



BSC DWQMP ANNUAL REPORT 2022- 23 FINANCIAL YEAR

Drinking Water Service Provider ID - 18

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1.0 INTRODUCTION

This is the Drinking Water Quality Management Plan (DWQMP) Annual Report for Boulia Shire Council (BSC) for the 2022- 23 Financial Year. This annual report will assist the Regulator in determining whether the approved DWQMP and any approval conditions have been complied with. It further provides a mechanism for service providers to report publicly on their performance in managing drinking water quality.

BSC is a registered Service Provider with Identification (SPID) number 18. BSC operates under an approved DWQMP to ensure consistent supply of safe quality drinking water in order to protect public health. This is done through proactive identification and minimisation of public health related risks associated with drinking water.

This annual report includes:

- Activities undertaken over the financial year in operating Council's drinking water service
- A summary of the Boulia and Urandangi drinking water quality for the 2022-23 Financial Year
- A summary of Council's performance in implementing the approved DWQMP
- Incidents reported to the Regulator
- Customer complaints
- Review outcomes and audit findings.

This report will be made available publicly to Council customers through the website or upon request at the Council offices.

2.0 SUMMARY OF SCHEMES OPERATED

BSC is a small Drinking Water Service Provider, as defined in the *Water Supply (Safety and Reliability) Act of 2008*. Boulia Shire covers an area of 61,635 km² with a permanent population of approximately 470 people which swells during the cooler months due to travelling tourists. There are two operational water schemes in the shire in the towns of Boulia and Urandangi. The administration centre of the shire is located in Boulia. Both water schemes source water from shallow sub-artesian bores less than 100m deep. These bores yield relatively low volumes of water with 5 bores required to supply Boulia's water needs. Being sub-artesian water, the source water supply does not meet the ADWGs and BSC are required to disinfect the drinking water in both schemes before it can be distributed.

Table 1: Summary of Schemes.

Scheme	Water Source	Treatment	Pop. Served	No. Conns	Demand
Boulia	Sub-Artesian Bore Water	Chlorination	300	119	770 KL/d
Urandangi	Sub-Artesian Bore Water	Chlorination	25	19	61 KL/d

3.0 DWQMP IMPLEMENTATION

The implementation of BSC's DWQMP has provided Council with an operational framework to manage the water supply systems of Boulia and Urandangi to ensure greater surety for the supply of safe drinking water for the Shire. The risk management components of the DWQMP have been a priority for BSC for providing safe and reliable drinking water sources for the local population and visitors.

3.1 Quarterly RMIP Reporting

Boulia Shire Council's DWQMP Amendment was approved by the Director-General of the Department of Regional Development, Manufacturing and Water (the Regulator) in October 2022. As per Section 7.9 of the Information Notice for the Decision, Council's amendment was approved on the condition that they provide quarterly progress reports to the Regulator, detailing the status of their DWQMP risk

management improvement programme (RMIP). Table 2 below outlines the reporting requirements for Council, including the dates that the reports were submitted to the Regulator.

Table 2: BSC Quarterly RMIP Progress Report Due Dates.

Quarter	Report Due	Submitted
1 st October 2022- 31 st December 2022	1 st February 2023	30/01/2023
1 st January 2023- 31 st March 2023	1 st May 2023	5/05/2023
1 st April 2023- 30 th June 2023	1 st August 2023	1/08/2023
1 st July 2023- 30 th September 2023	1 st November 2023	24/10/2023
1 st October 2023- 31 st December 2023	1 st February 2024	To be submitted.

3.2 RMIP Summary

Table 3 below provides a status summary of BSC's RMIP. The RMIP is an integral part of the DWQMP as it identifies the main risk factors and mitigation measures associated with Council's drinking water schemes. During the 2022- 23 Financial Year, Council completed seven of their Risk Management Improvement Items.

Table 3: Boulia Shire Council Risk Management Improvement Program Implementation Status.

Code	Scheme	Improvement Actions	Target Date	Actions Taken to Date	Status/Revised Target Date
B1	Boulia-Disinfection System	Provide training to staff to manage the disinfection system	June 23	<p>This item has been put on hold while Council are in the process of procuring and installing the new Electrochlorination (Salt) Unit. To date, it is expected to have the existing disinfection system replaced by February 2024.</p> <p>The current disinfection system is scheduled for regular 6-monthly services. However, Council also employ the same company to service the town pool. If something goes wrong with either the disinfection system or the pool and requires troubleshooting, the other benefits from the visit, so it is not uncommon for servicing of the disinfection system to occur more frequently than every 6 months. Subsequently, Council are managing the operation of the disinfection system more efficiently.</p>	Dec 24, new revised target date, pending instalment of new Electrochlorination Unit.
B2	Boulia-Disinfection System	Install non-return valves at high-risk locations (town common stables, STP etc.)	June 23	High-Risk locations have been identified. This will be addressed as part of the disinfection system upgrade with the installation of the new Electrochlorination (Salt) Unit.	Dec 23, new revised target date, pending instalment of new Electrochlorination Unit.
B3	Boulia-Bore/Sourcing Infrastructure	Investigate turbidity levels	June 23	Council are still gathering turbidity data in NTUs for the Boulia scheme. To date, the measuring of Turbidity in NTUs has seen a big decrease in Turbidity levels within the source and distribution water with an average of 1.96NTU recorded for the source water and an average of 0.5NTU recorded for the distribution system (data collected from June 22- Sept 23). Having now monitored Turbidity consistently for the last year, Council will re-assess the Turbidity targets outlined in the DWQMP. The outcome of this assessment will be discussed in the DWQMP Amendment which is currently planned for the end of 2023/early 2024.	Item complete, the outcome of this investigation will be discussed in the next DWQMP Amendment.

Code	Scheme	Improvement Actions	Target Date	Actions Taken to Date	Status/Revised Target Date
B4	Boulia- Whole of System	Upgrade the Boulia pump telemetry system from 3G to 4G	June 23	Complete.	Item completed.
B5	Boulia- Whole of System	Update operation and maintenance procedures with a protocol to follow if water to the town is lost and required to be brought back on again to address the sediment disturbance hazard	April 23	Procedure has been written and implemented. The review date for this procedure is set for July 2024.	Item completed.
B6	Boulia- Disinfection System	Upgrades to the chlorine disinfection system	Dec 23	Council has sought funding to upgrade the WTP to an Electrochlorination (Salt) Unit. The Contract has been awarded, fabrication is underway with installation and commissioning of the new system planned for February 2024. Additionally, a Review conducted in 2022 identified additional design limitations in Boulia's existing WTP and recommended Continuous Backwashing Filtration (Dynasand Filtration) as the preferred upgrade option (in addition to the electro chlorination upgrades). Council are currently seeking funding for these upgrades, estimated to cost around \$800,000.	Dec 23
B7	Boulia- Verification Monitoring	Investigate and develop an improved process for verification monitoring for <i>E.coli</i> within the 24-hr holding period	April 23	Complete. All verification monitoring for <i>E.coli</i> and Total Coliforms is now being sent to Mt Isa within the 24-hr holding period.	Item completed.
B8	Boulia- Whole of System	Formal collation and documentation of operation and maintenance procedures	April 23	All current procedures have been updated and missing procedures have been written. The review date for all BSC operation and maintenance procedures is set for July 2024 (refer to Table 3 below).	Item completed.

Code	Scheme	Improvement Actions	Target Date	Actions Taken to Date	Status/Revised Target Date
B9	Boulia- Source Water	Investigation into the presence of radiological activity in Boulia's source water	Dec 23	Radiological testing was added to the verification monitoring programme in the October 22 Amendment. Testing was conducted in December 22 which found Gross Alpha, Gross Beta and Uranium levels to be under the ADWG health guideline. The next round of radiological monitoring is to be conducted before December 2023.	Dec 23, Council on-track to achieve completion date.
U1	Urandangi- Bore	Seal the Urandangi bore	June 23	A new town bore for Urandangi was drilled in May 2023 to replace the bore that was damaged during the April/May 2023 flooding. Council intends to have it sealed by December 2023.	Dec 23, Council on-track to achieve completion date.
U2	Urandangi- Bore/Sourcing Infrastructure	Continue to inform the community of Urandangi's elevated fluoride levels	Dec 22	Notification was sent out to residents in January 2023 and the QLD Health Fluoride factsheet has been laminated and put up in the pub.	Ongoing due to need for annual notification
U3	Urandangi- Source Water	Update operation and maintenance procedures to include the new chlorine dosing and testing regime, the risks associated with chlorine dosing and procedures to follow if chlorine levels drop too low/high	April 23	All operation and maintenance procedures for Urandangi have been temporarily put on hold while Council decides how they would like to progress with the management of the scheme (see Section 4 below).	New revised target date of Dec 23, pending Council's final decision on how the Urandangi scheme will be managed moving forward.
U4	Urandangi- Bore	Cap old Urandangi bore	June 23	Now that the new Urandangi town bore has been drilled, both of the old bores (RN 93844, the bore damaged during the April/May 2023 flooding; RN 5337, the older Urandangi town bore) can be capped. Council intends to have this completed by December 2023.	Dec 23, new revised target date.
U5	Urandangi- Verification Monitoring	Investigate and develop an improved process for verification monitoring for <i>E.coli</i> within the 24hr holding period	April 23	Complete. All verification monitoring for <i>E.coli</i> and Total Coliforms is now being sent to Mt Isa.	Item completed.

Code	Scheme	Improvement Actions	Target Date	Actions Taken to Date	Status/Revised Target Date
U6	Urandangi-Source Water	Investigation into the presence of radiological activity in Urandangi's source water	Dec 23	Radiological testing was added to the verification monitoring programme in the October 22 Amendment. Testing was conducted in December 22 which found Gross Alpha, Gross Beta and Uranium levels to be under the ADWG health guideline. The next round of radiological monitoring is to be conducted before December 2023.	Dec 23, Council on-track to achieve completion date.

4.0 WATER QUALITY MONITORING SUMMARY – COMPLIANCE WITH QUALITY CRITERIA

Council conducts weekly operational testing within Boulia’s distribution system and quarterly monitoring of Boulia’s bores. Monthly testing is conducted for Urandangi’s distribution system. Weekly visual inspections are also undertaken of all drinking water infrastructure (bores, reservoirs, water treatment equipment etc.) within both schemes. Finally, verification monitoring is conducted annually (bores) and biannually (distribution system) across both schemes, with samples being sent to an external laboratory. The biggest change for BSC during the 2022- 23 Financial Year is that their *E.coli* samples are now sent to the Mt Isa Waterboard for verification monitoring. This is due to the trouble that Council have had previously in getting their *E.coli* samples to Brisbane within the 24-hour holding period, an issue that was flagged in Council’s Annual Report for the 2021- 22 Financial Year. Since sending their *E.coli* verification monitoring samples to Mt Isa, Council have had no issues getting the samples tested within the 24-hr holding period.

Sections 4.1 and 4.2 below summarise all operational and verification monitoring for Boulia and Urandangi undertaken during the reporting period, while Section 4.3. discusses any potential water quality issues encountered by Council.

4.1 Boulia Drinking Water Quality Summary 2022- 2023 Financial Year

Table 4: Boulia Annual Source Water Verification Monitoring.

Parameters	Units	No. of Samples Tested as per DWQMP	Samples Tested FY	Summary of Results					ADWG Value			
				Maximum Value	Mean Value	Minimum Values	Std Dev	95 th %	Health	Exceedances	Aesthetic	Exceedances
<i>E.coli</i>	CFU/100mL	5	5	0	0	0	0	0	1	0		
Total Coliforms	CFU/100mL	5	5	0	0	0	0	0				
Conductivity	µS/cm	5	5	1400	1380	1340	22.8	1400				
Dissolved Organic Carbon	mg/L	5	5	1	1	1	1	0				
Dissolved Oxygen	mg/L	5	5	4.9	4.2	3	0.684	4.88				
pH	mg/L	5	5	7.6	7.46	7.4	0.08	7.58			≥6.5 & ≤ 8.5	0
Total Dissolved Solids	mg/L	5	5	780	766	740	15	780			660	5
Turbidity	NTU	5	5	11	4.06	1.2	3.55	9.42			5	1
Chlorate	mg/L	5	5	0.05	0.05	0.05	0.05	0	0.8	0		
Chloride	mg/L	5	5	210	198	190	7.483	208			250	0
Fluoride	mg/L	5	5	1.1	0.98	0.9	0.075	0	1.5	0		
Lead	mg/L	5	5	0.0006	0.00028	0.0002	0.00016	0.00052	0.01	0		
Nitrate	mg/L	5	5	0.01	0.01	0.01	0.01	0	50	0		
Nitrite	mg/L	5	5	0.01	0.01	0.01	0.01	0	3	0		
Selenium	mg/L	5	5	0.001	0.001	0.001	0.001	0	0.01	0		
Silica (SiO ₂)	mg/L	5	5	16	15.6	15	0.49	16			80	0
Silver	mg/L	5	5	0.001	0.001	0.001	0.001	0	0.1	0		

Parameters	Units	No. of Samples Tested as per DWQMP	Samples Tested FY	Summary of Results					ADWG Value			
				Maximum Value	Mean Value	Minimum Values	Std Dev	95 th %	Health	Exceedances	Aesthetic	Exceedances
Sodium	mg/L	5	5	210	194	180	10.198	208			180	4
Total Iron	mg/L	5	5	0.86	0.36	0.21	0.249	0.744			0.3	1
Soluble Iron	mg/L	5	5	0.011	0.005	0.001	0.003	0.01				
Total Manganese	mg/L	5	5	0.11	0.064	0.044	0.024	0.1	0.5	0		
Soluble Manganese	mg/L	5	5	0.095	0.06	0.043	0.0184	0.0874				
Uranium	mg/L	5	5	0.001	0.001	0.001	0.001	0	0.017	0		
Gross Alpha	Bq/L	5	5	0.055 ±0.064	0.15 ±0.047	0.06 ±0.029	0.066 ±0.011	0.24 ±0.06			0.5	0
Gross Beta	Bq/L	5	5	0.265 ±0.063	0.16 ±0.054	0.071 ±0.045	0.078 ±0.007	0.257 ±0.062			0.5	
Aesthetic Guideline Exceedance												
Health Guideline Exceedance												

Table 5: Boulia Biannual Distribution Water Verification Monitoring.

Parameters	Units	No. of Samples Tested as per DWQMP	Samples Tested FY	Summary of Results					ADWG Value			
				Maximum Value	Mean Value	Minimum Values	Std Dev	95 th %	Health	Exceedances	Aesthetic	Exceedances
<i>E.coli</i>	CFU/100mL	6	6	0	0	0	0	0	1	0		
Total Coliforms	CFU/100mL	6	6	0	0	0	0	0				
Conductivity	µS/cm	6	6	1390	1378.33	1360	10.67	1390				
True Colour	HU	6	6	1	1	1	1	0			15	0
Dissolved Organic Carbon	mg/L	6	6	1	1	1	1	0				
Dissolved Oxygen	mg/L	6	6	9.3	8.42	7.3	0.88	9.3				
pH	pH Units	6	6	8	7.8	7.6	0.153	7.98			≥6.5 & ≤ 8.5	0
Total Dissolved Solids	mg/L	6	6	770	751.7	730	16.75	770			660	6
Turbidity	NTU	6	6	1.7	0.78	0.5	0.43	1.48			5	0
Chlorate	mg/L	6	6	0.01	0.01	0.01	0.01	0	0.8	0		
Chloride	mg/L	6	6	210	196.67	180	11.06	210			250	0
Fluoride	mg/L	6	6	1	0.95	0.9	0.05	1	1.5	0		
Lead	mg/L	6	6	0.0002	0.0002	0.0002	0.0002	0	0.01	0		
Nitrate	mg/L	6	6	0.01	0.01	0.01	0.01	0	50	0		
Nitrite	mg/L	6	6	0.01	0.01	0.01	0.01	0	3	0		
Sodium	mg/L	6	6	160	151.67	150	3.73	157.5			180	0

Parameters	Units	No. of Samples Tested as per DWQMP	Samples Tested FY	Summary of Results					ADWG Value			
				Maximum Value	Mean Value	Minimum Values	Std Dev	95 th %	Health	Exceedances	Aesthetic	Exceedances
Uranium	mg/L	6	6	0.001	0.001	0.001	0.001	0.001	0.017	0		
Total Iron	mg/L	6	6	0.19	0.115	0.062	0.0386	0.17			0.3	0
Soluble Iron	mg/L	6	6	0.015	0.009	0.005	0.004	0.015				
Total Manganese	mg/L	6	6	0.017	0.0083	0.0011	0.0065	0.017	0.5			
Soluble Manganese	mg/L	6	6	0.044	0.0154	0.00008	0.0163	0.04				
Trihalomethanes	mg/L	6	6	0.028	0.0082	0.002	0.0093	0.024	0.25	0		
Aesthetic Guideline Exceedance												
Health Guideline Exceedance												

Table 6: Boulia Operational Monitoring Source Water and Distribution.

Analyte	Units	Testing Frequency	No. of Samples Tested as per DWQMP	Samples Tested FY	Summary of Results					ADWG Value			
					Maximum Value	Mean Value	Minimum Values	Std Dev	95 th %	Health	Exceedances	Aesthetic	Exceedances
Source Water													
<i>E. coli</i>	CFU/100mL	Quarterly	10	22	0	0	0	0	0	1			
Total Coliforms	CFU/100mL	Quarterly	10	22	51	4.5	0	11.4	21.6				
Turbidity	NTU	Quarterly	10	22	7.55	1.22	0	1.842	5.645			5	2
Total Iron	mg/L	Quarterly	10	22	0.76	0.26	0.03	0.144	0.462			0.3	2
Distribution System													
<i>E. coli</i>	mg/L	Monthly	36	42	0	0	0	0	0	1	0		
Total Coliforms	pH Units	Monthly	36	42	51	3.76	0	13.11	48.6				
Free Chlorine	mg/L	Weekly	156	137	1.95	0.8	0.05	0.42	1.75			>0.2, <5	9
Turbidity	NTU	Monthly	36	42	2.34	0.5	0.01	0.46	1.15			5	0
pH	mg/L	Monthly	36	42	8.88	7.68	6.72	0.74	8.8			≥6.5 & ≤ 8.5	11
Conductivity	µS/cm	Monthly	36	42	1419	1314.8	945	146.32	1400				
Aesthetic Guideline Exceedance													
Health Guideline Exceedance													

Table 7: Boulia *E.coli* Annual Value Compliance Table.

Year	1/07/2020- 30/06/2023											
Month	July	August	September	October	November	December	January	February	March	April	May	June
No. of samples collected	4	7	9	4	9	3	3	8	6	3	15	4
No. of samples collected in which <i>E.coli</i> is detected	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	65	62	68	69	70	70	70	68	71	71	74	75
No. failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 8: Urandangi Annual Source Water Verification Monitoring.

Parameters	Units	No. of Samples Tested as per DWQMP	Samples Tested FY	Result	ADWG Value			
					Health	Exceedances	Aesthetic	Exceedances
<i>E.coli</i>	CFU/100mL	1	1	1	1	0		
Total Coliforms	CFU/100mL	1	1	>1				
Conductivity	µS/cm	1	1	1550				
Dissolved Organic Carbon	mg/L	1	1	1				
Dissolved Oxygen	mg/L	1	1	5.4				
pH	mg/L	1	1	7.4			≥6.5 & ≤ 8.5	0
Total Dissolved Solids	mg/L	1	1	970			660	1
Turbidity	NTU	1	1	0.7			5	0
Chlorate	mg/L	1	1	0.05	0.8	0		
Chloride	mg/L	1	1	240			250	0
Fluoride	mg/L	1	1	1.6	1.5	1		
Lead	mg/L	1	1	0.0002	0.01	0		
Nitrate	mg/L	1	1	0.25	50	0		
Nitrite	mg/L	1	1	0.1	3	0		
Selenium	mg/L	1	1	0.002	0.01	0		
Silica (SiO ₂)	mg/L	1	1	51			80	0
Silver	mg/L	1	1	0.001	0.1	0		
Sodium	mg/L	1	1	150			180	1
Total Iron	mg/L	1	1	0.002			0.3	0

Parameters	Units	No. of Samples Tested as per DWQMP	Samples Tested FY	Result	ADWG Value			
					Health	Exceedances	Aesthetic	Exceedances
Soluble Iron	mg/L	1	1	0.001				
Total Manganese	mg/L	1	1	0.093	0.5	0		
Soluble Manganese	mg/L	1	1	0.085				
Uranium	mg/L	1	1	0.01	0.017	0		
Gross Alpha	Bq/L	1	1	0.354 ±0.080			0.5	0
Gross Beta	Bq/L	1	1	0.125 ±0.055			0.5	0
Aesthetic Guideline Exceedance								
Health Guideline Exceedance								

Table 9: Urandangi Distribution Water Verification Monitoring.

Parameters	Units	No. of Samples Tested as per DWQMP	Samples Tested FY	Summary of Results			ADWG Value			
				Maximum Value	Mean Value	Minimum Values	Health	Exceedances	Aesthetic	Exceedances
<i>E.coli</i>	CFU/100mL	4	4	2	0.5	0	1	1		
Total Coliforms	CFU/100mL	4	4	110	42.5	0				
Conductivity	µS/cm	4	4	2080	2050	2020				
True Colour	HU	4	4	1	1	1			15	0
Dissolved Organic Carbon	mg/L	4	4	1	1	1				
Dissolved Oxygen	mg/L	4	4	9.4	8.88	8.1				
pH	pH Units	4	4	7.6	7.48	7.4			≥6.5 & ≤ 8.5	0
Total Dissolved Solids	mg/L	4	4	1300	1225	1200			660	4
Turbidity	NTU	4	4	5.6	2	0.5			5	1
Chlorate	mg/L	4	4	0.51	0.28	0.16	0.8	0		
Chloride	mg/L	4	4	380	357.5	330			250	4
Fluoride	mg/L	4	4	1.8	1.73	1.7	1.5	4		
Lead	mg/L	4	4	0.001	0.0006	0.0002	0.01	0		
Nitrate	mg/L	4	4	0.36	0.343	0.32	50	0		
Nitrite	mg/L	4	4	0.01	0.01	0.01	3	0		
Sodium	mg/L	4	4	180	175	170			180	0
Uranium	mg/L	4	4	0.014	0.013	0.012	0.017	0		
Total Iron	mg/L	4	4	0.023	0.0085	0.005			0.3	0
Soluble Iron	mg/L	4	4	0.005	0.003	0.001				

Parameters	Units	No. of Samples Tested as per DWQMP	Samples Tested FY	Summary of Results			ADWG Value			
				Maximum Value	Mean Value	Minimum Values	Health	Exceedances	Aesthetic	Exceedances
Total Manganese	mg/L	4	4	0.68	0.18	0.01	0.5	1		
Soluble Manganese	mg/L	4	4	0.011	0.0036	0.0005				
Trihalomethanes	mg/L	4	4	0.006	0.003	0.002	0.25	0		
Aesthetic Guideline Exceedance										
Health Guideline Exceedance										

Table 10: Urandangi Operational Monitoring.

Parameters	Units	No. of Samples Tested as per DWQMP	Samples Tested FY	Summary of Results			ADWG Value			
				Maximum Value	Mean Value	Minimum Values	Health	Exceedances	Aesthetic	Exceedances
Distribution System										
<i>E.coli</i>	CFU/100mL	24	17	0	0	0	1	0		
Total Coliforms	CFU/100mL	24	17	51	7.5	0				
Free Chlorine	mg/L	104	20	1.5	0.37	0.05			>0.2, <5	8
Turbidity	NTU	24	17	2.54	0.43	0.03			5	0
pH	mg/L	24	16	8.73	7.48	7.03			≥6.5 & ≤ 8.5	2
Conductivity	µS/cm	24	16	2001	1898	1646				
Aesthetic Guideline Exceedance										
Health Guideline Exceedance										

Table 11: Urandangi *E.coli* Annual Value Compliance Table.

Year	1/07/2021- 30/06/2023											
Month	July	August	September	October	November	December	January	February	March	April	May	June
No. of samples collected	2	4	6	2	2	2	0	4	0	0	1	2
No. of samples collected in which <i>E.coli</i> is detected	0	1	0	0	0	0	0	0	0	0	1	0
No. of samples collected in previous 12 month period	26	26	30	32	32	32	32	32	30	28	25	25
No. failures for previous 12 month period	0	1	1	1	1	1	1	1	1	1	1	1
% of samples that comply	100%	96.2%	96.7%	96.9%	96.9%	96.9%	96.9%	96.9%	96.7%	96.4%	96%	96%
Compliance with 98% annual value	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

4.2 Boulia and Urandangi Verification and Operational Monitoring Summary

4.2.1 Boulia

The following ADWG aesthetic exceedances were identified within Boulia's source water during the reporting period:

- Total Dissolved Solids (5 exceedances from 5 samples)
- Turbidity (1 exceedances from 5 samples)
- Sodium (4 exceedances from 5 samples)
- Total Iron (1 exceedance from 5 samples)
- Turbidity (operational monitoring; 2 exceedances from 22 samples)
- Total Iron (operational monitoring; 2 exceedances from 22 samples)

The following ADWG aesthetic exceedances were identified within Boulia's distribution system during the reporting period:

- Total Dissolved Solids (6 exceedances from 6 samples)
- pH (operational monitoring; 11 exceedances from 42 samples)
- Free Chlorine (operational monitoring; 9 samples below the lower critical limit of 0.2mg/L)

There were no ADWG health exceedances identified within the Boulia scheme during the reporting period.

4.2.2 Urandangi

The following ADWG aesthetic exceedances were identified within Urandangi's source water during the reporting period:

- Total Dissolved Solids (1 exceedances from 1 sample)
- Sodium (1 exceedance from 1 samples)

The following ADWG aesthetic exceedances were identified within Urandangi's distribution system during the reporting period:

- Total Dissolved Solids (4 exceedances from 4 samples)
- Turbidity (1 exceedance from 4 samples)
- Chloride (4 exceedances from 4 samples)
- pH (operational monitoring; 2 exceedances from 16 samples)
- Free Chlorine (operational monitoring; 8 samples below the lower critical limit of 0.2mg/L)

The following ADWG health exceedances were identified within Urandangi's source water and distribution system during the reporting period:

- *E.coli* (source water; 1 exceedance from 1 sample)
- Fluoride (source water; 1 exceedance from 1 sample)
- *E.coli* (distribution system; 1 exceedance from 4 samples)
- Fluoride (distribution system; 4 exceedances from 4 samples)
- Manganese (distribution system; 1 exceedance from 4 samples)

4.2.3 Summary of Water Quality Within the Schemes

Since the implementation of chlorination within the Boulia drinking water scheme, the drinking water distributed to customers generally meets the aesthetic and health ADWG values. Exceedances for Total Dissolved Solids, Turbidity, Sodium and Total Iron were identified within Boulia's source water during the reporting period, however only exceedances for Total Dissolved Solids and pH were identified within the distribution system; with Total Iron, Sodium and Turbidity issues being addressed during the water treatment process (elevated Turbidity and Total Iron concentrations are a natural characteristic of Boulia's source water). Furthermore, only two Turbidity exceedances were reported in the source water, all of which came from Boulia's Powerhouse Bore which is generally only switched on during the hotter months when water demand in the town increases.

Elevated pH in drinking water is common in groundwater supplies. Boulia's pH average sits around 7.68 pH units which is within the ADWG aesthetic range. While exceedances of the upper limit of 8.5 were reported within the scheme, pH exceedances are generally only associated with taste issues and pipe scaling and do not mean that the water is not safe for consumption. Similarly, Total Dissolved Solids exceedances only result in taste issues, with no health-based target considered necessary.

Boulia had three weeks during April 2023 where the Free Chlorine residual fell below the lower critical limit of 0.2mg/L. This Drinking Water Event was the result of a pump failure at the WTP, it was reported to the Regulator and is discussed further in Section 5 below.

Similar to Boulia, Urandangi reported elevated concentrations of Total Dissolved Solids and Sodium in the source water, however, only exceedances for Total Dissolved Solids were identified within the distribution system. Distribution system exceedances were also reported for pH, Turbidity and Chloride. As mentioned above, no health-based targets have been set for these parameters as exceedances are generally only associated with taste issues and not considered public health risks.

Urandangi Free Chlorine levels were not consistently maintained above the lower critical limit throughout the reporting period, this resulted in one detection of *E.coli* within the town's distribution system in September 2022. This Incident was escalated to the Regulator and is discussed in Section 5. Disinfection within the Urandangi scheme is also discussed in more detail in Section 6. Verification monitoring undertaken in May 2023 also detected *E.coli* in Urandangi's source water. Operational monitoring for *E.coli* taken the next day did not detect any *E.coli* within the distribution system. Subsequently, this source water detection was not escalated further as this was not considered a Drinking Water Incident as the source water is not the final product that is distributed to customers. It should also be noted that this detection occurred while the town was on a Boil Water Alert.

Finally, one Manganese exceedance was identified within Urandangi's distribution system, this exceedance was reported to the Regulator as an Incident and is discussed further in Section 5. Elevated Fluoride levels are a known characteristic of Urandangi's source water, associated with the underlying geology of the area, these exceedances were reported to the Regulator and are also discussed in Section 5.

4.2.4 *E.coli* Verification and Operational Monitoring

Bacteriological sampling within the Boulia's drinking water recorded no positive *E.coli* results for the reporting period. Therefore, the Boulia scheme has been compliant with the 98% *E.coli* value for the 2022-23 Financial Year. Bacteriological sampling within Urandangi's drinking water identified one positive result for *E.coli*, therefore, the Urandangi scheme was not compliant with the 98% *E.coli* value for the reporting period.

4.2.5 Missed Verification and Operational Monitoring

There was no missed verification monitoring for the Boulia and Urandangi schemes during the reporting period. Some operational testing was missed for Urandangi due to no road access into the town as a result of two major flood events that occurred in December/January 2022/23 and April/May 2023. This is discussed in Section 6 below.

5.0 INCIDENTS REPORTED TO THE REGULATOR

Table 12: Incidents Reported to The Regulator during the 2022-23 Financial Year.

Incident Date	Scheme	Issue	Preventive Actions	Investigation Report
15/03/2023 9/06/2023	Urandangi (DWI-7-18-00004)	Fluoride in exceedance of ADWG health guideline value.	Public notification and ongoing monitoring to ensure values are stable and remain only slightly above the ADWG health limit. Annual notification was distributed to residents in January 2023.	N/A, ongoing incident.
2/9/2022	Urandangi (DWI-18-22-09755)	Verification monitoring identified <i>E.coli</i> within Urandangi's distribution system, due to high water usage in the town causing insufficient chlorine contact time.	A Boil Water Alert was issued for the town. Follow-up Free Chlorine testing showed that the Free Chlorine residual was being maintained throughout the town above 0.2mg/L. Two rounds of verification monitoring for <i>E.coli</i> were conducted and the Boil water Alert was lifted via. consultation with the Regulator and QLD Health.	Submitted 10/10/2022
2/9/2022	Urandangi (DWI-18-22-09756)	Verification monitoring of Urandangi's distribution system identified one Manganese result above the ADWG health value.	Follow-up verification monitoring was undertaken which found Manganese levels to be under the ADWG health value. It was concluded that a pump replacement at the Urandangi bore caused the exceedance.	Submitted 20/10/2022
30/12/2023 (Incident Report submitted on the 11/7/2023)	Urandangi (DWI-18-22-10098)	On the 30/12/2022, Urandangi was evacuated due to a flood event.	21 people were evacuated from the town to Mt Isa. Following this event a Boil Water Alert was implemented for the town which is still in place while Council determine how they can move forward with the management of the scheme (see Section 6).	N/A, ongoing incident.
6/4/2023	Boulia (DWI-18-23-10246)	The booster pump and back-up pump at the WTP failed, resulting in manual chlorine dosing into the town's reservoir and an inability for the Free Chlorine residual to be	A Boil Water Alert was implemented while Council waited for the new pump to arrive and be installed. Operational monitoring for Free Chlorine, Turbidity, pH, <i>E.coli</i> and Total Coliforms was conducted every second day. The Boil Water Alert was lifted after the pump	Submitted 28/04/2023

Incident Date	Scheme	Issue	Preventive Actions	Investigation Report
		maintained above the lower critical limit of 0.2 mg/L.	had been installed and verification monitoring confirmed no <i>E.coli</i> within the system (in consultation with the Regulator and QLD Health).	

BSC has one ongoing incident for the naturally elevated levels of fluoride within Urandangi's drinking water. The elevated fluoride levels are associated with the natural geology of the area and averages around 1.8mg/L. Treatment to reduce fluoride levels in the drinking water is not financially feasible, considering that the concentration is only slightly above the ADWG health value of 1.5mg/L. The main issues associated with elevated fluoride levels in Urandangi is dental fluorosis primarily affecting children under the age of 6. Despite the frequent exceedance of fluoride levels, verification monitoring three times a year has been deemed suitable for the scheme as historical data has identified fluoride concentrations to be within a consistent range. At this stage, Council's primary management strategy is to provide annual public notification to residents in the form of a fluoride fact-sheet to help the community understand the potential impacts of elevated fluoride in the drinking water.

Council also have an ongoing Drinking Water Event in response to the flooding that occurred in Urandangi in December/January 2022/23. This Event is discussed further in Section 6 below.

6.0 URANDANGI DRINKING WATER SCHEME UPDATE

Historically in Urandangi, chlorination of the drinking water supply has been difficult due to a lack of available and suitably qualified staff. This was further complicated during the reporting period due to high water usage in the town and two flood events that occurred in December/January 2022/23 and April/May 2023 which required the town to be evacuated on both occasions. During both floods, no access could be gained to the town, resulting in missed operational testing. Following the second round of flooding in April/May significant damage to drinking water infrastructure occurred including the collapse of the Urandangi town bore and ingress of flood water into the reservoirs. In response to this, Council drilled a new bore in May 2023. The first flood event resulted in a Boil Water Alert being issued for the town which is currently still in place.

In July 2023, Council decided to investigate the process that would be required for making the Urandangi Drinking Water Scheme a non-potable scheme. Consultation was undertaken with the Regulator and QLD Health, details of which will be reported upon in the 2023-24 Financial Year Annual Report. Currently, BSC are in the process of outlining their management strategy for how they will proceed with the scheme. This will also be addressed in the upcoming DWQMP Review.

7.0 CUSTOMER COMPLAINTS

There were no customer complaints made to Council during the 2022-23 Financial Year.

8.0 DWQMP REVIEW OUTCOMES

The last DWQMP Review was conducted in December 2021. The Review found the current DWQMP to be out of date. Council applied for an Amendment to the DWQMP in February 2022 to incorporate these findings. The Amendment was approved in October 2022. The next review is scheduled for completion by the 31st of January 2024.

9.0 DWQMP AUDIT FINDINGS

An audit was completed in March 2022. Audit findings and recommendations were incorporated into the 2022 DWQMP Amendment.

10.0 BSC CUSTOMER SERVICE STANDARDS REVIEW

BSC did not undertake a review of their Customer Service Standards during the 2022-23 Financial Year. The next review is scheduled to be undertaken in 2025.