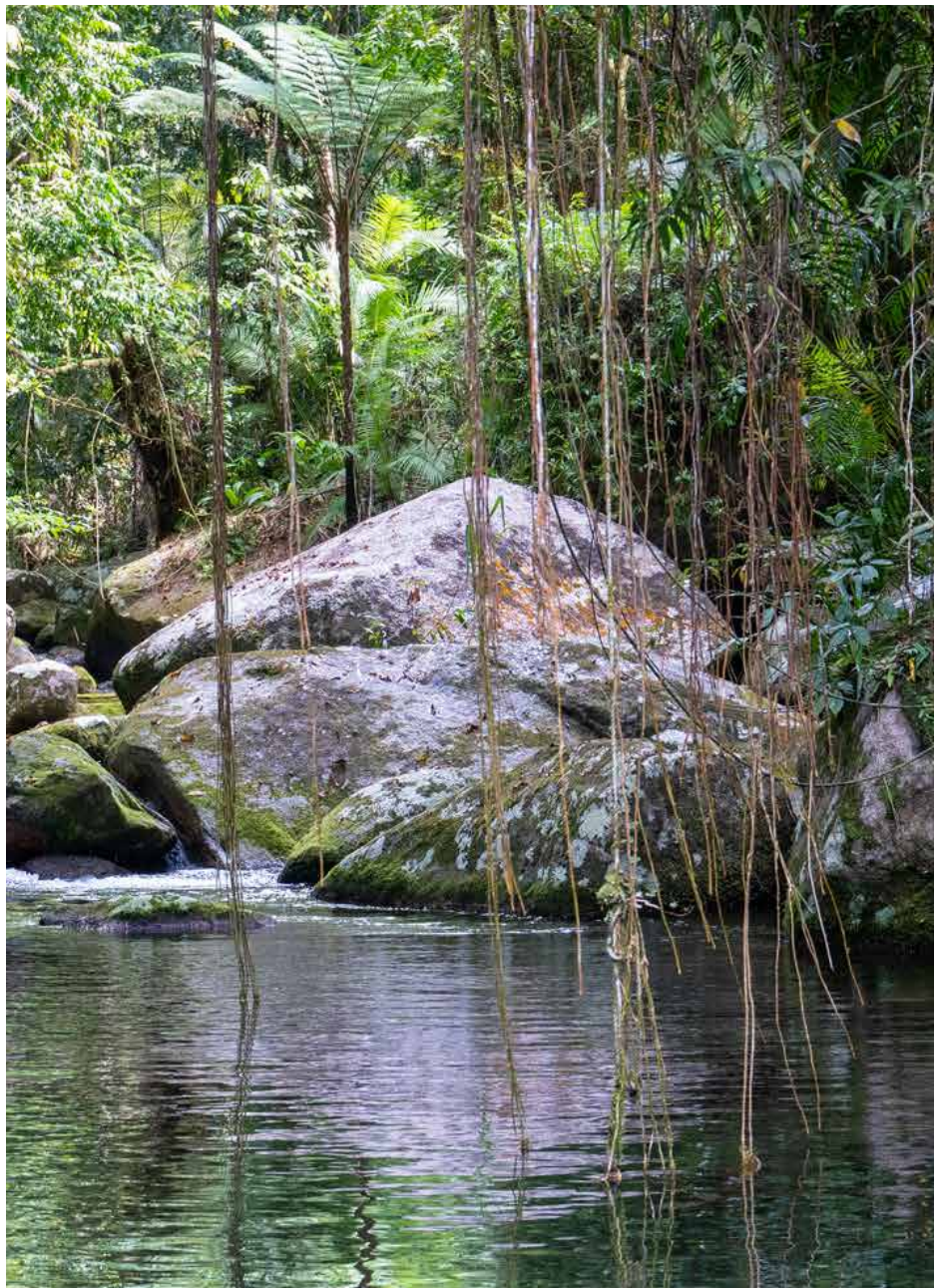


ANNUAL REPORT





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MESSAGE FROM THE **DIRECTOR**

CAIRNS INFRASTRUCTURE AND ASSETS



I am proud to present Cairns Regional Council's Annual Drinking Water Report for 2021-2022, which provides an overview of our results and achievements in providing our community with safe, high quality drinking water sourced from protected catchments in the Cairns region.

This year we continued to capitalise on gains made in previous years to transform our service offerings and improve our performance, while planning for the future of our water supply to ensure we can sustain our community now and into the future.

During 2021-22, we progressed several strategic priorities including:

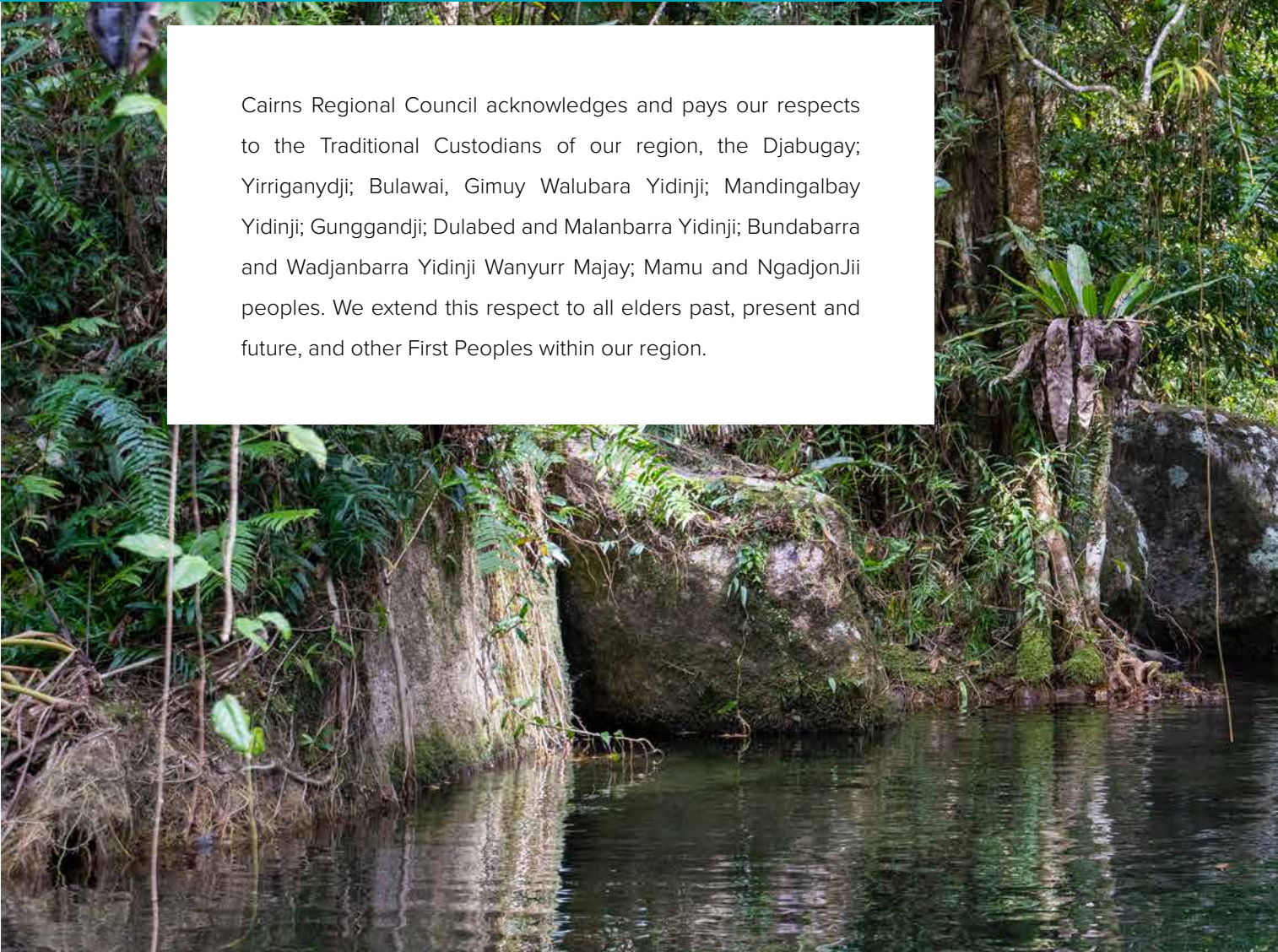
- Securing \$215 million in Federal and State funding (\$107.5 million each) for Cairns Water Security Stage 1, which will secure the city's drinking water into the next decade.
- Delivering Phase 1 of the Cairns emergency water supply plan.
- Delivering key asset upgrades on critical water infrastructure including Freshwater Water Treatment Plant filter upgrades, trunk main renewals, and reservoir upgrades.
- Implementation of demand management initiatives, including monitoring and repair programs, smart water metering and community education.

We continue to concentrate on the health and wellbeing of our customers and to deliver a brighter future for our community and the natural environment. We're driven by this vision as we plan the delivery of our essential services to meet the challenges of a growing population, social change and climate change impacts.

Finally, the quality and reliability of your drinking water is the result of the dedication and expertise of Cairns Regional Council employees in ensuring that our customers have access to high quality potable water whenever they need it.



ACKNOWLEDGMENT OF COUNTRY



Cairns Regional Council acknowledges and pays our respects to the Traditional Custodians of our region, the Djabugay; Yirriganydji; Bulawai, Gimuy Walubara Yidinji; Mandingalbay Yidinji; Gunggandji; Dulabed and Malanbarra Yidinji; Bundabarra and Wadjanbarra Yidinji Wanyurr Majay; Mamu and NgadjonJii peoples. We extend this respect to all elders past, present and future, and other First Peoples within our region.

ABOUT THIS REPORT

Cairns Regional Council's 2021/2022 Annual Drinking Water Quality Report describes Council's operational performance with drinking water quality and reports on activities detailed in Council's *Drinking Water Quality Management Plan* (DWQMP), including results of tests taken to check drinking water quality.

This report allows Council to meet its regulatory obligations under the *Water Supply (Safety and Reliability) Act 2008* by informing the Regulator about how Council has complied with its DWQMP, approval conditions and requirements of the *Public Health Act 2005*.

This report aims to communicate comprehensive information to satisfy the needs of individuals and groups who have an interest in

Cairns Regional Council's drinking water, including:

- Our customers
- Current, past and future employees
- Government
- The water industry
- Businesses and industry
- Researchers

A glossary of acronyms can be found at the end of the report.

DRINKING WATER STATISTICS

9 DRINKING WATER
SUPPLY SCHEMES

**MAXIMUM
DAILY
DEMAND**

112 ML

**\$57.6
MILLION**

DRINKING WATER REVENUE
SALE OF POTABLE WATER

\$19.2 MILLION

SPENT ON CAPITAL IMPROVEMENTS



169,742

POPULATION
RECEIVING
WATER
SERVICES

**DRINKING
WATER
SUPPLIED**

25,588 ML

74,710
PROPERTIES
CONNECTED

31,052
WATER
QUALITY
TESTS CONDUCTED

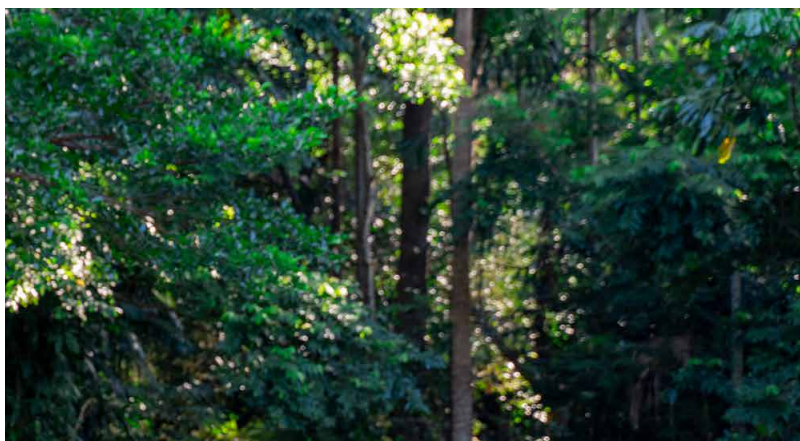
2,252 KM LENGTH OF WATER MAINS

\$1.2 BILLION

REPLACEMENT COST OF
WATER SUPPLY ASSETS

\$566

TYPICAL WATER BILL.
BASED ON 200 KL PER ANNUM WATER USE.



ABOUT US

Cairns Regional Council is responsible for delivering drinking water, sewerage and recycled water services to a population of over 170 000. Our 1687km² geographic area is framed by the lush World Heritage listed Wet Tropics rainforest to the west and north, and the Coral Sea and World Heritage listed Great Barrier Reef Marine Park to the east.

Cairns Regional Council maintains a Drinking Water Quality Management System (DWQMS) that is consistent with the *Australian Drinking Water Guidelines* (2011, National Health and Medical Research Council of Australia). The *Australian Drinking Water Guidelines* are hereon referred to as the ADWG.

The DWQMS utilises a risk-based “catchment to tap” approach to identify and manage potential risks associated with drinking water quality. Council does this in partnership with stakeholders and relevant agencies, by:

- Considering the needs and expectations of our customers, stakeholders, regulators and employees, and integrate appropriate solutions into our planning to provide and maintain safe water supplies.
- Undertaking regular monitoring of drinking water quality and maintaining effective reporting mechanisms to provide relevant and timely information and promote confidence in the management of the water supply systems.

- Having in place appropriate contingency plans and incident response capabilities to respond to and manage water quality incidents.
- Auditing and reviewing our practices against industry standards and stakeholder expectations to continually improve our performance.
- Maintaining competencies of council employees to improve knowledge about water quality, treatment standards and compliance procedures.
- Openly communicating our performance to the community to encourage public awareness.

This annual report describes our performance about the supply of drinking water for the 2021/2022 financial year.

SOURCING AND DELIVERING WATER

Cairns Regional Council provides drinking water services to nine water supply 'schemes.' Schemes start at the intake point on waterways, pass through treatment plants, bulk storage reservoirs, water distribution networks and end at the customer water meter. Council's largest water supply scheme is the Copperlode/Behana scheme, which services the city of Cairns. A map of the Council drinking water scheme areas is shown in Figure 1 below. Refer to Table 1 below for more information regarding each scheme.

Figure 1: Scheme Boundaries

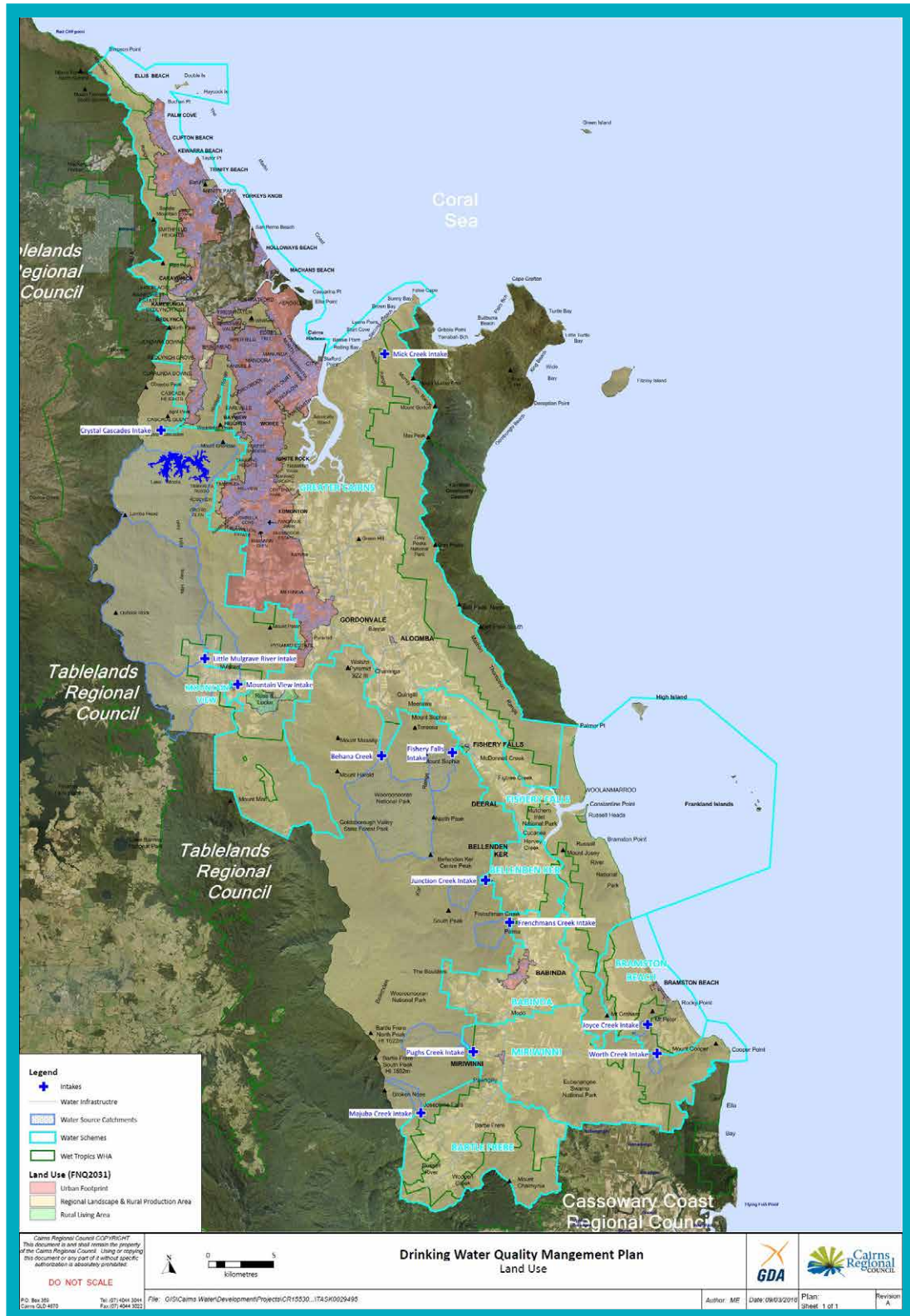


Table 1: Summary of Cairns Regional Council Drinking Water Supply Schemes.

Scheme Name	Water Source	Communities Served	Catchment Characteristics	Treatment Barriers	Total Connected Properties ¹	Population receiving water services ¹	10 year Population Projection ²
Copperlode/Behana	Copperlode Dam via Freshwater Creek	Goldsborough, Gordonvale, Bessie Point, the suburbs of greater Cairns from Edmonton in the South to Buchans Point in the north	State Forest World Heritage Gated Recreational Access by Permit Holder	Belt screen Coagulation Flocculation Direct filtration pH correction Chlorination	73,087	166,730	187,655
Copperlode/Behana	Behana Creek		National Park World Heritage	Coandă screen Drum micro strainer UV Chlorination			
Babinda	Frenchmans Creek	Babinda	National Park World Heritage	0.5mm Coandă Microscreen 50 micron filter 1 micron filter UV Chlorination	745	1,319	1,338
Bartle Frere	Majuba Creek	Bartle Frere and Woopen Creek	National Park World Heritage	0.5mm Coandă Microscreen 50 micron filter 1 micron filter UV Chlorination	159	303	307
Fishery Falls	Fishery Creek	Fishery Falls	National Park World Heritage	0.5mm Coandă Microscreen 50 micron filter 1 micron filter UV Chlorination	189	343	348
Bramston Beach	Joyce & Worth Creek	Bramston Beach	World Heritage	0.5mm Coandă Microscreen 50 micron filter 1 micron filter Swift Chlorination	159	296	300
Mirriwinni	Pughs Creek	Mirriwinni	National Park World Heritage	0.5mm Coandă Microscreen 1 micron filter UV Chlorination	195	362	368
Bellenden Ker	Junction Creek	Bellenden Ker	National Park World Heritage	0.5mm Coandă Microscreen 50 micron filter 1 micron filter UV Chlorination	119	226	229
Orchid Valley	Little Mulgrave River	Orchid Valley	Rural and Rural Residential	50 micron filter 1 micron filter UV Chlorination	22	63	64
Mountain View	Little Mulgrave River	Mountain View	Rural and Rural Residential	50 micron filter 1 micron filter UV Chlorination	35	100	101

Russell Heads³

Bessie Point Decommissioned - now serviced by Copperlode/Behana supply.

¹ Data sourced from 21/22 SWIM reporting. Indicators used: CS4 Total connected properties: water, CS1 Population receiving water services² Projection based on 21/22 SWIM CS1 population figures (population as at 30 June 2022). Population growth projections are in accordance with the Queensland Government Statistician's Office (QGSO) 2018 edition projections using low series projections.³ Russell Heads is a non-potable supply.



MANAGING SAFE DRINKING WATER

DRINKING WATER LEGISLATION

The supply of safe and reliable drinking water in Queensland is regulated by state legislation, including the *Water Supply (Safety and Reliability) Act 2008* and the *Public Health Act 2005*. Under the *Water Supply (Safety and Reliability) Act 2008*, the Department of Regional Development, Manufacturing and Water (RDMW) regulates Council to ensure that drinking water services are conducted in accordance with an approved DWQMP. Under the *Public Health Act 2005*, Queensland Health regulates drinking water quality to protect public health. This legislation establishes an *E. coli* standard for this purpose.

The ADWG set health guideline values, which have been incorporated into the Public Health Regulation 2018 as water quality criteria for drinking water in Queensland.

FRAMEWORK FOR MANAGING DRINKING WATER

Cairns Regional Council's methodology for managing drinking water quality is through a developed Drinking Water Quality Management System (DWQMS), based on the ADWG Framework for Management of Drinking Water Quality.

The primary aim is to provide safe drinking water to Cairns Regional Council customers.

The DWQMS provides a framework to bring together, and supplement where necessary, the operational procedures and work practices of Council into a structured management system.

The System is designed to formalise and link together procedures and practices, and assist in setting priorities, allocation of resources and performance of daily work activities.

A key attribute of the DWQMS is continual improvement, which includes improving the system itself. Any issues that arise with the system are viewed as opportunities for improvement.

DWQMS CORE ELEMENTS

Our DWQMS is based on the following core elements that make up the overall systems management approach:

- Organisation commitment
- Planning and Risk assessment
- Asset Management and Renewal
- Hazard analysis and critical controls
- Preventative measures
- Monitoring and verification
- Information Management
- Incident management

DWQMP IMPLEMENTATION

The implementation of the DWQMP is the responsibility of the Director, Cairns Infrastructure and Assets, supported by key operational staff and subject matter experts. Officers responsible for the implementation of the DWQMP meet quarterly to review the verification monitoring program, drinking water incidents, customer complaints and risk management improvement items.

DISTRIBUTION OF THE DWQMP AND DRINKING WATER QUALITY POLICY

Council maintains a current version of the DWQMP on its corporate document management system and is available to all relevant staff.

A Drinking Water Quality General Policy, endorsed by the Chief Executive Officer,

“To support the implementation and maintenance of a Drinking Water Quality Management System consistent with the Australian Drinking Water Guidelines”.

The policy assigns responsibility for the management of drinking water quality to all Cairns Infrastructure and Assets staff whilst acknowledging that corporate responsibility lies with the management team and ultimately with the Chief Executive Officer.

The policy is available to the public via the following link:

https://www.cairns.qld.gov.au/__data/assets/pdf_file/0011/9200/LIVE-1512851-v7-Drinking_Water_Quality_General_Policy.pdf

TRAINING OF STAFF

Council recognises that staff awareness training is a critical element of the system. The DWQMP commits to awareness training of staff through internal information sessions. During 2021/2022 the Drinking Water Quality Management Systems (12 Elements) awareness training continued.

A review of the training schedule has been completed to formalise the various forms of training required for individual staff. This has resulted in the following training planned for 2023:

- Drinking Water Quality Duty of Care (internal)
- Drinking Water Quality Incident Management (internal)
- Introduction to the Framework for Management of Drinking Water Quality (externally provided)

ATTENDANCE AT DEPARTMENT TRAINING AND INDUSTRY CONFERENCES

Council staff participate in industry training events and conferences to maintain professional development and to network with contemporaries from across the water sector.

Events attended in the 2021/2022 reporting period include:

- FNQROC Water Sub-group Meetings
- RDMW Water Supply Regulation Forum Cairns on 21 March 2022
- Ozwater’22 Brisbane 10-12 May 2022
- Qldwater Directorate Regional Conference Port Douglas 24 May 2022
- Water Supply Regulation – Drinking Water Regulation Workshop 20 July 2022



COORDINATION TEAM

A qualified and experienced team (listed in Table 2) is responsible for coordinating the system. This team reports to the quarterly management team meetings, their activities include:

- System review, including risk register review
- Quality and critical control points
- Exceedances
- Complaints received
- Standard Operating Procedures
- Business Continuity Plans
- Operational descriptions
- Drawings (as constructed and piping and instrumentation diagrams)
- SCADA schematics
- System implementation, optimisation and maintenance

Drinking water customer service performance data is compiled monthly and reported quarterly to Council. Data includes mains breaks, unplanned interruptions, response times, and water quality complaints as well as reportable drinking water non-compliances.

Table 2: DWQMP coordination team.

Position of Internal Stakeholder	Reason for Inclusion
Executive Manager Utilities Services	Overall responsibility for operation system. System governance. System sign-off.
Executive Manager Business Performance & Compliance	Overall responsibility for quality system and governance. System sign-off.
Water Services Coordinator	Rural systems and reticulation network operational management and process controller.
Coordinator Strategic Asset Management and Planning	Rural systems and reticulation network operational management and process controller.
Process and Treatment Coordinator	Treatment system operational management and process controller
Process Engineer Water	Treatment system operational management and process controller
Assets Coordinator	Asset management
Coordinator Program Delivery	Delivery of capital works program
Senior Asset Strategy Engineer	Strategic planning of water infrastructure
SCADA Coordinator	Maintain SCADA systems. Technical advice for SCADA.
Team Leader Water and Environment	System support. Regulatory liaison, maintenance of systems, internal auditing.
Water and Environment Systems Officer	System and regulatory support, advice and investigations.



SOURCE WATER

The first step in an effective DWQMS is to understand hazards in the natural water sources where drinking water is sourced. Council achieves this through an extensive Source Water Monitoring Program. The Program allows for the quantitative and qualitative assessment of risks in the catchments to determine treatment requirements.

Table 3 shows a summary of Council's Source Water Monitoring Program. This is not an exhaustive list, the complete list of summarised results by scheme can be found in section Source Water Monitoring Program Results Summary Statistics below.

Table 3: General summary of Source Water Monitoring Program

Scheme		Parameter Monitored	Frequency of Monitoring
Babinda, Bartle Frere, Bellenden Ker, Bramston Beach, Fishery Falls, Mirriwinni, Mountain View, Orchid Valley		<i>E. coli</i> <i>Cryptosporidium</i> <i>Giardia</i> Temperature Turbidity	Monthly
		Iron Manganese Silicon Calcium Magnesium Potassium Sodium Total hardness Total dissolved salts (calc) Colour Electrical conductance pH Total alkalinity Sulphate Chloride Fluoride	Quarterly
Copperlode/Behana	Behana Creek Intake	<i>Cryptosporidium</i> <i>Giardia</i> Turbidity	Weekly
	Freshwater Creek Intake	Colour <i>E. coli</i> and total coliforms Electrical conductance Heterotrophic plate count Iron Manganese pH Turbidity	Weekly
		Dissolved oxygen Temperature Sulphide	Monthly
		Alkalinity Ammonia Blue-green algae Chlorophyll a Ortho phosphate Total oxidised nitrogen Total nitrogen Total phosphorous Thermotolerant coliforms	Quarterly
		Arsenic Calcium Chloride Magnesium Organochlorine pesticides Organophosphate pesticides Potassium Silicon Sodium Sulphate Tin Total dissolved salts (calc) Total hardness	Six monthly

SOURCE WATER MONITORING PROGRAM

RESULTS SUMMARY STATISTICS

This section provides a complete summary of source water monitoring results. Note: 'Not detected' and 'less than' results have been replaced with zero prior to calculation of averages. This is because whole numbers are required for calculating averages.

Table 4: Babinda Source Water Summary Statistics

BABINDA						
Result Name	Number of Tests	Average	Minimum	Maximum	Median	Units
Apparent Colour	4	5.88	4.7	6.4	6.2	Pt/Co units
Calcium	4	0.76	0.68	0.84	0.755	mg/L
Chloride	4	4.98	4.4	5.4	5.1	mg/L
Confirmed <i>Cryptosporidium</i>	12	0.3	1	3	0	(oo)cyst/10L
Confirmed <i>Giardia</i>	12	0.2	2	2	0	(oo)cyst/10L
<i>E. coli</i>	12	219.25	17	1200	160	CFU/100mL
Electrical Conductance	4	31.33	27	37	31	µS/cm
Fluoride	4	0.02	0.02	0.02	0.01	mg/L
ICPOES Iron	4	0.051	<0.050	0.127	0	mg/L
ICPOES Manganese	4	0.001	0.002	0.002	0	mg/L
ICPOES Silicon	4	11.216	2	17	13	mg/ L SiO ₂
Magnesium	4	0.396	0.37	0.44	0.39	mg/L
pH	4	7.09	6.9	7.3	7.1	.
Potassium	4	0.91	0.39	1.1	1.05	mg/L
Presumptive <i>Cryptosporidium</i>	12	Not detected				(oo)cyst/10L
Presumptive <i>Giardia</i>	12	0.3	1	2	0	(oo)cyst/10L
Sodium	4	3.99	2.3	5.3	4.2	mg/L
Sulphate	4	1.20	1.1	1.3	1.2	mg/L
Temperature	12	22.37	19	25	22.5	°C
Total Alkalinity	4	5.97	4.2	8.3	5.65	mg CaCO ₃ / L
Total Dissolved Salts (calc)	4	27.04	14	37	28.5	mg/L
Total Hardness	4	3.53	3.2	3.9	3.5	mg CaCO ₃ / L
True Colour	4	4.10	3.6	5	3.85	Pt/Co units
Turbidity	12	0.55	0.2	1.1	0.45	NTU

Table 5: Bartle Frere Source Water Summary Statistics

BARTLE FRERE						
Result Name	Number of Tests	Average	Minimum	Maximum	Median	Units
Apparent Colour	4	4.80	4	5.8	4.7	Pt/Co units
Calcium	4	0.73	0.6	0.89	0.705	mg/L
Chloride	4	4.14	3.6	4.6	4.15	mg/L
Confirmed <i>Cryptosporidium</i>	12	Not detected				(oo)cyst/10L
Confirmed <i>Giardia</i>	12	0.17	1	1	0	(oo)cyst/10L
<i>E. coli</i>	12	64.17	17	190	57	CFU/100mL
Electrical Conductance	4	28.15	25	33	27	µS/cm
Fluoride	4	0.02	<0.02	0.03	0.02	mg/L
ICPOES Iron	4	0.025	<0.050	<0.050	<0.050	mg/L
ICPOES Manganese	4	0.001	<0.002	<0.002	0	mg/L
ICPOES Silicon	4	12.523	9.7	17	11.95	mg/ L SiO ₂
Magnesium	4	0.300	0.28	0.32	0.3	mg/L
pH	4	7.03	6.9	7.1	7.05	.
Potassium	4	0.80	0.73	0.92	0.785	mg/L
Presumptive <i>Cryptosporidium</i>	12	Not detected				(oo)cyst/10L
Presumptive <i>Giardia</i>	12	Not detected				(oo)cyst/10L
Sodium	4	3.79	3.2	4.7	3.65	mg/L
Sulphate	4	1.02	<1	1.1	1.1	mg/L
Temperature	12	21.53	18	23	21.5	°C
Total Alkalinity	4	5.97	4.8	7.8	5.6	mg CaCO ₃ / L
Total Dissolved Salts (calc)	4	26.91	22	34	26	mg/L
Total Hardness	4	3.05	2.7	3.5	3	mg CaCO ₃ / L
True Colour	4	3.18	2.4	3.8	3.2	Pt/Co units
Turbidity	12	0.42	0.1	1	0.3	NTU

Table 6: Bellenden Ker Source Water Summary Statistics

BELLENDEN KER						
Result Name	Number of Tests	Average	Minimum	Maximum	Median	Units
Apparent Colour	4	4.45	3.8	5.6	4.2	Pt/Co units
Calcium	4	0.56	0.51	0.64	0.54	mg/L
Chloride	4	5.28	4.7	6.2	5.05	mg/L
Confirmed <i>Cryptosporidium</i>	12	Not detected				(oo)cyst/10L
Confirmed <i>Giardia</i>	12	0.33	1	2	0	(oo)cyst/10L
<i>E. coli</i>	13	1341.69	36	14000	150	CFU/100mL
Electrical Conductance	4	29.88	29	31	30	µS/cm
Fluoride	4	0.02	0.02	0.02	0.02	mg/L
Iron	4	0.019	<0.050	<0.050	<0.050	mg/L
Manganese	4	0.001	0.002	0.002	0	mg/L
Silicon	4	12.177	11	13	12	mg/L SiO ₂
Magnesium	4	0.338	0.31	0.36	0.335	mg/L
pH	4	7.03	6.9	7.1	7	.
Potassium	4	0.83	0.8	0.87	0.82	mg/L
Presumptive <i>Cryptosporidium</i>	12	Not detected				(oo)cyst/10L
Presumptive <i>Giardia</i>	12	Not detected				(oo)cyst/10L
Sodium	4	4.17	3.9	4.5	4.15	mg/L
Sulphate	4	1.13	<1	1.4	1.1	mg/L
Temperature	13	20.80	17	23	21	°C
Total Alkalinity	4	4.98	4.2	6.1	4.8	mg CaCO ₃ / L
Total Dissolved Salts (calc)	4	27.48	26	30	27.5	mg/L
Total Hardness	4	2.77	2.6	3.1	2.75	mg CaCO ₃ / L
True Colour	4	2.90	2.3	4	2.65	Pt/Co units
Turbidity	13	0.48	0.2	2	0.4	NTU

Table 7: Bramston Beach Source Water Summary Statistics

BRAMSTON BEACH						
Result Name	Number of Tests	Average	Minimum	Maximum	Median	Units
Apparent Colour	4	14.61	4.2	41	6.7	Pt/Co units
Calcium	4	1.31	0.59	1.7	1.45	mg/L
Chloride	4	6.72	3.3	8.2	7.75	mg/L
Confirmed <i>Cryptosporidium</i>	11	0.18	1	1	0	(oo)cyst/10L
Confirmed <i>Giardia</i>	11	Not detected				(oo)cyst/10L
<i>E. coli</i>	12	127.33	14	530	40.5	CFU/100mL
Electrical Conductance	4	39.80	22	51	43.5	µS/cm
Fluoride	4	0.02	<0.02	<0.02	0.02	mg/L
ICPOES Iron	4	0.040	<0.050	0.088	0	mg/L
ICPOES Manganese	4	0.003	<0.002	0.011	0	mg/L
ICPOES Silicon	4	8.628	7.4	9.5	8.85	mg/ L SiO ₂
Magnesium	4	1.048	0.34	1.5	1.2	mg/L
pH	4	6.95	6.6	7.1	7.05	.
Potassium	4	0.49	0.33	0.9	0.37	mg/L
Presumptive <i>Cryptosporidium</i>	11	Not detected				(oo)cyst/10L
Presumptive <i>Giardia</i>	11	Not detected				(oo)cyst/10L
Sodium	4	4.34	3.2	5	4.55	mg/L
Sulphate	4	1.47	1.3	1.7	1.4	mg/L
Temperature	12	25.67	23	28	26.5	°C
Total Alkalinity	4	6.62	2.7	9.6	7.1	mg CaCO ₃ / L
Total Dissolved Salts (calc)	4	27.99	21	33	29	mg/L
Total Hardness	4	7.60	2.9	10	8.55	mg CaCO ₃ / L
True Colour	4	8.66	2.7	24	3.8	Pt/Co units
Turbidity	12	1.11	0.1	5.6	0.3	NTU

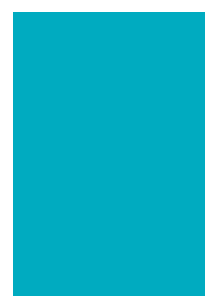
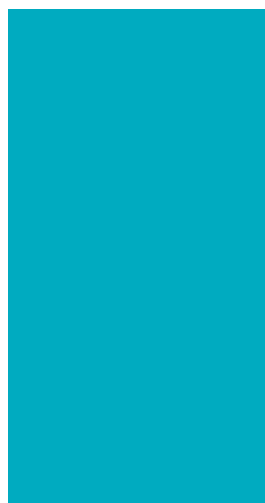


Table 8: Copperlode/Behana Source Water Summary Statistics

COPPERLODE/BEHANA						
Result Name	Number of Tests	Average	Minimum	Maximum	Median	Units
Ammonia	139	0.056	<0.02	1.2	0.02	mg/L N
Apparent Colour	188	29.985	5.6	>150	16	Pt/Co units
Calcium	2	1.468	1.4	1.5	1.45	mg/L
Chloride	2	6.785	6.6	7	6.8	mg/L
Chlorpyrifos	2	0.000	<0.02	<0.02	<0.02	µg/L
Chlorpyrifos-methyl	2	0.000	<0.2	<0.2	<0.2	µg/L
cis-Chlordane	2	0.000	<0.010	<0.010	<0.010	µg/L
Conductivity (in Situ)	232	45.550	34	140	42	µS/cm
Confirmed <i>Cryptosporidium</i>	48	0.092	0.4	2	0	(oo)cyst/10L
Confirmed <i>Giardia</i>	48	0.429	0.2	9	0	(oo)cyst/10L
DO in situ (mg/L)	353	4.432	0.1	8.9	4.8	mg/L
<i>E. coli</i>	107	23.196	<1	220	14	CFU/100mL
Electrical Conductance	141	42.781	37	64	42	µS/cm
Heterotrophic Plate Count	107	305.047	10	2400	280	CFU/mL
ICPMS Arsenic	2	0.002	0.0012	0.002	0.0016	mg/L
ICPMS Iron	16	0.365	0.154	0.906	0.325	mg/L
ICPMS Manganese	16	0.049	0.02	0.0989	0.0374	mg/L
ICPMS Tin	2	0.000	<0.001	<0.001	<0.001	mg/L
ICPOES Iron	265	0.763	0.052	18.1	0.331	mg/L
ICPOES Manganese	265	0.086	0.005	1.16	0.028	mg/L
ICPOES Silicon	2	8.013	7.4	8.7	8.05	mg/ L SiO ₂
Intestinal Enterococci	28	22.429	<1	270	0	CFU/100mL
Magnesium	2	1.079	1.1	1.1	1.1	mg/L
Ortho Phosphate	139	0.004	Not detected			mg/L
Pesticides (OP & OC)	152	0.000	<0.02	1.2	0.02	mg/L N
pH	141	7.051	6.5	7.5	7.1	.
pH (in situ)	232	5.997	5	7.6	5.9	pH units
Potassium	2	0.658	0.51	0.8	0.655	mg/L
Presumptive <i>Cryptosporidium</i>	48	0.000	Not detected			(oo)cyst/10L
Presumptive <i>Giardia</i>	48	0.167	0.2	4	0	(oo)cyst/10L
Reported Chlorophyll a	28	7.124	<1	22	6.55	µg/L
Sodium	2	4.949	4.7	5.2	4.95	mg/L
Sulphate	2	1.199	1.1	1.2	1.15	mg/L
Sulfide as S ₂	4	0.000	<0.1	<0.1	<0.1	mg/L
Temperature	353	24.419	18	30	24	°C
Thermotolerant Coliforms	28	166.357	14	1600	115	CFU/100mL
TN*	2	3.578	2.5	4.6	3.55	mg/L N
TN (Low Level)*	134	0.238	0.07	1.4	0.2	mg/L N

COPPERLODE/BEHANA

Result Name	Number of Tests	Average	Minimum	Maximum	Median	Units
TON	139	0.019	0.01	0.16	0.01	mg/L N
Total Alkalinity	64	9.022	7	25	8.7	mg CaCO ₃ / L
Total Coliforms	107	4698.785	490	24000	3700	CFU/100mL
Total Dissolved Salts (calc)	2	29.409	29	30	29.5	mg/L
Total Hardness	2	8.150	8	8.3	8.15	mg CaCO ₃ / L
Total Nitrogen*	4	0.178	0.17	0.19	0.175	.
Total Nitrogen*	12	0.184	0.14	0.27	0.185	mg/L
Total Nitrogen as N	8	0.125	0.1	0.15	0.12	mg/L
Total Phosphorus*	4	0.010	0.009	0.012	0.0095	.
Total Phosphorus*	12	0.009	0.004	0.012	0.009	mg/L
Total Phosphorus as P	8	0.000	<0.005	<0.005	<0.005	mg/L
Total Sulphide	8	0.005	<0.05	<0.1	0	mg/L
TP*	1	0.409	0.41	0.41	0.41	mg/L P
TP (Low Level)*	135	0.013	<0.02	0.35	0	mg/L P
True Colour	3	114.088	46	>150	46	Pt/Co units
Turbidity	268	5.751	0.2	390	1.4	NTU
UVT	30	93.737	90.4	98.9	93.5	%
Blue-Green Algae Monitoring						
Aphanocapsa (Cyan)	8	1625.000	400	5200	1100	Cells/mL
Chlorophyta	45	6600.889	640	21300	6300	Cells/mL
Cryptophyta (Cryptophytes)	1	35.000	35	35	35	Cells/mL
Cyanogranis (Cyanophyta)	43	9111.628	200	56700	5400	Cells/mL
Diatoms (Bacillariophyta)	43	893.256	20	2100	780	Cells/mL
Dinophyta (Dinoflagellates)	1	280.000	280	280	280	Cells/mL
Dolichospermum (Cyanophyta)	3	114.333	13	200	130	Cells/mL
Euglenophyta (Euglenoids)	2	15.000	10	20	15	Cells/mL
Mixed Algae (No Cyanophyta Detected)	1	0.000	<100	<100	<100	Cells/mL
Oscillatoria (Cyanophyta)	1	200.000	200	200	200	Cells/mL
Planktolyngbya sp	3	300.000	150	400	350	Cells/mL
Planktothrix (Cyan.)	1	42.000	42	42	42	Cells/mL
Snowella (Cyanophyta)	9	697.778	280	1700	560	Cells/mL
Total Cyanophyta	43	9593.023	600	56700	6800	Cells/mL
Total Potentially Toxic Cyanophyta	43	0.000	Not detected			Cells/mL

*Duplicated parameters can be the result of different laboratory testing methods and technicalities with reporting; for the purposes of the report they can be considered together.

Table 9: Fishery Falls Source Water Summary Statistics

FISHERY FALLS						
Result Name	Number of Tests	Average	Minimum	Maximum	Median	Units
Apparent Colour	28	7.98	5.5	18	7.3	Pt/Co units
Calcium	4	1.26	1.1	1.5	1.2	mg/L
Chloride	4	6.62	6.3	7.1	6.55	mg/L
Confirmed <i>Cryptosporidium</i>	12	Not detected				(oo)cyst/10L
Confirmed <i>Giardia</i>	12	Not detected				(oo)cyst/10L
<i>E. coli</i>	36	63.72	11	460	35.5	CFU/100mL
Electrical Conductance	4	47.05	45	49	47	µS/cm
Fluoride	4	0.03	0.03	0.03	0.03	mg/L
Heterotrophic Plate Count	22	267.27	140	550	220	CFU/mL
ICPOES Iron	4	0.029	<0.050	<0.050	<0.050	mg/L
ICPOES Manganese	4	0.001	<0.002	<0.002	<0.002	mg/L
ICPOES Silicon	4	18.226	16	20	18.5	mg/L SiO ₂
Magnesium	4	0.995	0.86	1.2	0.94	mg/L
pH	4	7.37	7.3	7.4	7.4	.
Potassium	4	0.81	0.77	0.85	0.81	mg/L
Presumptive <i>Cryptosporidium</i>	12	Not detected				(oo)cyst/10L
Presumptive <i>Giardia</i>	12	Not detected				(oo)cyst/10L
Sodium	4	5.86	5.5	6.2	5.85	mg/L
Sulphate	4	1.63	1.4	1.8	1.65	mg/L
Temperature	12	21.37	18	24	22	°C
Total Alkalinity	4	10.74	9.3	12	11	mg CaCO ₃ / L
Total Coliforms	24	8379	3200	19000	7000	CFU/100mL
Total Dissolved Salts (calc)	4	41.88	39	43	42.5	mg/L
Total Hardness	4	7.18	6.3	8.7	6.85	mg CaCO ₃ / L
Total Suspended Solids	24	1.53	<1	7.5	1.2	mg/L
True Colour	4	5.45	4	7.8	5	Pt/Co units
Turbidity	36	0.46	0.2	1.3	0.4	NTU
UVTrans @ 254nm	24	89.92	75	94	90.5	%

Extra monitoring was completed in addition to the regular verification monitoring program at Fishery Falls in 2021 as part of a study to verify water quality with the commissioning of an upgraded water filter system at the Fishery Falls treatment plant.

Table 10: Mirriwinni Source Water Summary Statistics

MIRRIWINNI						
Result Name	Number of Tests	Average	Minimum	Maximum	Median	Units
Apparent Colour	4	3.96	3.7	4.3	3.95	Pt/Co units
Calcium	4	0.47	0.44	0.51	0.465	mg/L
Chloride	4	4.34	3.8	4.5	4.5	mg/L
Confirmed <i>Cryptosporidium</i>	12	Not detected				(oo)cyst/10L
Confirmed <i>Giardia</i>	12	0.08	1	1	0	(oo)cyst/10L
<i>E. coli</i>	14	241.07	55	410	225	CFU/100mL
Electrical Conductance	4	26.80	25	30	26	µS/cm
Fluoride	4	0.02	0.02	0.02	0.02	mg/L
ICPOES Iron	4	0.014	<0.050	<0.050	<0.050	mg/L
ICPOES Manganese	4	0.001	<0.002	<0.002	0	mg/L
ICPOES Silicon	4	11.789	9.1	15	11.5	mg/ L SiO ₂
Magnesium	4	0.294	0.29	0.3	0.29	mg/L
pH	4	6.97	6.8	7.1	7	.
Potassium	4	0.81	0.75	0.86	0.815	mg/L
Presumptive <i>Cryptosporidium</i>	12	Not detected				(oo)cyst/10L
Presumptive <i>Giardia</i>	12	Not detected				(oo)cyst/10L
Sodium	4	3.78	3.1	4.4	3.8	mg/L
Sulphate	4	1.01	<1	1.1	0.5	mg/L
Temperature	14	20.95	18	23	21	°C
Total Alkalinity	4	4.84	4	6.1	4.6	mg CaCO ₃ / L
Total Dissolved Salts (calc)	4	25.41	21	30	25.5	mg/L
Total Hardness	4	2.38	2.3	2.5	2.35	mg CaCO ₃ / L
True Colour	5	2.59	1.7	3.2	2.6	Pt/Co units
Turbidity	14	0.41	0.1	1.5	0.25	NTU



Table 11: Mountain View Source Water Summary Statistics

MOUNTAIN VIEW						
Result Name	Number of Tests	Average	Minimum	Maximum	Median	Units
Apparent Colour	5	9.62	4	14	12	Pt/Co units
Calcium	5	3.65	3	4.3	3.8	mg/L
Chloride	5	6.07	5.7	6.5	6.2	mg/L
Confirmed <i>Cryptosporidium</i>	12	Not detected				(oo)cyst/10L
Confirmed <i>Giardia</i>	12	0.17	1	1	0	(oo)cyst/10L
<i>E. coli</i>	13	203.46	38	410	220	CFU/100mL
Electrical Conductance	5	61.66	57	69	62	µS/cm
Fluoride	5	0.04	0.03	0.04	0.04	mg/L
ICPOES Iron	5	0.098	0.05	0.138	0.106	mg/L
ICPOES Manganese	5	0.007	0.004	0.009	0.006	mg/L
ICPOES Silicon	5	19.038	17	20	19	mg/ L SiO ₂
Magnesium	5	1.093	0.92	1.2	1.1	mg/L
pH	5	7.28	7.2	7.4	7.3	.
Potassium	5	1.10	0.94	1.2	1.1	mg/L
Presumptive <i>Cryptosporidium</i>	12	Not detected				(oo)cyst/10L
Presumptive <i>Giardia</i>	12	Not detected				(oo)cyst/10L
Sodium	5	6.49	5.9	7.2	6.5	mg/L
Sulphate	5	1.43	1.4	1.5	1.4	mg/L
Temperature	13	22.98	19	26	24	°C
Total Alkalinity	5	19.30	16	23	19	mg CaCO ₃ / L
Total Dissolved Salts (calc)	5	50.48	46	56	50	mg/L
Total Hardness	5	13.60	11	16	14	mg CaCO ₃ / L
True Colour	5	6.45	2.8	9.2	7.6	Pt/Co units
Turbidity	13	1.02	0.3	3.2	0.6	NTU

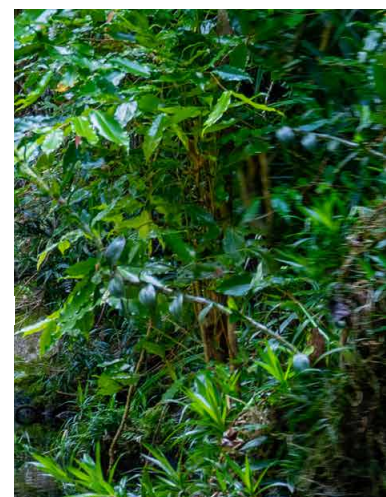
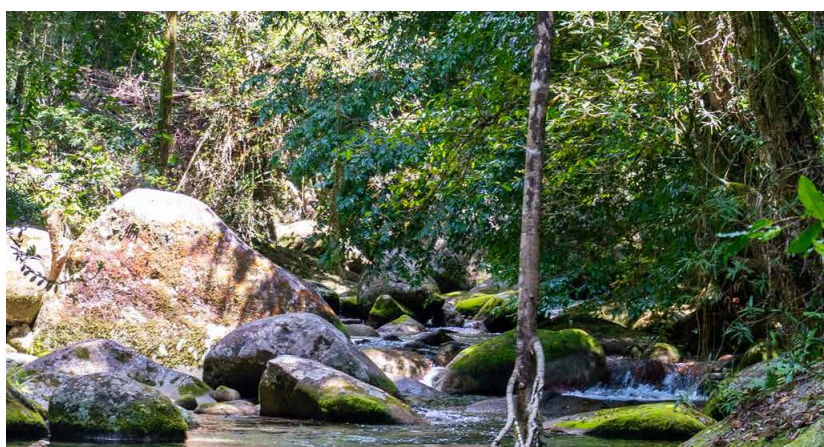
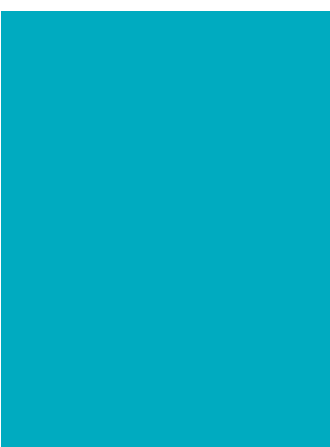
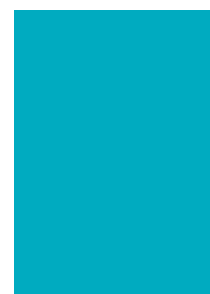


Table 12: Orchid Valley Source Water Summary Statistics

ORCHID VALLEY						
Result Name	Number of Tests	Average	Minimum	Maximum	Median	Units
Apparent Colour	4	8.67	4.8	12	9.1	Pt/Co units
Calcium	4	3.03	2.6	3.6	2.95	mg/L
Chloride	4	5.82	5.5	6.1	5.85	mg/L
Confirmed <i>Cryptosporidium</i>	12	0.08	1	1	0	(oo)cyst/10L
Confirmed <i>Giardia</i>	12	Not detected				(oo)cyst/10L
<i>E. coli</i>	13	149.85	39	360	110	CFU/100mL
Electrical Conductance	4	54.63	51	61	53	µS/cm
Fluoride	4	0.03	0.03	0.03	0.03	mg/L
ICPOES Iron	4	0.083	<0.050	0.149	0.0725	mg/L
ICPOES Manganese	4	0.006	0.003	0.01	0.0055	mg/L
ICPOES Silicon	4	18.945	18	21	19	mg/ L SiO ₂
Magnesium	4	0.822	0.75	0.9	0.82	mg/L
pH	4	7.32	7.3	7.4	7.35	.
Potassium	4	1.07	0.97	1.2	1.04	mg/L
Presumptive <i>Giardia</i>	12	0.08	1	1	0	(oo)cyst/10L
Presumptive <i>Cryptosporidium</i>	12	0.08	1	1	0	(oo)cyst/10L
Sodium	4	6.10	5.6	6.9	5.95	mg/L
Sulphate	4	1.31	1.2	1.4	1.35	mg/L
Temperature	13	22.33	18	26	22	°C
Total Alkalinity	4	16.23	14	19	15.5	mg CaCO ₃ / L
Total Dissolved Salts (calc)	4	46.87	43	52	46.5	mg/L
Total Hardness	4	10.94	9.6	13	10.5	mg CaCO ₃ / L
True Colour	4	4.93	2.4	7.4	4.95	Pt/Co units
Turbidity	13	0.77	0.3	2.3	0.5	NTU



TREATED WATER

To check that treatment of source water from the environment is effective and that reservoirs, distribution mains, and reticulation pipes keep water safe for consumption, Council monitors the quality of treated water with a comprehensive Verification Monitoring Program (VMP). This testing is the final check to ensure barriers and preventive measures used to protect public health are performing effectively.

Verification monitoring is conducted by the NATA accredited Cairns Regional Council Water Laboratory at dedicated sampling points located at intakes, treatment sites, major reservoirs and within the reticulation network.

Table 13 below provides a schedule of Council's VMP. This is not an exhaustive list; complete details of all results are provided in summary charts and tables for verification monitoring in the sections below including: Performance against the Verification Monitoring Program; Microbiological pathogens; Overall assessment; and Summary Verification Monitoring Program.

Table 13: General summary of Verification Monitoring Program

System Component	Parameter Monitored	Frequency of Monitoring
Reticulation network	Alkalinity* Chlorine (free & total) Colour <i>E. coli</i> and total coliforms Electrical conductivity* Heterotrophic plate count pH Temperature Turbidity	Weekly
	Aluminium Copper Iron Lead Manganese	Monthly
	Ammonia Nitrate Nitrite Chloride Sodium Total dissolved salts (calc) Sulphate Zinc Total Trihalomethanes	Six monthly *
Reservoirs	Alkalinity Chlorine (free & total) <i>E. coli</i> and total coliforms Heterotrophic plate count pH Temperature Colour* Turbidity* Aluminium* Copper* Iron* Manganese*	Weekly
	Chlorite <i>Naegleria</i> Total Trihalomethanes	Monthly*

PERFORMANCE AGAINST THE VERIFICATION MONITORING PROGRAM

Table 14 below shows a summary of the water quality tests conducted under Council's VMP, indicating the number required as per Council's DWQMP, the actual number of tests conducted and whether there were any non-compliances with the ADWG aesthetic or health guideline values. Comments have been provided in the table where non-compliances occurred.

Although every effort is made to strictly adhere to the VMP, circumstances occasionally prevent samples being collected, in these instances a "no-sample" is reported by the Laboratory. The VMP has been designed to give a degree of flexibility and allow for a number of no-samples in each scheme per year.

Council has Business Continuity Plans in place to ensure that it can maintain essential services during periods of interruption. At certain times a reduced VMP may need to be implemented, it is important however to maintain sufficient testing to firstly protect public health and secondly to meet regulatory requirements.

Any reduction to monitoring is approved through the executive management team. If the change is significant or there is a possibility that the Public Health Regulation minimum requirements may not be met, Council and Queensland Health collaborate to create a mutually acceptable short-term sampling program.

The timing of sample collection either side of the financial year reporting period can result in discrepancies between planned and actual sample numbers. In some cases, duplicate samples are also collected by the laboratory for quality control and statistical analysis purposes.

Parameters where there is no 'Number samples planned to be collected as per DWQMP' specified, are generally supplementary tests, conducted as a result of another test. For example, dissolved metals are usually only tested when total metals results require further investigation.



Table 14: Performance against Verification Monitoring Program

Scheme	Parameter	Number of samples planned to be collected as per DWQMP	Actual Number Collected	ADWG Guideline Value	Number Non-compliant	Comments
Babinda	Apparent Colour	104	108			The aesthetic guideline limit for true colour is 15Pt/Co units. The Verification Monitoring Program is designed to test for apparent colour, with true colour analysed if the apparent colour exceeds 15Pt/Co units. There were two instances in the Babinda scheme where the apparent colour indicated an exceedance of the guideline value. True colour was subsequently analysed and results determined to be less than the aesthetic limit.
	True Colour		2	≤ 15.0 Pt/Co units	0	
	<i>E. coli</i>	104	109	< 1.0 CFU/100mL	0	
	Free Chlorine	104	109	≤ 5.0 mg/L	0	
	Heterotrophic Plate Count	104	108			
	ICPMS Aluminium	26	26	≤ 0.2 mg/L	0	
	ICPMS Copper	26	26	≤ 1.0 mg/L	0	
	ICPMS Iron	26	26	≤ 0.3 mg/L	0	
	ICPMS Lead	26	26	≤ 0.01 mg/L	0	
	ICPMS Manganese	26	26	≤ 0.1 mg/L	0	
	pH	104	108	6.5 - 8.5	2	Two exceedances of the aesthetic limits within the Babinda scheme on 4 April 2022 and 24 May 2022. Results were 8.95 and 8.64 respectively. Alkaline water above a pH of 8 can impair the efficiency of chlorine disinfection. Neither exceedance was associated with changes in microbial quality.
	Temperature	104	109			
	Total Chlorine	104	109	≤ 5.0 mg/L	0	
	Total Coliforms	104	109			
	Turbidity	104	108	≤ 5 NTU	2	Two aesthetic exceedances during the reporting period: <ul style="list-style-type: none"> 19.8 NTU on 20 October 2021 was associated with the reinstatement of water supply following a leak detection in the vicinity. 13.4 NTU on 22 November 2022 which was linked with water being drawn from an unauthorised standpipe.

*at selected site/s

Scheme	Parameter	Number of samples planned to be collected as per DWQMP	Actual Number Collected	ADWG Guideline Value	Number Non-compliant	Comments
Bartle Frere	Apparent Colour	104	112			
	<i>E. coli</i>	104	114	< 1.0 CFU/100mL	0	
	Free Chlorine	104	114	≤ 5.0 mg/L	0	
	Heterotrophic Plate Count	104	108			
	ICPMS Aluminium	26	27	≤ 0.2 mg/L	0	
	ICPMS Copper	26	27	≤ 1.0 mg/L	0	
	ICPMS Iron	26	27	≤ 0.3 mg/L	0	
	ICPMS Lead	26	27	≤ 0.01 mg/L	0	
	ICPMS Manganese	26	27	≤ 0.1 mg/L	0	
	pH	104	112	6.5 - 8.5	2	Results of 8.72 and 8.6 recorded in May 2022 were greater than the guideline value. There were no corresponding changes in disinfection rate or microbial quality.
	Temperature	104	114			
	Total Chlorine	104	114	≤ 5.0 mg/L	0	
	Total Coliforms	104	114			
	Turbidity	104	112	≤ 5 NTU	0	
Scheme	Parameter	Number of samples planned to be collected as per DWQMP	Actual Number Collected	ADWG Guideline Value	Number Non-compliant	Comments
Bellenden Ker	Apparent Colour	52	53			
	<i>E. coli</i>	52	54	< 1.0 CFU/100mL	0	
	Free Chlorine	52	54	≤ 5.0 mg/L	0	
	Heterotrophic Plate Count	52	53			
	ICPMS Aluminium	13	13	≤ 0.2 mg/L	0	
	ICPMS Copper	13	13	≤ 1.0 mg/L	0	
	ICPMS Iron	13	13	≤ 0.3 mg/L	0	
	ICPMS Lead	13	13	≤ 0.01 mg/L	0	
	ICPMS Manganese	13	13	≤ 0.1 mg/L	0	
	pH	52	53	6.5 - 8.5	44	Aesthetic exceedances are associated with an interaction between the water and cement lined pipes in the reticulation network. Alkaline water above a pH of 8 can impair the efficiency of chlorine disinfection. Council closely monitors disinfection performance through testing microbial indicators to ensure the effectiveness of chlorine is not compromised by elevated pH.
	Temperature	52	54			
	Total Chlorine	52	54	≤ 5.0 mg/L	0	
	Total Coliforms	52	54			
	Turbidity	52	53	≤ 5 NTU	0	

Scheme	Parameter	Number of samples planned to be collected as per DWQMP	Actual Number Collected	ADWG Guideline Value	Number Non-compliant	Comments
Bramston Beach	Amoeba - <i>Naegleria</i>					<i>Naegleria</i> testing is completed every four weeks at one site in the Bramston Beach scheme. <i>Naegleria</i> testing involves firstly testing for the presence of Thermophilic Amoeba in a sample. If Thermophilic Amoeba are detected, further testing is done on the sample to determine if certain species are present; <i>Naegleria fowleri</i> and/or <i>Naegleria</i> spp. The 13 samples collected and tested for 'Amoeba - Thermophilic Amoeba' indicate the total number of samples collected under <i>Naegleria</i> testing. No samples detected Thermophilic Amoeba and therefore no further testing was required for speciation.
	Amoeba - Thermophilic Amoeba	13	13			
	Amoeba speciation - <i>Naegleria fowleri</i>					
	Amoeba speciation - <i>Naegleria</i> spp					
	Apparent Colour	52	13			
	<i>E. coli</i>	52	52	< 1.0 CFU/100mL	0	
	Free Chlorine	52	53	≤ 5.0 mg/L	0	
	Heterotrophic Plate Count	52	53			
	ICPMS Aluminium	13	52	≤ 0.2 mg/L	0	
	ICPMS Copper	13	13	≤ 1.0 mg/L	0	
	ICPMS Iron	13	13	≤ 0.3 mg/L	0	
	ICPMS Lead	13	13	≤ 0.01 mg/L	0	
	ICPMS Manganese	13	13	≤ 0.1 mg/L	0	
	pH	52	13	6.5 - 8.5	0	
	Temperature	52	52			
	Total Chlorine	52	53	≤ 5.0 mg/L	0	
	Total Coliforms	52	53			
	Turbidity	52	53	≤ 5 NTU	0	
Scheme	Parameter	Number of samples planned to be collected as per DWQMP	Actual Number Collected	ADWG Guideline Value	Number Non-compliant	Comments
Copperlode-Behana	Ammonia	4	4	< 0.5 mg/L	0	
	Amoeba - <i>Naegleria</i>					
	Amoeba - Thermophilic Amoeba	78	77			<i>Naegleria</i> testing is completed every four weeks at six sites in the Copperlode/Behana scheme. <i>Naegleria</i> testing involves firstly testing for the presence of Thermophilic Amoeba in a sample. If Thermophilic Amoeba are detected, further testing is done on the sample to determine if certain species are present; <i>Naegleria fowleri</i> and/or <i>Naegleria</i> spp. The 77 samples collected and tested for 'Amoeba - Thermophilic Amoeba' indicate the total number of samples collected under <i>Naegleria</i> testing. No samples detected Thermophilic Amoeba and therefore no further testing was required for speciation.

Scheme	Parameter	Number of samples planned to be collected as per DWQMP	Actual Number Collected	ADWG Guideline Value	Number Non-compliant	Comments
Copperlode-Behana	Apparent Colour	1417	1538	≤ 15.0 Pt/Co units	0	The aesthetic guideline limit for true colour is 15Pt/Co units. The Verification Monitoring Program is designed to test for apparent colour, with true colour analysed if the apparent colour exceeds 15Pt/Co units. There were two instances in the Copperlode-Behana scheme where the apparent colour indicated an exceedance of the guideline value. True colour was subsequently analysed and results determined to be less than the aesthetic limit.
	True Colour		147			
	Bromodichloromethane		149			
	Bromoform		149			
	Calcium		4			
	Chlorate		2			
	Chloride	2	6	≤ 250.0 mg/L	0	
	Chlorite	143	145	≤ 0.8 mg/L	0	
	Chloroform		149			
	Dibromochloromethane		149			
	<i>E. coli</i>	2093	2269	< 1.0 CFU/100mL	1	A single <i>E. coli</i> exceedance was reported in the Behana Chlorinated Water on 17 January 2022. This occurrence was reported to the Regulator on 18 January 2022. See the section entitled 'Notifying the Regulator' for a full account of the event.
	Electrical Conductance	52	52			
	Free Chlorine	2093	2256	≤ 5.0 mg/L	0	
	Heterotrophic Plate Count	2093	2235			
	ICPMS Aluminium	585	626	≤ 0.2 mg/L	0	
	ICPMS Copper	589	628	≤ 1.0 mg/L	0	
	ICPMS Iron	585	626	≤ 0.3 mg/L	1	There was a single exceedance of the aesthetic guideline limit for iron during the reporting period. A value of 0.347mg/L was recorded at Kewarra – Pelican Park on 17 November 2021. Elevated levels of manganese were also observed in this sample. Investigations into the cause were inconclusive. The sampling point was checked and no issues such as vandalism noted.
	ICPMS Lead	537	579	≤ 0.01 mg/L	0	

Scheme	Parameter	Number of samples planned to be collected as per DWQMPz	Actual Number Collected	ADWG Guideline Value	Number Non-compliant	Comments
Copperlode-Behana	ICPMS Manganese	585	626	≤ 0.1 mg/L	3	<p>All manganese results during the reporting period were less than the health guideline value of 0.5mg/L. There were three instances where the aesthetic limit was exceeded:</p> <ul style="list-style-type: none"> • 0.107mg/L was recorded on 16 November 2021 at Parramatta Park – Newton St. Pump Station. • A result of 0.124mg/L on 17 November 2021 at Kewarra – Pelican Park. Refer to the above explanation relating to elevated iron concentrations in the same sample. • 0.14mg/L recorded at Edge Hill – Red Arrow Walking Track on 11 January 2022.
	ICPMS Zinc	4	6	≤ 3.0 mg/L	0	
	ICPOES Silicon		4			
	Nitrate	4	4	< 50 mg/L	0	
	Nitrite	4	4	< 3 mg/L	0	
	pH	2093	2227	6.5 - 8.5	57	<p>These exceedances indicate results outside of the aesthetic guideline of 6.5-8.5 pH values. Of these exceedances, 30% occurred at Aloomba - Sports Centre throughout the year consisting of results from pH 8.5 to 9.1. There were 10 exceedances of pH ranging from 8.5-8.8 that occurred in Palm Cove during the reporting period. The remaining exceedances originate mainly from Edmonton West – 51 Cooktown Rd, Smithfield – 116 Stanton Rd and Yorkeys Knob – Esplanade. Council closely monitors disinfection performance through testing microbial indicators to ensure the effectiveness of chlorine is not compromised by elevated pH.</p>
	Sodium	4	4	≤ 180.0 mg/L	0	
	Sulphate	4	6	≤ 250.0 mg/L	0	
	Temperature	2093	2255			
	Total Alkalinity	728	786			
	Total Chlorine	2093	2256	≤ 5.0 mg/L	0	
	Total Coliforms	2093	2269			
	Total Dissolved Solids	4	4	≤ 600 mg/L	0	
	Total Oxidised Nitrogen		4			
	Total Trihalomethanes	147	147	≤ 250.0 µg/L	0	
	Turbidity	1417	1544	≤ 5 NTU	1	<p>Aesthetic guideline exceedance of 15 NTU at Smithfield – 116 Stanton Rd sampled 25 October 2021. This exceedance was associated with works to replace a section of water main in the vicinity.</p>

Scheme	Parameter	Number of samples planned to be collected as per DWQMP	Actual Number Collected	ADWG Guideline Value	Number Non-compliant	Comments
Fishery Falls	Apparent Colour	52	56			
	<i>E. coli</i>	52	57	< 1.0 CFU/100mL	0	
	Free Chlorine	52	57	≤ 5.0 mg/L	0	
	Heterotrophic Plate Count	52	54			
	ICPMS Aluminium	13	13	≤ 0.2 mg/L	0	
	ICPMS Copper	13	13	≤ 1.0 mg/L	0	
	ICPMS Iron	13	13	≤ 0.3 mg/L	0	
	ICPMS Lead	13	13	≤ 0.01 mg/L	0	
	ICPMS Manganese	13	13	≤ 0.1 mg/L	0	
	pH	52	52	6.5 - 8.5	0	
	Temperature	52	53			
	Total Chlorine	52	57	≤ 5.0 mg/L	0	
	Total Coliforms	52	57			
	Turbidity	52	56	≤ 5 NTU	0	
Scheme	Parameter	Number of samples planned to be collected as per DWQMP	Actual Number Collected	ADWG Guideline Value	Number Non-compliant	Comments
Miriwinni	Apparent Colour	52	53			
	<i>E. coli</i>	52	54	< 1.0 CFU/100mL	0	
	Free Chlorine	52	54	≤ 5.0 mg/L	0	
	Heterotrophic Plate Count	52	53			
	ICPMS Aluminium	13	13	≤ 0.2 mg/L	0	
	ICPMS Copper	13	13	≤ 1.0 mg/L	0	
	ICPMS Iron	13	13	≤ 0.3 mg/L	0	
	ICPMS Lead	13	13	≤ 0.01 mg/L	0	
	ICPMS Manganese	13	13	≤ 0.1 mg/L	0	
	pH	52	53	6.5 - 8.5	0	
	Temperature	52	54			
	Total Chlorine	52	54	≤ 5.0 mg/L	0	
	Total Coliforms	52	54			
	Turbidity	52	53	≤ 5 NTU	0	

Scheme	Parameter	Number of samples planned to be collected as per DWQMP	Actual Number Collected	ADWG Guideline Value	Number Non-compliant	Comments
Mountain View	Apparent Colour	52	54			
	<i>E. coli</i>	52	55	< 1.0 CFU/100mL	0	
	Free Chlorine	52	55	≤ 5.0 mg/L	0	
	Heterotrophic Plate Count	52	54			
	ICPMS Aluminium	13	15	≤ 0.2 mg/L	0	
	ICPMS Copper	13	15	≤ 1.0 mg/L	0	
	ICPMS Iron	13	15	≤ 0.3 mg/L	0	
	ICPMS Lead	13	15	≤ 0.01 mg/L	0	
	ICPMS Manganese	13	15	≤ 0.1 mg/L	0	
	pH	52	54	6.5 - 8.5	0	
	Temperature	52	55			
	Total Chlorine	52	55	≤ 5.0 mg/L	0	
	Total Coliforms	52	55			
	Turbidity	52	54	≤ 5 NTU	0	
Scheme	Parameter	Number of samples planned to be collected as per DWQMP	Actual Number Collected	ADWG Guideline Value	Number Non-compliant	Comments
Orchid Valley	Apparent Colour	52	55			
	<i>E. coli</i>	52	56	< 1.0 CFU/100mL	0	
	Free Chlorine	52	56	≤ 5.0 mg/L	0	
	Heterotrophic Plate Count	52	55			
	ICPMS Aluminium	13	13	≤ 0.2 mg/L	0	
	ICPMS Copper	13	13	≤ 1.0 mg/L	0	
	ICPMS Iron	13	13	≤ 0.3 mg/L	0	
	ICPMS Lead	13	13	≤ 0.01 mg/L	0	
	ICPMS Manganese	13	13	≤ 0.1 mg/L	0	
	pH	52	55	6.5 - 8.5	1	Single detection of pH below the guideline limit (6.45) was recorded on 13 June 2022 in Orchid Valley – Chlorinated. There were no corresponding changes in other water quality parameters that might indicate an adverse impact on the supply.
	Temperature	52	56			
	Total Chlorine	52	56	≤ 5.0 mg/L	0	
	Total Coliforms	52	56			
	Turbidity	52	55	≤ 5 NTU	0	



MICROBIOLOGICAL PATHOGENS RESULTS

The standard for drinking water in Queensland requires no detection of *E. coli* in 98% of samples collected over a 12-month period as detailed in the Queensland Public Health Regulation 2018 s52. *E. coli* compliance details for each drinking water supply scheme are provided in Table 15 below, including the month-by-month performance for each scheme in Tables 16-24.

Table 15: *E. coli* Performance Assessment

Zone	No. samples required a year as per Public Health Regulation 2018	No. of samples collected in previous 12 months	% of Samples that meet health guideline values
Copperlode/Behana	396	2307	100%
Bartle Frere	12	114	100%
Babinda	12	109	100%
Bellenden Ker	12	54	100%
Bramston Beach	12	53	100%
Fishery Falls	12	57	100%
Mirriwinni	12	54	100%
Mountain View	12	55	100%
Orchid Valley	12	56	100%

Data sourced from CRC Laboratory database.



Table 16: Copperlode/Behana *E. coli* Monitoring Results

Drinking water scheme:		COPPERLODE/BEHANA											
Year	21-22												
Month	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	
No. of samples collected	181	199	190	177	196	195	212	174	198	178	210	197	
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)													
No. of samples collected in previous 12 month period	2323	2311	2299	2303	2305	2303	2339	2331	2304	2306	2326	2307	
No. of failures for previous 12 month period	1	1	1	1	1	1	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	

An estimated 1CFU/100mL was detected in the Behana treated water in January 2022 as part of routine operational monitoring. The Regulator was notified and details of the incident can be found in the 'Notifying the Regulator' section of this report. As this sample was taken outside of the scheduled Verification Monitoring Program, the result has not been included in the rolling average for the scheme.

Table 17: Bartle Frere *E. coli* Monitoring Results

Drinking water scheme:	BARTLE FRERE											
Year	21-22											
Month	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
No. of samples collected	13	10	9	9	10	8	9	8	10	9	11	8
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)												
No. of samples collected in previous 12 month period	117	119	118	119	121	119	120	119	113	113	114	114
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 18: Babinda *E. coli* Monitoring Results

Drinking water scheme:	BABINDA											
Year	21-22											
Month	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
No. of samples collected	10	10	10	8	10	8	8	8	11	8	10	8
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)												
No. of samples collected in previous 12 month period	106	108	108	108	110	108	108	108	109	109	109	109
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 19: Bellenden Ker *E. coli* Monitoring Results

Drinking water scheme: BELLENDEN KER												
Year	21-22											
Month	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
No. of samples collected	4	5	4	5	5	4	4	5	5	4	5	4
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)												
No. of samples collected in previous 12 month period	56	55	54	55	55	54	54	55	55	55	55	54
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 20: Bramston Beach *E. coli* Monitoring Results

Drinking water scheme: BRAMSTON BEACH												
Year	21-22											
Month	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
No. of samples collected	4	5	4	5	5	4	4	4	5	4	5	4
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)												
No. of samples collected in previous 12 month period	52	53	51	52	53	52	52	52	51	52	53	53
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 21: Fishery Falls *E. coli* Monitoring Results

Drinking water scheme: FISHERY FALLS												
Year	21-22											
Month	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
No. of samples collected	4	5	4	4	5	8	4	4	5	4	6	4
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)												
No. of samples collected in previous 12 month period	64	65	64	64	65	68	68	67	61	60	60	57
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 22: Mirriwinni *E. coli* Monitoring Results

Drinking water scheme: MIRRIWINNI												
Year	21-22											
Month	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
No. of samples collected	4	5	4	4	5	5	4	4	6	4	5	4
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)												
No. of samples collected in previous 12 month period	54	55	54	54	55	53	53	53	54	54	54	54
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 23: Mountain View *E. coli* Monitoring Results

Drinking water scheme: MOUNTAIN VIEW												
Year	21-22											
Month	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
No. of samples collected	4	4	5	4	5	4	4	4	7	4	5	5
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)												
No. of samples collected in previous 12 month period	53	53	53	53	53	53	53	53	54	54	55	55
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 24: Orchid Valley *E. coli* Monitoring Results

Drinking water scheme: ORCHID VALLEY												
Year	21-22											
Month	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
No. of samples collected	5	4	6	4	5	5	5	4	5	4	5	4
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)												
No. of samples collected in previous 12 month period	53	52	53	53	53	54	55	55	55	56	57	56
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

HEALTH-RELATED CHEMICAL ASSESSMENT

Council’s risk management approach identifies substances that may be present and may pose a risk to public health or influence optimal water quality characteristics. Council’s Verification Monitoring Program checks and analyses these substances, which are routinely trended and assessed against ADWG health-related and aesthetic limits.

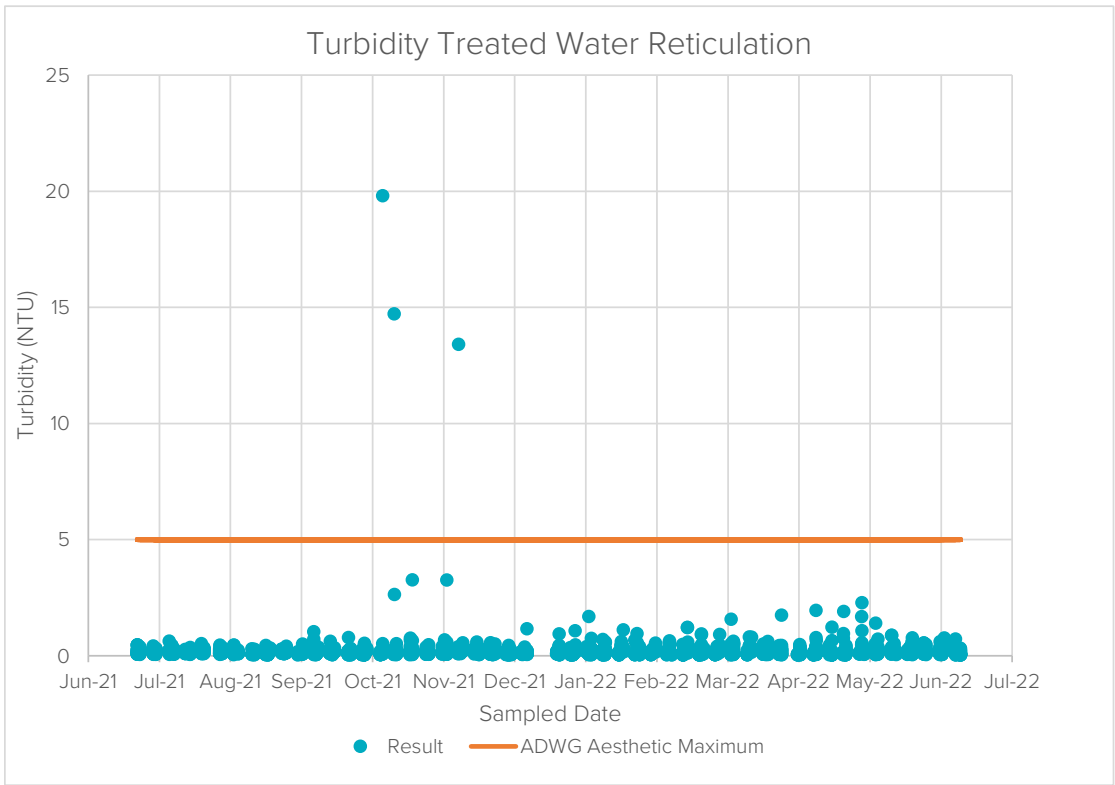
AESTHETIC ASSESSMENT

The Verification Monitoring Program underpins Council’s ability to confirm the supply of safe drinking water to our customers. We take advantage of the program to assess non-health related parameters that contribute to the way the water tastes, smells and appears. These aesthetic guideline values are treated as quality triggers to identify improvement opportunities.

OVERALL ASSESSMENT RESULTS GRAPHS

Trends results for this year’s performance are shown in the following diagrams. A full summary of results for the VMP are shown in the tables for each scheme in section Verification Monitoring Program Results Summary Statistics. An incident investigation is undertaken when testing identifies drinking water quality does not meet ADWG health guideline values or a critical control limit is breached. Investigation findings and improvements are discussed in section ‘Notifying the Regulator’.

Figure 2: Turbidity Treated Water Reticulation



The ADWG aesthetic value for turbidity is 5 NTU. Three tests exceeded the guideline value, an increase of one from the 2020/2021 reporting period. There is no health guideline value for turbidity. The exceedances are discussed in more detail in Table 14 for Copperlode/Behana and Babinda.

Figure 3: pH Treated Water Reticulation

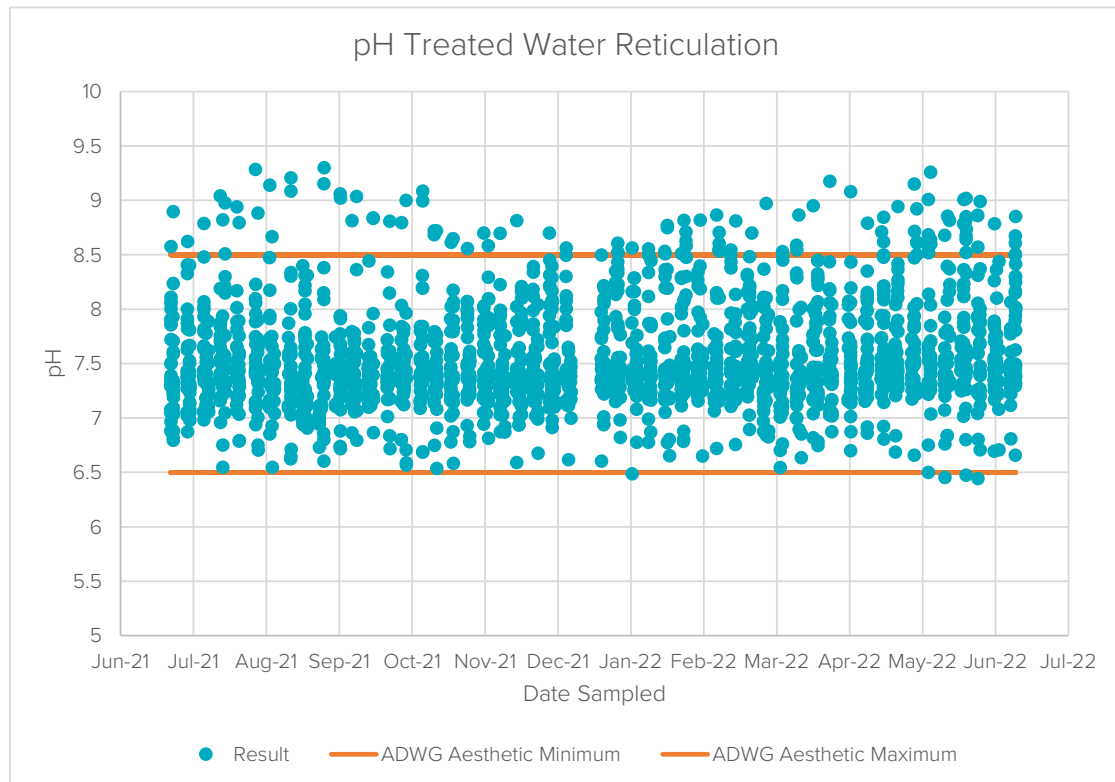
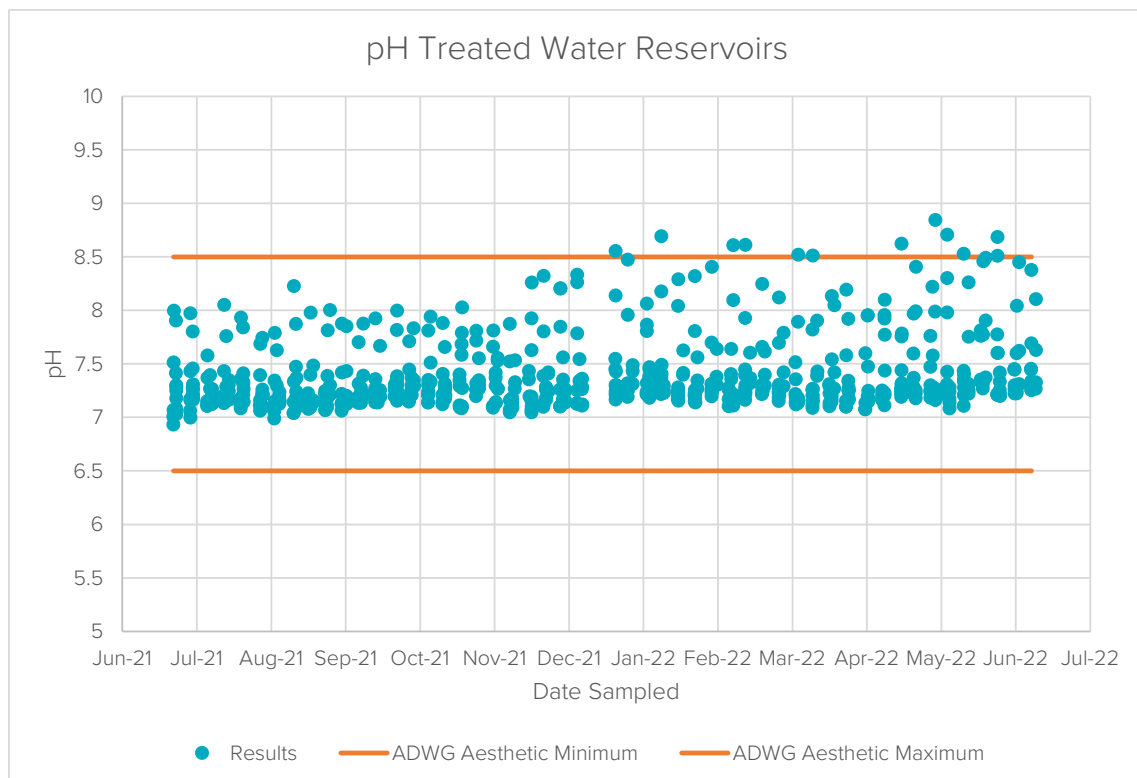


Figure 4: pH Treated Water Reservoirs



The ADWG aesthetic value range for pH is 6.5 – 8.5. However, excursions do occur with values outside this range as shown in Figures 3 and 4. There is no health guideline value for pH, although the ADWG identifies that values less than 4 and greater than 11 may adversely affect health. While most test results are within the guideline range a number of results above the 8.5 aesthetic limit are likely to result from an interaction between the water and cement lined pipes in the reticulation network. Alkaline water above a pH of 8 can impair the efficiency of chlorine disinfection. Council closely monitors disinfection performance through testing microbial indicators to ensure the effectiveness of chlorine is not compromised by elevated pH.

Figure 5: Chlorine (Free & Total) Treated Water Reticulation

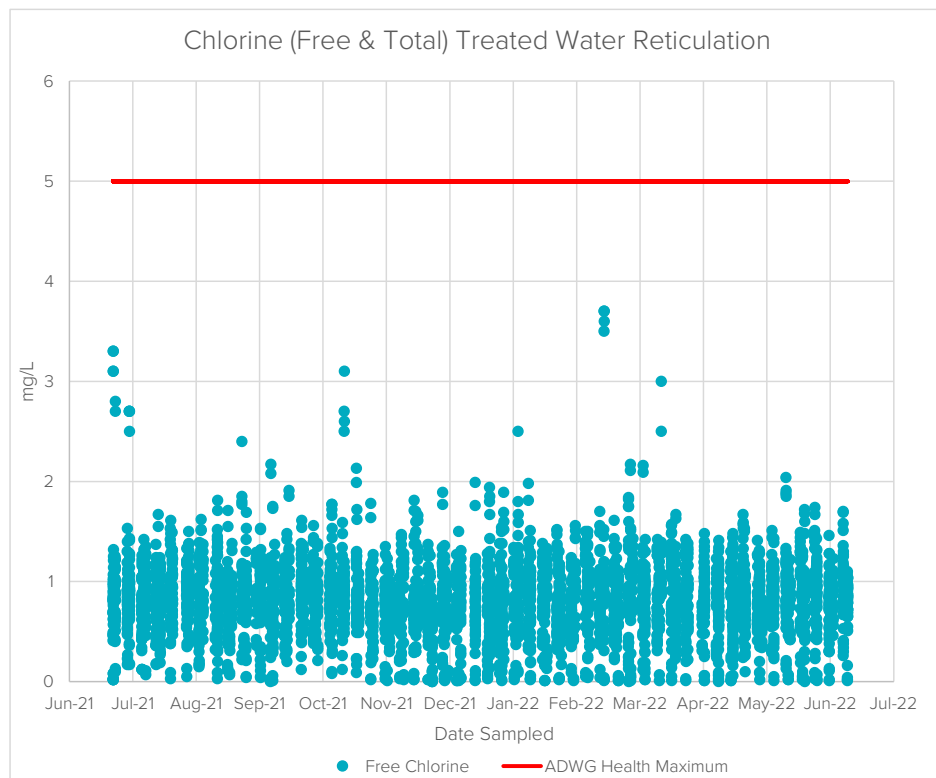
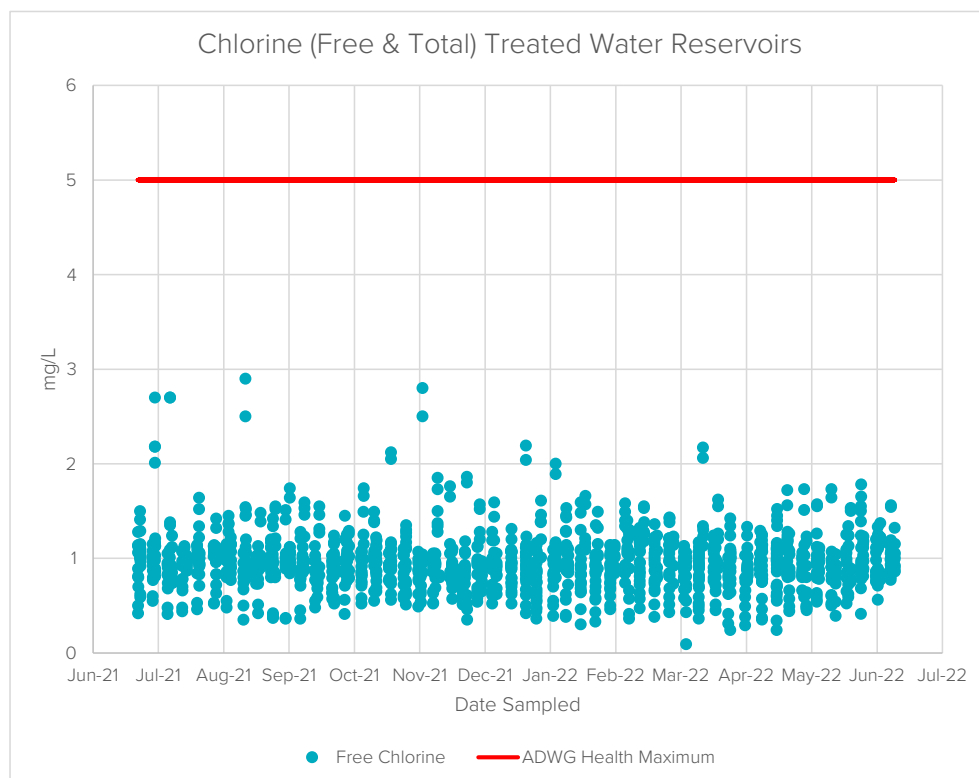
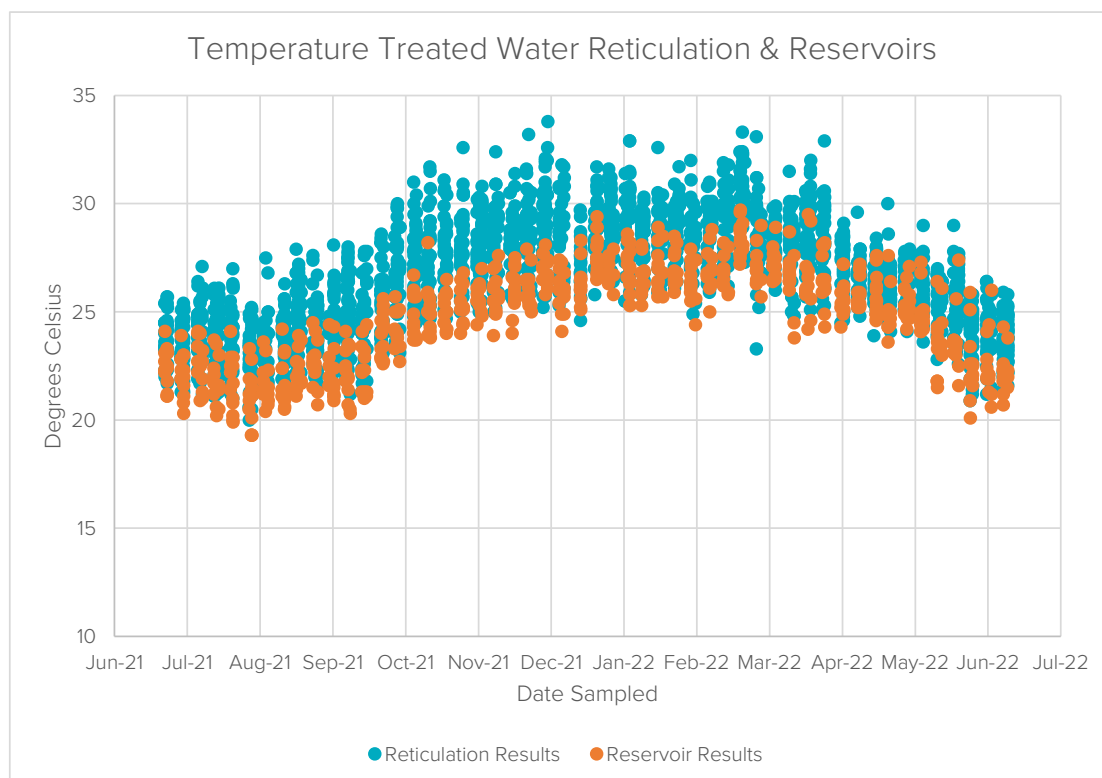


Figure 6: Chlorine (Free & Total) Treated Water Reservoirs



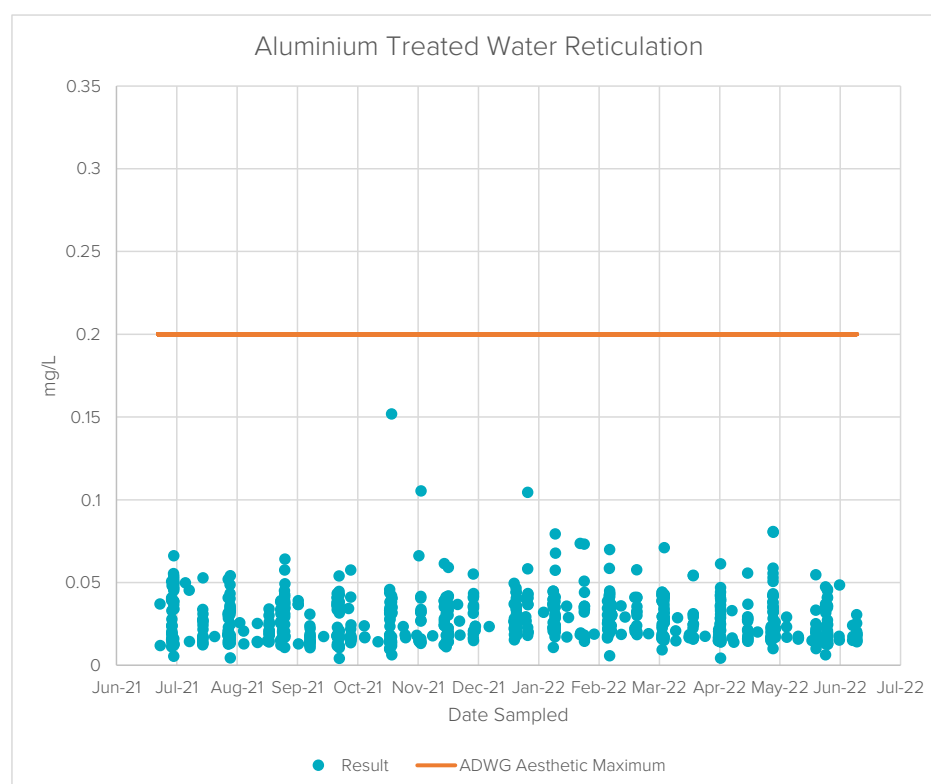
Chlorine is used to disinfect water to control pathogens. The ADWG health value is 5 mg/L for total chlorine. The water supplied in all schemes remained below the guideline value during the reporting period.

Figure 7: Temperature Treated Water Reticulation & Reservoirs



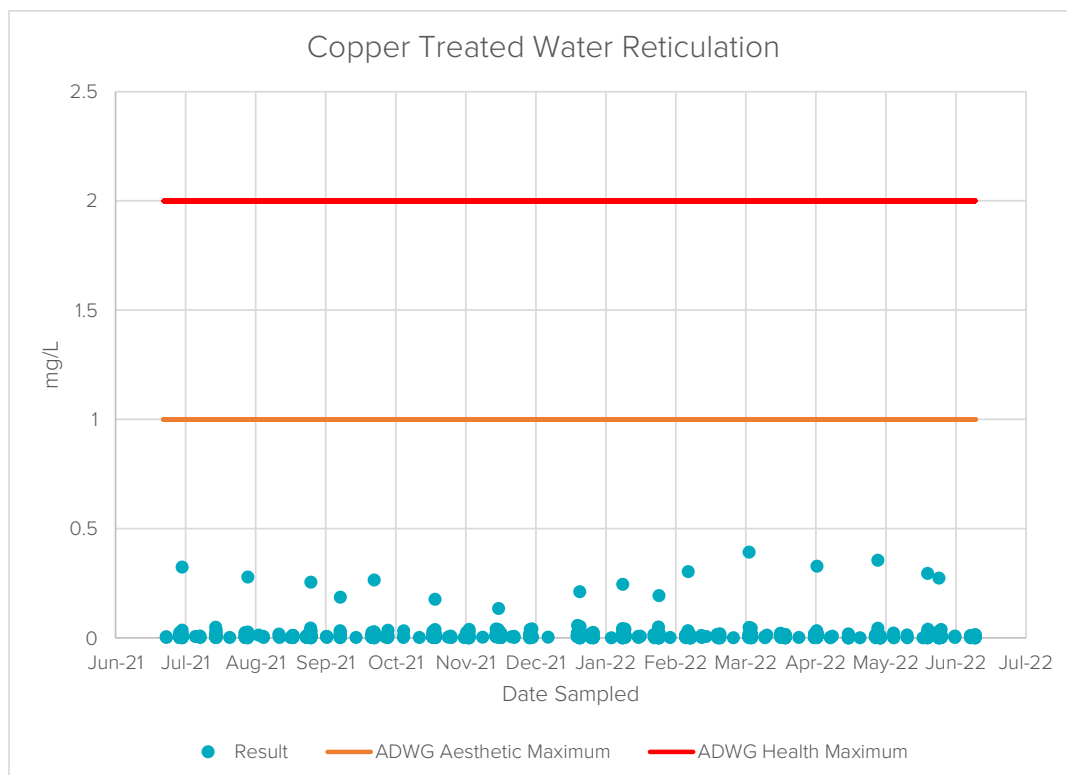
There is no ADWG guideline limit for temperature. Temperatures range to greater values in the reticulation system compared to reservoirs and water naturally increases in temperature during the summer months.

Figure 8: Aluminium Treated Water Reticulation



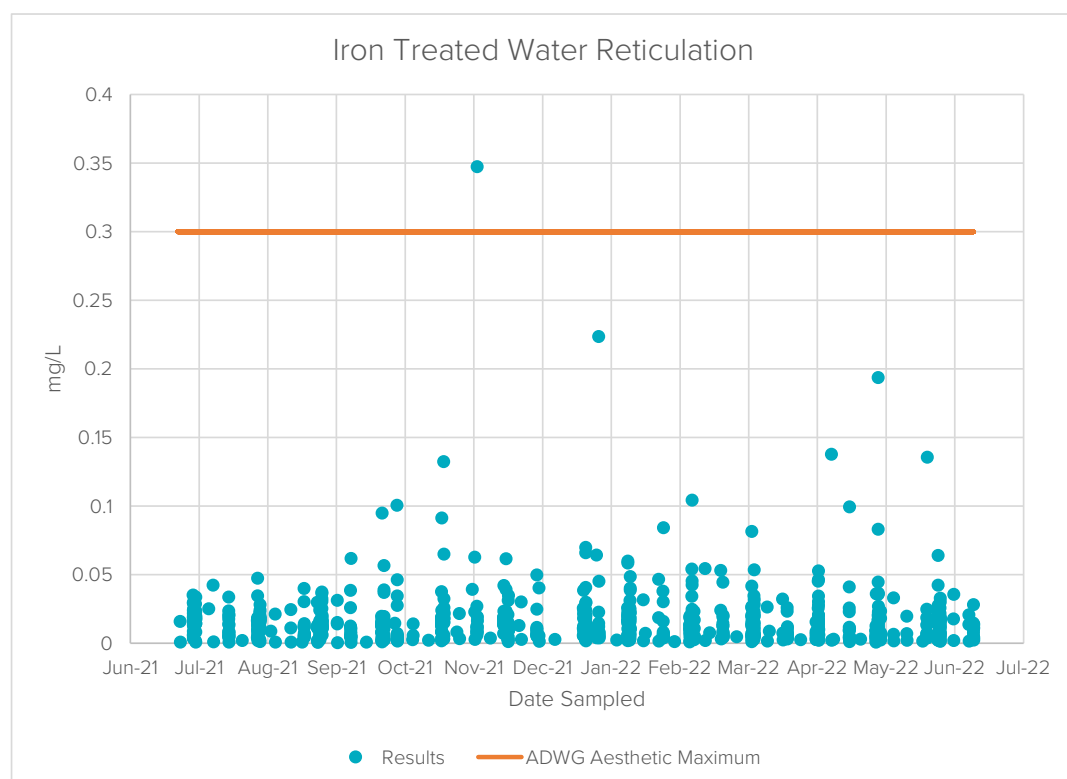
The ADWG aesthetic limit for aluminium is 0.2 mg/L. All results remained below the guideline value during the reporting period.

Figure 9: Copper Treated Water Reticulation



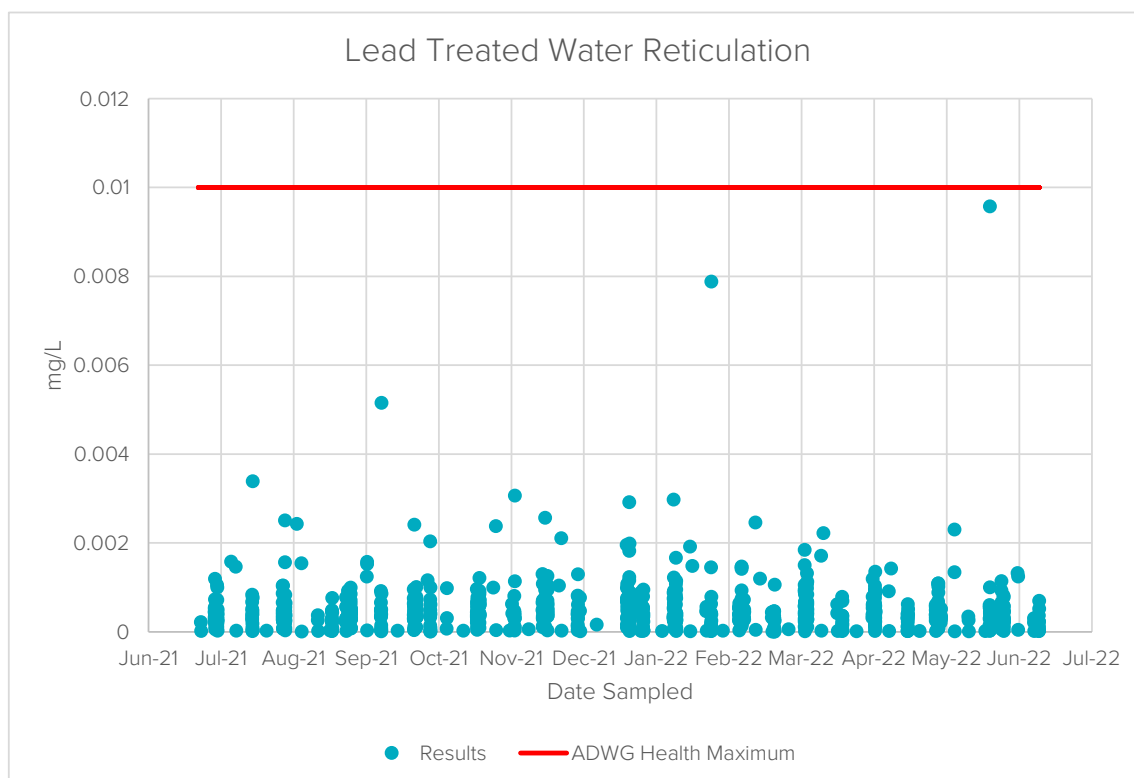
The ADWG aesthetic value for copper is 1 mg/L and health value is 2 mg/L. Drinking water supplies remained within this specification throughout the year as shown in Figure 9.

Figure 10: Iron Treated Water Reticulation



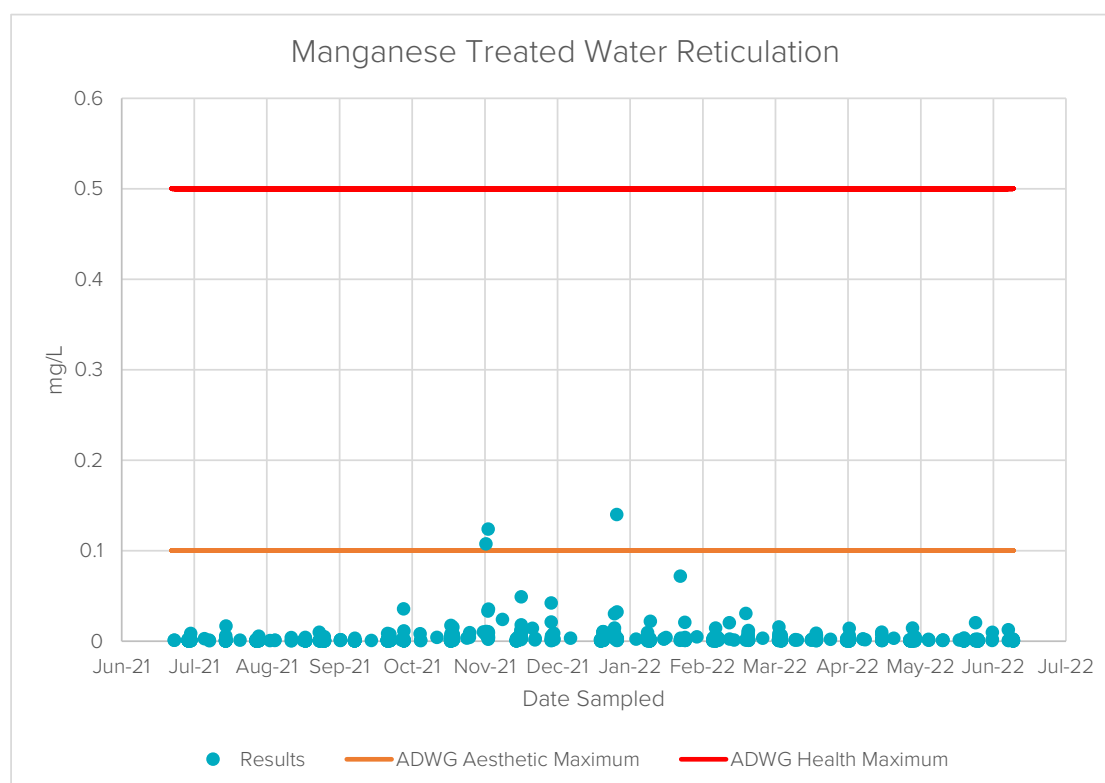
The ADWG aesthetic limit for iron is 0.3 mg/L. There was one exceedance of this value in the year as shown in Figure 10, refer to Table 14 Copperlode/Behana for more information. There is no health guideline value for iron.

Figure 11: Lead Treated Water Reticulation



The ADWG health value for lead is 0.01 mg/L. All verification monitoring samples were less than the guideline value for the reporting period as per Figure 11.

Figure 12: Manganese Treated Water Reticulation



There were three exceedances of the ADWG aesthetic guideline value of 0.1mg/L during the reporting period as shown in Figure 12. All results remained below the health guideline value of 0.5mg/L. Refer to Table 14 Copperlode/Behana for more information.

VERIFICATION MONITORING PROGRAM RESULTS SUMMARY STATISTICS

Note: 'Not detected' and 'less than' results have been replaced with zero for the purposes of calculating averages.

Table 25: Babinda Treated Water Summary Statistics

BABINDA								
Result Name	Number of Tests	Average	Minimum	Maximum	Median	ADWG Value	Number of OOS results	Units
Apparent Colour	108	2.094	<1	46	1.3	≤ 15.0 Pt/Co units	0	Pt/Co units
<i>E. coli</i>	109	0	<1	<1	<1	< 1.0 CFU/100mL	0	CFU/100mL
Free Chlorine	109	0.575	<0.1	1.6	0.580	≤ 5.0 mg/L	0	mg/L
Heterotrophic Plate Count	108	2.963	<10	60	0.000		0	CFU/mL
ICPMS Aluminium	26	0.032	0.019	0.059	0.029	≤ 0.2 mg/L	0	mg/L
ICPMS Copper	26	0.009	0.003	0.023	0.008	≤ 1.0 mg/L	0	mg/L
ICPMS Iron	26	0.032	<0.015	0.095	0.027	≤ 0.3 mg/L	0	mg/L
ICPMS Lead	26	0.001	<0.0005	0.002	0.001	≤ 0.01 mg/L	0	mg/L
ICPMS Manganese	26	0.001	0.000	0.009	0.001	≤ 0.1 mg/L	0	mg/L
pH	108	7.692	7.200	9	7.5	6.5 - 8.5	2	.
Temperature	109	26.340	22.000	31	27		0	°C
Total Chlorine	109	0.644	<0.1	1.800	0.620		0	mg/L
Total Coliforms	109	0	<1	<1	<1		0	CFU/100mL
True Colour	2	0	<1	<1	<1	≤ 15.0 Pt/Co units	0	Pt/Co units
Turbidity	108	0.624	0.100	20.000	0.300	≤ 5 NTU	2	NTU

Table 26: Bartle Frere Treated Water Summary Statistics

BARTLE FRERE								
Result Name	Number of Tests	Average	Minimum	Maximum	Median	ADWG Value	Number of OOS results	Units
Apparent Colour	112	1.062	<1	2.6	1	≤ 15.0 Pt/Co units	0	Pt/Co units
<i>E. coli</i>	114	0	<1	<1	<1	< 1.0 CFU/100mL	0	CFU/100mL
Free Chlorine	114	0.406	<0.1	3.100	0.275	≤ 5.0 mg/L	0	mg/L
Heterotrophic Plate Count	108	34.537	<10	1400	0		0	CFU/mL
ICPMS Aluminium	27	0.029	0.015	0.080	0.028	≤ 0.2 mg/L	0	mg/L
ICPMS Copper	27	0.018	0.005	0.057	0.008	≤ 1.0 mg/L	0	mg/L
ICPMS Iron	27	0.017	<0.015	0.027	0.017	≤ 0.3 mg/L	0	mg/L
ICPMS Lead	27	0.0004	<0.0005	0.001	0	≤ 0.01 mg/L	0	mg/L
ICPMS Manganese	27	0.0005	0	0.001	0	≤ 0.1 mg/L	0	mg/L
pH	112	7.486	6.5	8.7	7.500	6.5 - 8.5	2	.
Temperature	114	26.345	23	30	27		0	°C
Total Chlorine	114	0.463	<0.1	3.300	0.325	≤ 5.0 mg/L	0	mg/L
Total Coliforms	114	0	<1	<1	0		0	CFU/100mL
True Colour	1	0.427	<1	<1	<1	≤ 15.0 Pt/Co units	0	Pt/Co units
Turbidity	112	0.228	0.1	0.6	0.2	≤ 5 NTU	0	NTU

Table 27: Bellenden Ker Treated Water Summary Statistics

BELLENDEN KER								
Result Name	Number of Tests	Average	Minimum	Maximum	Median	ADWG Value	Number of OOS results	Units
Apparent Colour	53	0.778	<1	1.9	0	<=15.0 Pt/Co units	0	Pt/Co units
<i>E. coli</i>	54	0	<1	<1	<1	< 1.0 CFU/100mL	0	CFU/100mL
Free Chlorine	54	0.873	0.2	1.3	0.87	< 5.0 mg/L	0	mg/L
Heterotrophic Plate Count	53	1.132	<10	40	0		0	CFU/mL
ICPMS Aluminium	13	0.057	0.038	0.081	0.058	<= 0.2 mg/L	0	mg/L
ICPMS Copper	13	0.007	0.006	0.009	0.007	<= 1.0 mg/L	0	mg/L
ICPMS Iron	13	0.011	<0.015	<0.015	<0.015	<= 0.3 mg/L	0	mg/L
ICPMS Lead	13	0.0002	<0.0005	<0.0005	<0.0005	<= 0.01 mg/L	0	mg/L
ICPMS Manganese	13	0.0004	0.0003	0.0005	0.0004	<= 0.1 mg/L	0	mg/L
pH	53	8.78	7.8	9.3	8.8	6.5 - 8.5	44	.
Temperature	54	26.476	23	30	27		0	°C
Total Chlorine	54	0.936	0.23	1.4	0.97	<= 5.0 mg/L	0	mg/L
Total Coliforms	54	0	<1	<1	<1		0	CFU/100mL
Turbidity	53	0.210	0.1	0.5	0.2	<= 5 NTU	0	NTU

Table 28: Bramston Beach Treated Water Summary Statistics

BRAMSTON BEACH								
Result Name	Number of Tests	Average	Minimum	Maximum	Median	ADWG Value	Number of OOS results	Units
Amoeba - Thermophilic Amoeba	13	0	Not Detected			.		
Apparent Colour	52	0.746	<1	3.1	0	<= 15.0 Pt/Co units	0	Pt/Co units
<i>E. coli</i>	53	0	<1	<1	<1	< 1.0 CFU/100mL	0	CFU/100mL
Free Chlorine	53	0.727	0.43	1	0.69	<= 5.0 mg/L	0	mg/L
Heterotrophic Plate Count	52	2.115	<10	40	0		0	CFU/mL
ICPMS Aluminium	13	0.020	<0.015	0.032	0.018	<= 0.2 mg/L	0	mg/L
ICPMS Copper	13	0.016	0.012	0.023	0.016	<= 1.0 mg/L	0	mg/L
ICPMS Iron	13	0.026	<0.015	0.042	0.024	<= 0.3 mg/L	0	mg/L
ICPMS Lead	13	0.001	0.0005	0.0008	0.0005	<= 0.01 mg/L	0	mg/L
ICPMS Manganese	13	0	0.0002	0.0004	0.0003	<= 0.1 mg/L	0	mg/L
pH	52	7.407	7.2	7.5	7.4	6.5 - 8.5	0	.
Temperature	53	27.775	23	32	28		0	°C
Total Chlorine	53	0.819	0.52	1.1	0.8	<=5.0mg/L	0	mg/L
Total Coliforms	53	0.000	<1	<1	<1		0	CFU/100mL
Turbidity	52	0.183	0.1	1.1	0.1	<= 5 NTU	0	NTU

Table 29: Copperlode/Behana Treated Water Summary Statistics

COPPERLODE/BEHANA								
Result Name	Number of Tests	Average	Minimum	Maximum	Median	ADWG Value	Number of OOS results	Units
Ammonia	2	0	<0.02	<0.02	<0.02		0	mg/L N
Amoeba - Thermophilic Amoeba	77	0	Not Detected				0	.
Apparent Colour	1493	0.784	<1	28	0	<= 15.0 Pt/Co units	0	Pt/Co units
Bromodichloromethane	146	7.520	5	16	7		0	µg/L
Bromoform	146	0.404	<5	59	0		0	µg/L
Chlorate	1	0.107	0.107	0.107	0.107		0	mg/L
Chloride	3	8.173	7	9.7	7.9	<= 250.0 mg/L	0	mg/L
Chlorite	144	0.0109	<0.005	0.343	0	<= 0.8 mg/L	0	mg/L
Chloroform	146	34.506	9	114	26		0	µg/L
Dibromochloromethane	146	0	<5	<5	0		0	µg/L
<i>E. coli</i>	2230	1	<1	<1	0	< 1.0 CFU/100mL	1	CFU/100mL
Electrical Conductance	52	58.605	52	63	59		0	µS/cm
Free Chlorine	2150	0.833	<0.1	3.6	0.82	<= 5.0 mg/L	0	mg/L
Heterotrophic Plate Count	2198	1.765	<10	540	0		0	CFU/mL
ICPMS Aluminium	574	0.0287	<0.015	0.152	0.026	<= 0.2 mg/L	0	mg/L
ICPMS Copper	576	0.0085	0.001	0.295	0.005	<= 1.0 mg/L	0	mg/L
ICPMS Iron	574	0.0162	<0.015	0.347	0	<= 0.3 mg/L	1	mg/L
ICPMS Lead	576	0.0005	<0.0005	0.0096	0	<= 0.01 mg/L	0	mg/L
ICPMS Manganese	574	0.0034	0.0002	0.14	0.0011	<= 0.1 mg/L	3	mg/L
ICPMS Zinc	3	0.00336	<0.008	<0.008	<0.008	<= 3.0 mg/L	0	mg/L
ICPOES Silicon	2	8.437	8.1	8.8	8.45		0	mg/ L SiO ₂
Nitrate	2	0.0361	0.02	0.05	0.035		0	mg/L N
Nitrite	2	0.0002	<0.01	<0.01	<0.01		0	mg/L N
pH	2141	7.48	6.7	9.8	7.4	6.5 - 8.5 .	57	.
Sodium	2	6.31	5	7.6	6.3	<= 180.0 mg/L	0	mg/L
Sulphate	2	2.85	<1	4.8	2.4	<= 250.0 mg/L	0	mg/L
Temperature	2122	7.502	6.5	9.2	7.4		0	°C
TON	2	0.036	0.03	0.05	0.04		0	mg/L N
Total Alkalinity	681	8.265	4.9	16	8.1		0	mg CaCO ₃ /L
Total Chlorine	2150	0.935	<0.1	3.7	0.92		0	mg/L
Total Coliforms	2230	0.067	<1	>100	0		0	CFU/100mL
Total Dissolved Solids	2	30	27	33	30	<= 600 mg/L	0	mg/L
Total Trihalomethanes	145	41.786	6	121	34	<= 250.0 µg/L	0	µg/L
True Colour	2	1.177	<1	1.4	0.7	<=15.0 Pt/Co units	0	Pt/Co units
Turbidity	1493	0.159	<0.1	15	0.1	<= 5 NTU	1	NTU

Table 30: Fishery Falls Treated Water Summary Statistics

FISHERY FALLS								
Result Name	Number of Tests	Average	Minimum	Maximum	Median	ADWG Value	Number of OOS results	Units
Apparent Colour	56	1.239	1	3.6	1.1	<= 15.0 Pt/Co units	0	Pt/Co units
<i>E. coli</i>	57	0	<1	<1	<1	< 1.0 CFU/100mL	0	CFU/100mL
Free Chlorine	57	0.643	0.11	1.2	0.67	<= 5.0 mg/L	0	mg/L
Heterotrophic Plate Count	54	1.481	<10	20	0		0	CFU/mL
ICPMS Aluminium	13	0.035	0.017	0.079	0.036	<= 0.2 mg/L	0	mg/L
ICPMS Copper	13	0.006	0.005	0.008	0.006	<= 1.0 mg/L	0	mg/L
ICPMS Iron	13	0.023	<0.015	0.048	0.019	<= 0.3 mg/L	0	mg/L
ICPMS Lead	13	0	<0.0005	<0.0005	<0.0005	<= 0.01 mg/L	0	mg/L
ICPMS Manganese	13	0	0.0002	0.0009	0.0003	<= 0.1 mg/L	0	mg/L
pH	52	7.823	7.3	8.5	7.8	6.5 - 8.5 .	0	.
Temperature	53	25.919	22	31	26		0	°C
Total Chlorine	57	0.720	0.11	1.3	0.74		0	mg/L
Total Coliforms	57	0	<1	<1	<1		0	CFU/100mL
Turbidity	56	0.243	0.1	0.7	0.2	<= 5 NTU	0	NTU

Table 31: Mirriwinni Treated Water Summary Statistics

MIRRIWINNI								
Result Name	Number of Tests	Average	Minimum	Maximum	Median	ADWG Value	Number of OOS results	Units
Apparent Colour	53	0.710	<1	1.9	0	<= 15.0 Pt/Co units	0	Pt/Co units
<i>E. coli</i>	54	0.000	<1	<1	<1	< 1.0 CFU/100mL	0	CFU/100mL
Free Chlorine	54	0.871	0.52	1.5	0.85	<= 5.0 mg/L	0	mg/L
Heterotrophic Plate Count	53	0.566	<10	<10	0		0	CFU/mL
ICPMS Aluminium	13	0.022	<0.015	0.038	0.024	<= 0.2 mg/L	0	mg/L
ICPMS Copper	13	0.010	0.008	0.013	0.01	<= 1.0 mg/L	0	mg/L
ICPMS Iron	13	0.007	<0.015	<0.015	<0.015	<= 0.3 mg/L	0	mg/L
ICPMS Lead	13	0.000	0.0005	0.0006	0	<= 0.01 mg/L	0	mg/L
ICPMS Manganese	13	0.000	0.0002	0.0006	0.0003	<= 0.1 mg/L	0	mg/L
pH	53	7.326	7	7.5	7.3	6.5 - 8.5 .	0	.
Temperature	54	24.400	21	28	25		0	°C
Total Chlorine	54	0.938	0.58	1.6	0.92		0	mg/L
Total Coliforms	54	0.000	<1	<1	<1		0	CFU/100mL
Turbidity	1	0.477	<1	<1	<1	<= 5 NTU	0	NTU

Table 32: Mountain View Treated Water Summary Statistics

MOUNTAIN VIEW								
Result Name	Number of Tests	Average	Minimum	Maximum	Median	ADWG Value	Number of OOS results	Units
Apparent Colour	54	2.184	<1	6.5	1.9	<= 15.0 Pt/Co units	0	Pt/Co units
<i>E. coli</i>	55	0	<1	<1	<1	< 1.0 CFU/100mL	0	CFU/100mL
Free Chlorine	55	0.842	0.48	1.4	0.75	<= 5.0 mg/L	0	mg/L
Heterotrophic Plate Count	54	0.741	<10	<10	0		0	CFU/mL
ICPMS Aluminium	15	0.022	0.015	0.053	0.018	<= 0.2 mg/L	0	mg/L
ICPMS Copper	15	0.035	0.026	0.048	0.035	<= 1.0 mg/L	0	mg/L
ICPMS Iron	15	0.055	0.028	0.104	0.053	<= 0.3 mg/L	0	mg/L
ICPMS Lead	15	0.001	0.0006	0.0011	0.0008	<= 0.01 mg/L	0	mg/L
ICPMS Manganese	15	0.001	0.0007	0.0026	0.0012	<= 0.1 mg/L	0	mg/L
pH	54	7.603	7.5	7.7	7.6	6.5 - 8.5 .	0	.
Temperature	55	27.093	23	31	28		0	°C
Total Chlorine	55	0.940	0.62	1.5	0.87		0	mg/L
Total Coliforms	55	0	<1	<1	<1		0	CFU/100mL
Turbidity	54	0.667	0.2	2.3	0.5	<= 5 NTU	0	NTU

Table 33: Orchid Valley Treated Water Summary Statistics

ORCHID VALLEY								
Result Name	Number of Tests	Average	Minimum	Maximum	Median	ADWG Value	Number of OOS results	Units
Apparent Colour	55	1.537	<1	3.4	1.3	<= 15.0 Pt/Co units	0	Pt/Co units
<i>E. coli</i>	56	0	<1	<1	<1	< 1.0 CFU/100mL	0	CFU/100mL
Free Chlorine	56	0.849	0.26	1.2	0.92	<= 5.0 mg/L	0	mg/L
Heterotrophic Plate Count	55	1.273	<10	20	0		0	CFU/mL
ICPMS Aluminium	13	0.009	<0.015	0.022	0	<= 0.2 mg/L	0	mg/L
ICPMS Copper	13	0.273	0.135	0.393	0.274	<= 1.0 mg/L	0	mg/L
ICPMS Iron	13	0.019	<0.015	0.029	0.02	<= 0.3 mg/L	0	mg/L
ICPMS Lead	13	0.001	0.0008	0.0015	0.001	<= 0.01 mg/L	0	mg/L
ICPMS Manganese	13	0.010	0.0031	0.0205	0.0083	<= 0.1 mg/L	0	mg/L
pH	55	6.809	6.4	7.6	6.8	6.5 - 8.5 .	1	.
Temperature	56	26.754	22	31	28		0	°C
Total Chlorine	56	0.920	0.28	1.3	0.975		0	mg/L
Total Coliforms	56	0	<1	<1	<1		0	CFU/100mL
Turbidity	55	0.322	0.2	0.8	0.3	<= 5 NTU	0	NTU

NOTIFYING THE REGULATOR

Under sections 102 and 102A of the *Water Supply (Safety and Reliability) Act 2008*, Council is required to immediately inform RDMW if the quality of water supplied from the drinking water service does not comply with the water quality health criteria as specified in the ADWG, or if Council becomes aware of an incident as prescribed under a regulation. Council made three notifications to RDMW during the reporting period, summarised in Tables 34-36 below.

Table 34: Boil Water Notice at Bartle Frere due to water shortage event.

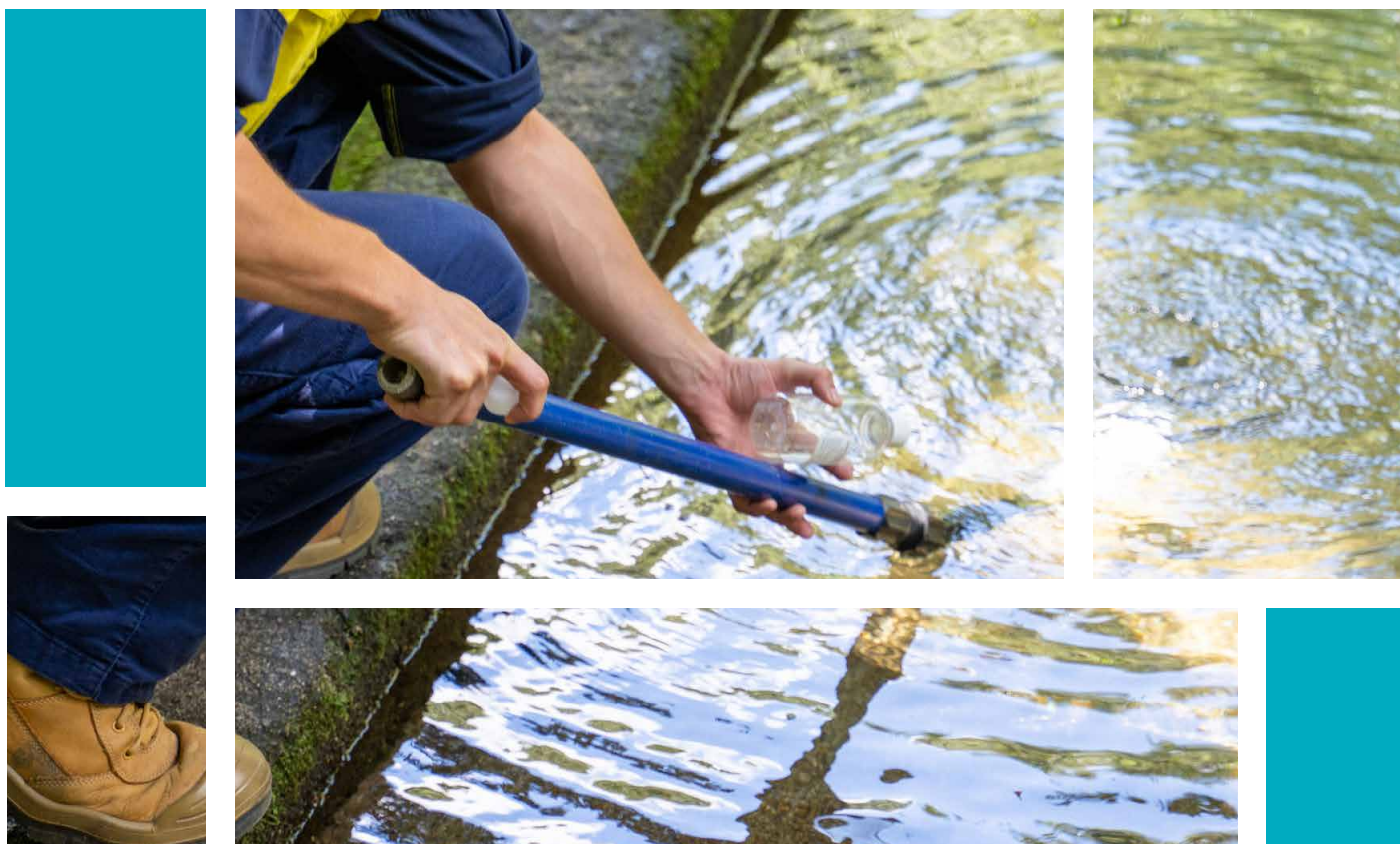
Boil Water Notice for Bartle Frere due to water shortage	
Scheme	Bartle Frere
Parameter	NR
Incident date	02/07/2021 – 08/07/2021
Regulator notified	02/07/2021 07:26 AM
Event description	Increased raw water turbidity from a rainfall event coupled with increased water demand in the Bartle Frere scheme at a rate greater than water could be produced, caused a decline in reservoir storage level. To avoid running out of water, the production rate needed to be increased and sourcing water from neighbouring schemes was not a viable option. Therefore, a planned bypass of pre-filters and removal of bag filters from the Bartle Frere treatment system took place (UV and chlorine disinfection remained in place).
Corrective and preventative actions	A pre-cautionary Boil Water Notice was issued for the scheme on 2 July 2021 while the bag filters were not in place, though no water quality issues were identified throughout the event. Sampling in the reticulation system was conducted once the bag filters were reinstated and before the Boil Water Notice was removed to ensure <i>E. coli</i> met the guideline value of <1 CFU/100mL. Both samples collected met the guideline value which led to the Boil Water Notice being lifted on 8 July 2021. Various work is underway or planned to prevent this type of event occurring in the future including leak detection, mains replacements, possible filter upgrades pending trial results, and a rural water security planning study for the future.

Table 35: *E. coli* detection at Behana

<i>E. coli</i> detection at Behana – Post Chlorination	
Scheme	Copperlode/Behana
Parameter	<i>E. coli</i>
Incident date	17/01/2022
Regulator notified	18/01/2022 4:40 PM
Incident description	An estimated 1 CFU/100mL <i>E. coli</i> was detected in a routine verification monitoring sample at a post-chlorination sampling point on the Behana trunk main. SCADA trends from the Behana treatment plant showed chlorine residual consistent at approximately 1mg/l. Additionally, a chlorine residual of approximately 1-1.4mg/L was being maintained in Draper Road Reservoir where rechlorination occurs prior to distribution to the reticulation network.
Corrective and preventative actions	Chlorine concentration at the water treatment plant and the Draper Road reservoir were investigated finding that disinfection was normal. Operational processes were investigated and no issues identified to prompt any corrective actions. A resample was collected on 19 January which tested <1 CFU/100mL <i>E. coli</i> complying with the <i>E. coli</i> guideline value. Further sampling was done at Draper Road Reservoir and reticulation sites in Gordonvale with results meeting the guideline values.

Table 36: Boil Water Notice at Clifton Beach due to suspected contamination from a main break

Boil Water Notice for Clifton Beach due to potential contamination from main break	
Scheme	Copperlode/Behana
Parameter	NR
Incident date	24/03/2022 – 27/03/2022
Regulator notified	24/03/2022 6:46 PM
Incident description	A water main break occurred on the 24 March 2022 in Clifton Beach. During the process of locating the underground location of the break, the sewer main which was located in close proximity, was also broken. Both mains were shutoff, giving rise to the potential for sewage to enter the broken water main due to the loss of positive pressure.
Corrective and preventative actions	Water supply was immediately shut off to all customers downstream and directly upstream of the break to prevent any potentially contaminated water being supplied to residential properties. A boil water notice was issued effective immediately until further notice and door knocking occurred to inform residents of the situation. Both main breaks were repaired and the water main was flushed to remove any potentially contaminated water from the system. Once flushing was completed, water meters were reconnected and samples were taken for analysis. A further two sets of samples were collected on 25 & 26 March with all results returning <1CFU/100mL indicating that the water was free of any potential sewage contamination. The boil water notice was lifted on 27 March 2022 in consultation with the Regulators. This event was deemed highly unusual due to the rare occurrence the water and sewage mains being in such close proximity. Water operations continuously work to update records where survey plans were previously unavailable so that mains can be more accurately located in the future. Drinking water quality awareness training has been prioritised for those staff working across water assets.



CUSTOMER SATISFACTION

Cairns Regional Council recognises the value of community engagement in building confidence in our water quality. We value customer feedback as it enables us to continuously improve our services. We recognise that customers or members of the community may need to provide feedback if a service or product fails to meet their expectations or our standards. This feedback is captured, recorded and monitored to help identify any trends and possible areas of improvement in the operation, maintenance and management of the networks.

We keep customers informed about drinking water quality by maintaining a web page that provides:

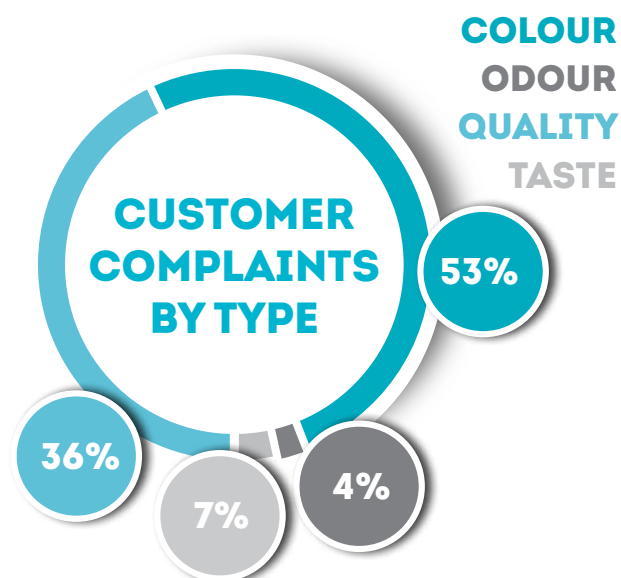
- an overview of all drinking water supply systems; and
- results of water quality test results.

The web page is available at: <https://www.cairns.qld.gov.au/water-waste-roads/water-supply-and-use/sources-and-supply>

Customers can raise urgent or non-urgent problems about drinking water quality by contacting Council by phone, in person, online at: <https://www.cairns.qld.gov.au/council/contact-us>, or via the My Cairns app.

During 2021/2022, Council received a total of 171 complaints about water quality. Of these complaints, 53% were about colour, 36% about quality, 7% about taste, and 4% were about odour. A summary of customer complaints by category are shown in Figure 13 below.

Figure 13: Customer complaints about drinking water quality by type



CONTINUOUS IMPROVEMENT

Cairns Regional Council aims to do better tomorrow what we did well today, for the DWQMS this means improvements are continually made to all assets and operation practices. Improvement opportunities are identified as a result of audits, incident reviews, research projects and benchmarking industry practice. Improvement projects agreed by the management team are recorded in the Risk Management Improvement Program (RMIP).

Improvement projects are prioritised according to risk and budget cycles. The RMIP informs the capital and operational works planning process. However, where a project is needed to manage an unforeseen serious risk, contingency funds are identified.

DRINKING WATER QUALITY IMPROVEMENT PROJECTS

The improvement program of works undertaken on water infrastructure and the amount spent for the 2021/2022 financial year included:

- 2021/22 water main replacement program \$2,872,632
- Henley's hill no. 5 water reservoir refurbishment \$2,801,833
- Draper Road Water Treatment Plant \$2,357,233
- 2021/22 new revenue water meter installations \$1,258,842
- Freshwater water treatment plant upgrade filters \$1,235,769
- Northern beaches trunk water main (Kamerunga Rd to Lake Placid) \$1,048,518
- Emergency water supply plan \$1,009,152
- Edmonton West water pump station renewal \$839,054
- Stager Rd Mirriwinni replace water main 5000m x100 ac \$608,543
- Preparation of a business case for the Cairns Water Security Stage 1 (cwss1) \$565,455
- Currunda Creek refurbish reservoir \$521,815
- Russell Heads water supply improvement works \$413,265
- Crystal Cascades replace raw water control valve \$365,885
- 2020/21 water main replacement program \$348,901
- Whites Gap no. 1 water reservoir refurbishment \$330,330
- Mount Peter high level water reservoir and associated infrastructure \$286,675
- Condition assessment program 2021/22 \$272,751
- Slaughter Yard Creek Road, Babinda - replacement or relining of water main \$268,697
- Redlynch Intake Road replace water main \$267,820
- 2021/22 replacement of commercial water meters \$246,125
- Smart water meters project \$245,795
- Little Spence St, Bungalow replace hot water main (845m of 100cicl) \$211,796
- W4Q4 - water & waste sodium hypochlorite sites remediation works \$173,554
- Walker Road, Edmonton - replacement of trunk water main \$157,924
- Goldsborough TMWs wmf009 \$116,561
- Rural water supply security strategy program \$115,483
- Freshwater Creek water treatment plant sodium hypochlorite system upgrade \$114,900
- Water supply upgrade for Lake Morris and Ferntree catchments \$107,632
- University water reservoir leak remediation \$103,516
- Freshwater water treatment plant chemical dosing general \$89,963
- Ponticello water pump station renewal \$84,993
- Bulk water meter replacement \$82,394
- W4Q4 - warren road water pump station renewal \$81,703
- Behana intake communications upgrade \$75,000
- Freshwater Creek WTP electrical condition assessment and masterplan \$73,072
- Dillon street and Kelly/Wilks St aerial pipe crossing remediation works \$64,616
- Marinos reservoir investigations and refurbishment \$63,124
- Freshwater Creek WTP clear water reservoir outlet valve and flowmeter replacement \$58,999
- Runnymede reservoir refurbishment \$54,604
- Freshwater Creek WTP/crystal cascades intake upgrade \$52,961
- Falcon Street (high) reservoir refurbishment \$50,134
- Copperlode Falls Dam cone valve actuator replacement \$49,187
- Copperlode Falls Dam piezometer replacement \$48,744
- Goldsborough mid reservoir refurbishment \$45,528
- Tills St, Mann St water main \$37,763
- Copperlode Falls Dam recreation area bbq replacement \$37,285
- Barron view reservoir refurbishment \$37,044
- Crest Close reservoir access \$35,670
- Brinsmead reservoir renewal \$34,786
- Dempsey Street reservoir a & b structural assessment and refurbishment \$34,752
- Trinity Beach booster pump system \$34,654
- Bramston Beach Rd rehab & veg \$34,595
- Bayview large reservoir refurbish \$32,328
- Plantation road water supply options assessment \$31,749
- Sheridan Wharf St wm crossing \$31,393
- Crest Close reservoir refurbishment \$30,106
- 2022/23 - new revenue water meter installations \$26,943
- Fishery Falls intake platform \$18,247
- Resolution Drive water main renewal - MSF rail bridge \$17,904
- Mayers St Edge Hill refurbish water reservoir \$17,872
- Magazine Street - new office \$17,860
- Smithfield Village stage 24 - 150dn water main link \$16,559
- Copperlode Falls Dam water level gauge board replacement \$15,944
- Water lab implementation of additional functionality into labware LIMS \$14,650
- Copperlode Dam cone valve house refurbishment \$13,434
- Freshwater Creek WTP clear water reservoir - replace flowmeter \$11,796
- Dunne Road potable water connection \$10,682
- Freshwater WTP service water system refurbishment \$10,448
- Laboratory service - replace glasswasher \$9,926
- Behana Creek WTP scour upgrade \$9,767
- Freshwater WTP install NEDAP vehicle reader \$7,978
- Janett St water reservoir refurbishment \$7,457
- Water lab replace drying ovens \$7,447
- Bellevue Crescent reservoir road upgrade \$6,681
- Freshwater creek WTP upgrade road areas and prepare additional car parks \$6,180
- 2020/21 new revenue water meter installations \$6,059
- Water lab field instruments replacement \$5,824
- Strombus Avenue, Trinity Beach Road trunk water main extension \$5,585
- Bartle Frere reservoir refurbishment \$5,020
- Fishery Falls replace bag filter (was originally Frenchman's Creek) \$4,557
- Freshwater WTP - washwater and sludge handling upgrade \$3,924
- Crystals intake to Copperlode and Freshwater water treatment plant to Crystals intake communications \$3,055
- Mount Peter water supply planning study update \$2,429
- Bellevue water pump station renewal \$2,401
- 2020/21 replacement of commercial water meters \$2,376
- Behana water treatment plant intake handrails upgrade \$2,093
- Cairns water supply network planning study \$1,889

DWQMP REVIEW

RDMW approved Council's amended Drinking Water Quality Management Plan, through issue of an Information Notice on 1 December 2020. Under the approval, Council was required to review the plan by 30 March 2022.

A key component of the review process was to engage relevant internal stakeholders to complete a 'DWQMP Implementation' checklist to identify any updates regarding the drinking water supply system that could require a change to Council's DWQMP. The elements discussed in this process included:

- Service Description
- Details of infrastructure used for providing the service
- Information gathering on water quality and catchment characteristics
- Hazard Identification
- Assessment of risks
- Risk management measures
- Operation and maintenance procedures
- Management of incidents and emergencies
- Risk management improvement program (RMIP)
- Service-wide support information management
- Operational monitoring
- Verification monitoring
- Other areas

The DWQMP review resulted in updates and new additions to various elements of the Plan to help meet regulatory requirements and continuously improve the document. The Plan was assessed against the RDMW *Drinking Water Quality Management Plan Guideline*.

APPROVAL OF PLAN

Following the review and update of the Plan, Council made an application to RDMW on 17 May 2022 to amend the approved DWQMP with the updates mentioned above. RDMW provided an Information Notice for the Decision to approve Council's DWQMP on 16 August 2022 for a period of two years with the next review to be conducted by 31 March 2024.

DRINKING WATER QUALITY MANAGEMENT PLAN AUDIT FINDINGS

Pursuant to subsection 99(2)(c) of the Water Supply (Safety & Reliability) Act 2008, audits of the DWQMP must be undertaken by an external party with relevant qualifications at a frequency stipulated by the Regulator. No regulatory audit was scheduled to occur in 2021/2022.

The last scheduled regulatory audit occurred in March 2021. For more detail about the findings of the audit and subsequent actions taken by Council, please see the 2020/2021 Drinking Water Annual Report on Council's website.

The next audit is scheduled to be conducted by 30 June 2025.

GLOSSARY OF ACRONYMS

ADWG	<i>Australian Drinking Water Guidelines (2011)</i> . Published by the National Health and Medical Research Council of Australia
CRC	Cairns Regional Council
RDMW	Department of Regional Development, Manufacturing and Water
DWQMP	Drinking Water Quality Management Plan
DWQMS	Drinking Water Quality Management System
HACCP	Hazard Analysis and Critical Control Points certification for protecting drinking water quality
NATA	National Association of Testing Authorities, Australia
VMP	Verification Monitoring Program
SWIM	Statewide Water Information Management. SWIM is a database used by Water Service Providers to report data on water and sewerage services to numerous State and Commonwealth agencies.