Drinking Water Quality Management Plan Annual Report

FY 2023/24

eDOCS #5100610

WIDE BAY water

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1	I.R	I.R. /C.A.	C.A.	13/11/2024

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1 INTRODUCTION

Wide Bay Water (WBW) is a Commercial Business unit of Fraser Coast Regional Council which is listed as Service Provider Identification Number (SPID Number) 585 with the Department of Regional Development, Manufacturing and Water.

WBW supplies potable water through three separate systems to the cities of Hervey Bay and Maryborough and the township of Tiaro.

This report details WBW's compliance with its Drinking Water Quality Management Plan (DWQMP).
This DWQMP Report for the financial year of 2023/24 is submitted as required under sections 141 and 142 of the *Water Supply (Safety and Reliability) Act 2008*.

2 DWQMP REPORTING, REVIEWS AND AUDITS

2.1 DWQMP Reviews

DWQMP Reviews are required every two years. The previous review was undertaken and approved 20 February 2024.

The next review is due 30 June 2026.

2.2 DWQMP Audits

DWQMP auditing normally occurs every four years and was not due to be completed until 30 June 2021. However, to bring the auditing into alignment with the Wide Bay Burnett Regional Organisation of Councils (WBBROC) auditing was undertaken August 2020.

WBW&WS engaged the consultancy firm Northern Water Management Pty Ltd to audit the DWQMP and a report was supplied 28th September 2020.

There were 12 Opportunities for Improvements noted, council has adopted all recommendations, with actions outlined in the following table.

The next audit is due 30 June 2025.

Ref No.	Description	Action	Target date	Status as at 30/6/2022
OFI 1	There is an opportunity to review the geographical spread of verification sampling locations to ensure a reasonable spread of testing locations. For example, Tiaro has the 2 reticulation sampling points at the southern end of the system and 1 could be moved to the northern side:	Action for this already exists in the Drinking Water Quality Management Action Plan. **Action # FN01-01**	Dec-23	See action FN01-01 – Completed
OFI 2	It is suggested that the sample point location on Intramaps be reviewed to accurately show sample point locations. It is suggested that any remaining private land sample locations are positioned on public land.	Action for this already exists in the Drinking Water Quality Management Action Plan. **Action # FN01-02**	Jan-24	See action FN01-02 - Completed
OFI 3	It is suggested that the recording of verification information to worksheets be automated by using electronic tablets.	Suitable tablets to be purchased with mobile connection.	Dec-21	Completed.
OFI 4	Parameters measured on SCADA: It is suggested that the SCADA system filter the data on the totalizer to remove any doubt that the chlorine has stopped dosing in periods of no flow. It is suggested that the SCADA system filter data on the turbidity analysers at Teddington for the clarifiers and filtered water to ensure information is not incorrectly presented.	Investigate options to mask SCADA data for chlorine residual where there is no flow so false readings are not reported. Investigate options to mask SCADA data for filtered water turbidity so false readings are not reported. Investigate options to mask SCADA data for clarifier turbidity so false readings are not reported.	Jul-21	Completed. SCADA data masking for filtered water turbidity and statistical reporting implemented. Investigation found sufficient data is captured on SCADA to determine if chlorine dosing is occurring in low flow periods and if clarifier turbidity is within limits during operation. Data masking will not be progressed at this stage but will be considered if statistical reporting is implemented for these processes.

OFI 5	SCADA Monitoring: It is suggested that the SCADA results are checked against the verified results to see if there are issues in terms of the calibrated online instruments.	Develop procedure to check calibrated online instruments match values reported on SCADA	Jun-24	Creation of formalised procedure in progress.. Target date revised.
OFI 6	Update the water main repair procedure "OPS Planned Scouring of Reticulated Mains" #3275958 to include water safety such as machinery disinfection prior to use in water management situations where cross-contamination may be a risk;	Note: after review of audit notes it is taken that the procedure is intended to be "OPS Mains Repair" #3276055 Update procedure to include cross contamination management including disinfection.	Dec-22	Completed. Procedure completed to include water safety including disinfection of machinery and tools to manage risk of contamination.
OFI 7	Chemical Management and Storage: There needs to be a process at the time of chemical delivery on-site whereby each delivery comes with a quality assured certificate for each batch of chemical instead of retrospective certificates being provided. The certificates audited do show the concentration of chemical being supplied. Each delivery docket number should link to that certificate/batch in addition to the Sample ID and delivery docket. The service provider must also be checked for ongoing quality compliance. It is suggested that acceptance testing occurs as per ADWG, and a diluted sample could be used to check the chemical concentration prior to use.	Include requirements for Certificate of Analysis for each chemical delivery in Bulk Chemical Tender. Develop procedure to check COA relates to delivery and keep records. Consider acceptance testing chemicals upon delivery.	Jun-24	COA requirements in bulk chemical supply contracts. Completed. Delivery documentation scrutiny and acceptance testing procedures in progress. Target date revised.
OFI 8	Sourcing of Quality Assured Materials: A procedure needs to be in place to ensure that all drinking water materials purchased are certified to Australian Standards or are WaterMark approved. The Council Procurement Policy does mention "relevant standards", however, this is potentially vague, particularly for small purchases;	Investigate options to ensure WaterMark certification is verified at time of purchase as stores items.	Jan-23	Closed, no further action required.
OFI 9	Procedures: It is a possibility that the paper procedures and those stored on M Drive are not the latest versions. It is recommended that access procedures directly from E Docs Document Portal to ensure that all procedures viewed are the latest. This also avoids needing to provide controlled/uncontrolled paper	Document Management Manual to be updated with statement to prefer access to documents via document portal. Quality Management System Awareness Training (annual) to be updated with this information also. Raw Water Quality Thresholds management to be included in the Treatment Plant Operator Manuals.	Jun-23	Completed. Document Management Manual update complete and states requirement for documents to be stored in

	copies. Consider a system to store operational log sheets to avoid them being lost from M Drive. It is suggested that a process be formalised for raw water quality threshold exceedances to ensure a fast response and that the actions include plant derating for a range of parameters.			eDOCS and made available on the DOC portal. Operator manuals updated to include appropriate actions for raw water quality.
OFI 10	Monitoring Instruments: Undertake a regular check of operational calibration record checks to ensure that the instruments are being calibrated regularly and effectively.	Develop process to monitor instrument calibration schedules.	Jun-21	Completed. Supervisor sign-off added to Operator Duty Checklist.
OFI 11	Incident Response Capability: Provide training for management staff in new roles in the water department for incident management, and specifically DWQMP awareness directly relating to the system.	Update annual DWQ/HACCP awareness training with incident management procedures/processes.	Jan-24	Complete – Training procedures updated to include incident management procedures.
OFI 12	At Tiaro WTP, raise the rain gauge bucket or move the unit so that there is no obstruction near the unit to adversely affect the rainfall results.	Clear obstruction from rain gauge site	Jul-21	Complete.

3 RISK MANAGEMENT IMPROVEMENT PLAN

The following is a summarised record of the DWQMP risk management improvement plan as of June 2023.

Reference	Corrective Actions	Risk Rating	Target Date	Status – 30/06/2023
WBW Region – Network and WTPs				
FN01-01	Establish permanent sample sites for sampling drinking water in all WBW reticulation systems; Identify and establish permanent sample sites for sampling drinking water.	Low	Jun-2025	In progress. Sites reviewed and approved. Roll out schedule in progress.
FN01-02	Undertake review of all network chlorine analysers and dose stations to check suitability of locations and equipment	Low	Jan-2024	Complete – Review complete and identified dosing sites rolled out in Maryborough and Hervey Bay.
Cyber Security				
Under s575 of the Water Supply (Safety and Reliability) Act 2008, cyber security information is not published.				
All Water Treatment Plants				
FN03-01	All risks except cyber security - Update DWQMP risk assessments for catchments, Water Treatment Plants and distribution networks	High	Jan-2023	Complete
FN03-02	Potential for Critical Control Points to be exceeded - Review CCP's and respective interlocks, shutdowns and alarms to ensure CCP's cannot be exceeded without operator knowledge. Consider hard coding max CCP values in PLC/SCADA	High	Jun-2024	Complete CCPs protected using correct permission framework.
FN03-03	Raw water supply - Public and livestock access to inner catchments: Review of Catchment Management Plan and consider limiting public and livestock access in close proximity to extraction points (inner catchments)	High	Dec-23	Complete Catchment Management Strategy adopted by Council. Action plan in progress
FN03-04	Raw water supply - Unsewered dwellings within inner catchments: Develop project with FCRC Regulatory Services group to review plumbing application and approval processes to include considerations to protect drinking water catchments and ongoing inspection and monitoring program for critical sites.	High	Jun-2025	In progress. Formal planning procedures being reviewed

FN03-05	Raw water supply - Increased pathogens from runoff: Implement event monitoring at extraction points during flood events	High	Aug-2023	Complete Event based monitoring implemented.
FN03-06	Insufficient multiple barriers to manage protozoa: Inform FCRC Water Strategy of risks for identification of further planning requirements e.g. installation of UV disinfection.	High	Dec-2023.	In progress. Water strategy issued for review.
FN03-07	Blue Green Algae toxins: Inform FCRC Water Strategy 2020 of risks for identification of further planning requirements e.g. development of Blue Green Algae Management Plan	High	Jun-2024	In progress. Water strategy issued for review.
FN03-08	Disinfection Byproducts in exceedance of ADWG Health Limits: Commission pilot trial of Advanced Catalytic Oxidation process to compare performance against other TOC removal processes and to determine CAPEX and OPEX costs	High	Jul-2023	Complete.
FN03-09	Chlorine overdose due to equipment or control failure: Complete chlorination system review commenced 2019 of all chlorination sites to ensure fail safes/interlocks are in place and PID's are available for all sites	High	Jun-2024	In progress. PIDs to be completed. Target date to be revised.
FN03-10	Insufficient documentation on operation and maintenance of WTP's: Update Operation and Maintenance Manuals	High	Jul-2023	Complete.
Hervey Bay – Burgowan WTP				
FN04-01	3.1 High pathogen loading from runoff: Update procedures to fill Cassava Dam during low risk periods and utilise while Burrum River is in flood (Cassava catchment more protected)	High	Nov-2023	Complete.
FN04-02	3.2 TEMA process not able to meet turbidity targets for protozoa removal: Review performance following finalisation of polymer dosing upgrade. Do not operate if performance remains insufficient.	High	Jun-2025	In progress. Awaiting validation.
FN04-03	3.3 TEMA process challenged by manganese and Blue Green Algae cell removal: Inform FCRC Water Strategy 2020 of performance and capacity constraints across Burgowan and Howard Water Treatment Plants to identify future planning and capital expenditure requirements to resolve these issues e.g. Hervey Bay Water Treatment Master Plan.	High	Dec-2023	In progress. Water strategy issued for review. Target date to be revised.
FN04-04	3.4 Disinfection Byproducts in exceedance of ADWG Health Limits: Inform FCRC Water Strategy 2020 with investigations and options analysis for management of DBP's delivered by Hunter H2o in 2019 (EDOCS #3815522, #3931456) Options include: · Enhanced coagulation	High	Dec-2023	In progress. Water strategy issued for review. Target date to be revised.

	· Clarifier replacement · Powder activated Carbon Dosing · Ion exchange · Advanced Catalytic Oxidation · Reservoir aeration. Also inform the FCRC Water Strategy to consider existing performance and capacity constraints in identifying overall strategic direction and necessary timeframes to rectify			
FN04-05	3.6 Sludge management capacity exceeded resulting in poor quality supernatant returned to head of plant (microbial and manganese risks): Design of sludge dewatering and management facilities	High	Dec-2022	Complete
FN04-06	3.7 Sludge management capacity exceeded resulting in poor quality supernatant returned to head of plant (microbial and manganese risks): Construction of sludge dewatering and management facilities	High	Dec-2026	In progress. Project has commenced and design in progress.
Hervey Bay – Howard WTP				
FN05-01	4 Risk of poor asset condition and process performance: See action #3.3 (Inform FCRC Water Strategy 2020 of performance and capacity constraints across Burgowan and Howard Water Treatment Plants to identify future planning and capital expenditure requirements to resolve these issues e.g. Hervey Bay Water Treatment Master Plan.) (INT2225-00, FN 04-03)	High	Dec-2023	In progress. Water strategy issued for review. Target date to be revised.
FN05-02	4.1 Disinfection Byproducts in exceedance of ADWG Health Limits. See action #3.4 Inform FCRC Water Strategy 2020 with investigations and options analysis for management of DBP's delivered by Hunter H2o in 2019 (eDOCS #3815522, #3931456) Options include: · Enhanced coagulation · Clarifier replacement · Powder activated Carbon Dosing · Ion exchange · Advanced Catalytic Oxidation · Reservoir aeration. Also inform the FCRC Water Strategy to consider existing performance and capacity constraints in identifying overall strategic direction and necessary timeframes to rectify (INT2225-00 FN04-04)	High	Dec-2023	In progress. Water strategy issued for review. Target date to be revised.
Maryborough – Teddington WTP				

FN06-01	5 High pathogen loading from runoff: Update procedures to ensure bulk water transfers from Mary River to Tinana Ck are subject to water quality testing including E.coli, especially during flood events (Tinana Ck catchment better protected that Mary River)	High	Jul-2023	Complete
FN06-02	5.1 Disinfection Byproducts in exceedance of ADWG Health Limits: Inform FCRC Water Strategy 2020 with investigations and options analysis for management of DBP's delivered by Hunter H2o in 2019 (eDOCS #3815522, #3931456) Options include: · Alternate water supply from Mary River (direct feed to WTP) · Enhanced coagulation · Powder activated Carbon Dosing · Ion exchange · Advanced Catalytic Oxidation	High	Dec-2023	In progress. Water strategy issued for review. Note – THM incident closed with Water Supply Regulator for Maryborough due to compliant results.
FN06-03	5.3 Sludge management capacity exceeded : Construction of sludge dewatering and management facilities	High	Dec-2024	In progress
Tiaro – Tiaro WTP				
FN06-01	5 High pathogen loading from runoff: Update procedures to ensure bulk water transfers from Mary River to Tinana Ck are subject to water quality testing including E.coli, especially during flood events (Tinana Ck catchment better protected that Mary River)	High	Jul-2023	Complete
FN07-02	6.1 Protozoa not removed through filtration: Inform FCRC Water Strategy of need to include additional solids removal process to prevent DAF process failure during periods of high turbidity as identified in Health Based Target project (LRV Assessment eDOCS #3929900)	High	Dec-2023	In progress. Water strategy issued for review. Target date to be revised.
FN07-03	6.2 Disinfection Byproducts in exceedance of ADWG Health Limits (only during high NOM events) : Inform FCRC Water Strategy 2020 with investigations and options analysis for management of DBP's delivered by Hunter H2o in 2019 (eDOCS #3815522, #3931456) Options include: · Powder activated Carbon Dosing	High	Dec-2023	In progress. Water strategy issued for review. Target date to be revised.

Following closure of the 2023/24 reporting period, the FCRC Water Strategy has been sufficiently progressed to allow a number of actions noted in the Risk Improvement Management Plan to be reviewed and updated. For risks which had an action of "inform the FCRC Water Strategy", Council is now in a position to update these with actions more specific in nature, including better defined planning projects and timing. It is Council's intention to review these in the 2024/25 reporting period through an amendment to the DWQMP.

4 VERIFICATION MONITORING PROGRAM

Requirements for the verification monitoring of drinking water quality is outlined in Council's Drinking Water Quality Management Plan.

4.1 Verification Monitoring Program Location

Requirements for verification monitoring of drinking water quality is outlined in Council's DWQMP. The quantity and location of monitoring sites is provided in the following table:

Table 1: Monitoring Site Details

Drinking water supply scheme	Quantity of verification monitoring sites	Locations of verification monitoring sites
Hervey Bay	22	See 7.3.2 DWQMP
Maryborough	12	See 10.9.1 DWQMP
Tiaro	4	See 11.7.2 DWQMP

4.2 Verification Monitoring Schedules

Table 2: Verification Monitoring Schedule for Hervey Bay, Maryborough and Tiaro

Physical and Chemical Parameters (*Aesthetic Parameter)	Guideline value (ADWG 2011) or Operational target	Frequency of testing Hervey Bay	Frequency of testing Maryborough	Frequency of testing Tiaro
Total Hardness *		Fortnightly	Fortnightly	Monthly
pH *	6.5 – 8.5	Fortnightly	Fortnightly	Monthly
Conductivity *	750 mg/L	Fortnightly	Fortnightly	Monthly
Total Chlorine	<5 mg/L	Weekly	Weekly	Monthly
Aluminium *	0.2 mg/L desirable (acid soluble)	Fortnightly	Fortnightly	Monthly
Turbidity *	No guidelin4e, but < 1 desirable for effective disinfection	Fortnightly	Fortnightly	Monthly
True Colour *	<15 HU	Fortnightly	Fortnightly	Monthly
Copper	<2 mg/L	Fortnightly	Fortnightly	Monthly
Iron *	<0.3 mg/L	Fortnightly	Fortnightly	Monthly
Manganese	<0.5 mg/L	Fortnightly	Fortnightly	Monthly
Zinc *	<3 mg/L	Fortnightly	Fortnightly	Monthly
Trihalomethanes	<0.25 mg/L	Quarterly	Quarterly	Quarterly
Chlorate	No guideline, however, <0.8mg/L recommended based on Queensland Health advice	Quarterly	N/A	N/A
Microbiological Parameters				
Heterotrophic plate count (37^0C) *	No guideline value.	Weekly	Weekly	Monthly

	<100 cfu/mL desirable for disinfected, filtered supply			
Total coliforms *	No health guideline set, monitor trends for system sanitation	Weekly	Weekly	Monthly
Escherichia coli	Zero in 100mL	Weekly	Weekly	Monthly

4.3 Verification Results

The following data is the verification monitoring for the Drinking Water Schemes for the 2023/24 reporting period as per the approved Drinking Water Quality Management Plan.

4.3.1 Hervey Bay Verification Results

Table 3: Hervey Bay 2023/24 Water Quality Compliance – ADWG Health Guidelines

Hervey Bay Retic Jul 2023 - Jun 2024	**Manganese**	**Copper**	***Escherichia coli***	**Total Chlorine**	**Total THMs**
	mg/L	**mg/L**	**MPN/100mL**	**mg/L**	**µg/L**
Maximum	0.000	0.334	0	3.70	426
Minimum	0.000	0.000	0	0.00	70
Average	0.000	0.008	0	1.57	183
DWQMP value	0.1 mg/L aesthetic 0.5mg/L health	2mg/L	Zero in 100mL	5mg/L	250µg/L
Health/non health related guideline value	Health	Health	Health	Health	Health
95th percentile	0.000	0.037	0	2.72	297
Number of Samples tested	594	594	1186	1187	542
Number of exceedances of guideline value	0	0	0	0	69
% Compliance with ADWG	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**87.3%***

*Drinking Water Incident lodged with Regulator.

Table 4: Hervey Bay 2023/24 Water Quality Compliance – ADWG Aesthetic Guidelines

Hervey Bay Retic Jul 2023 - Jun 2024	Aluminium	Iron	pH	Total Hardness	True Colour	Turbidity	Zinc	Chlorate
	mg/L	mg/L		$mgCaCO_3/L$	PtCo Units	NTU	mg/L	mg/L
Maximum	0.153	0.066	8.3	84	0	0.73	0.202	0.381
Minimum	0.000	0.000	7.1	42	0	0.00	0.000	0.078
Average	0.044	0.001	7.78	61	0	0.26	0.002	0.193
Guideline value, ADWG (2004)	0.2mg/L	0.3mg/L	6.5 - 8.5	60 - 200 acceptable	<15 TCU	<5 NTU	3mg/L	0.7mg/L
Health/non health related guideline value	non health	non health	non health	non health	non health	non health	non health	non health
95th percentile	0.071	0.000	8.00	71	0.0	0.53	0.013	0.345
Number of Samples tested	594	594	594	594	594	594	594	8
Number of exceedances of guideline value	0	0	0	0	0	0	0	0
% Compliance with ADWG	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

4.3.2 *Maryborough Verification Results*

Table 5: Maryborough 2023/24 Water Quality Compliance – ADWG Health Guidelines

Maryborough Retic Jul 2023 - Jun 2024	Manganese	Copper	*Escherichia coli*	Total Chlorine	Total THMs
	mg/L	mg/L	MPN/100mL	mg/L	µg/L
Maximum	0.001	0.416	0	4.2	385
Minimum	0.000	0.000	0	0.48	84
Average	0.000	0.009	0	1.77	212
Guideline value, ADWG (2011)	0.5mg/L health	2mg/L	Zero in 100mL	5mg/L	250µg/L
Health/non health related guideline value	Health	Health	Health	Health	Health
95th percentile	0.000	0.032	0	2.80	343
Number of Samples tested	312	312	634	640	126
Number of exceedances of guideline value	0	0	0	0	42
% Compliance with ADWG	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**66.7%***

*Drinking Water Incident lodged with Regulator.

Table 6: Maryborough 2023/24 Water Quality Compliance – ADWG Aesthetic Guidelines

Maryborough Retic Jul 2023 - Jun 2024	Aluminium	Iron	pH	Total Hardness	True Colour	Turbidity	Zinc
	mg/L	mg/L		$mgCaCO_3/L$	PtCo Units	NTU	mg/L
Maximum	0.143	0.127	8.4	158	0	0.68	0.095
Minimum	0.000	0.000	7.1	76	0	0.00	0.000
Average	0.012	0.003	7.79	101	0	0.10	0.001
Guideline value, ADWG (2004)	0.2mg/L	0.3mg/L	6.5 - 8.5	60 - 200 acceptable	<15 TCU	<5 NTU	3mg/L
Health/non health related guideline value	non health	non health	non health	non health	non health	non health	non health
95th percentile	0.027	0.015	8.20	136	0.0	0.36	0.011
Number of Samples tested	312	312	312	312	312	312	312
Number of exceedances of guideline value	0	0	0	0	0	0	0
% Compliance with ADWG	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

4.3.3 Tiaro Verification Results

Table 7: Tiaro 2023/24 Water Quality Compliance – ADWG Health Guidelines

Tiaro Retic Jul 2023 - Jun 2024	Manganese	Copper	*Escherichia coli*	Total Chlorine	Total THMs
	mg/L	mg/L	MPN/100mL	mg/L	µg/L
Maximum	0.000	0.009	0	1.89	196
Minimum	0.000	0.000	0	0.80	0
Average	0.000	0.001	0	1.39	145
Guideline value, ADWG (2011)	0.5mg/L health	2mg/L	Zero in 100mL	5mg/L	250µg/L
Health/non health related guideline value	Health	Health	Health	Health	Health
95th percentile	0.000	0.005	0	1.82	190
Number of Samples tested	44	44	44	44	18
Number of exceedances of guideline value	0	0	0	0	0
% Compliance with ADWG	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 8: Tiaro 2023/24 Water Quality Compliance – ADWG Aesthetic Guidelines

Tiaro Retic Jul 2023 - Jun 2024	**Aluminium**	**Iron**	**pH**	**Total Hardness**	**True Colour**	**Turbidity**	**Zinc**
	mg/L	**mg/L**		**mg$CaCO_3$/L**	**PtCo Units**	**NTU**	**mg/L**
Maximum	0.033	0.022	8.0	219	0	0.33	0.006
Minimum	0.000	0.000	7.2	59	0	0.00	0.000
Average	0.012	0.002	7.67	150	0	0.07	0.000
Guideline value, ADWG (2004)	0.2mg/L	0.3mg/L	6.5 - 8.5	60 - 200 acceptable	<15 TCU	<5 NTU	3mg/L
Health/non health related guideline value	non health	non health	non health	non health	non health	non health	non health
95th percentile	0.030	0.014	8.00	216	0.0	0.24	0.000
Number of Samples tested	44	44	44	44	44	44	44
Number of exceedances of guideline value	0	0	0	24	0	0	0
% Compliance with ADWG	**100.0%**	**100.0%**	**100.0%**	**45.5%***	**100.0%**	**100.0%**	**100.0%**

*Elevated hardness is caused by increased levels of calcium and magnesium in the source water. This is not a health risk attributed to elevated hardness, however there may be increased scaling effects.

5 EXCEEDANCES OF ADWG HEALTH GUIDELINES

Where water quality parameters exceed the health values as prescribed in the ADWG and approved DWQMP, the incident was reported to the Drinking Water Regulator when identified. Occurrences from the reporting period are identified in the following table:

Table 9: Reportable Drinking Water Quality Incidents

Drinking Water Supply Scheme	Description	Exceedance	Drinking Water Regulator Specific ID	Date reported	Date closed
Hervey Bay	Elevated THMs	>250µg/L	DWI-585-23-10181	21/02/2023	Open
Tiaro	Elevated Bromate	>0.02mg/L	DWI-585-23-10579	10/11/2023	13/02/2024
Maryborough	Elevated THMs	>250µg/L	DWI-585-24-10906	14/03/2024	11/07/2024

5.1 THM Exceedances – Hervey Bay and Maryborough

The basic cause of elevated trihalomethanes (THM) is due to high concentrations of Natural Organic Matter (NOM) in the raw water supply for the Fraser Coast region. While NOM is substantially removed through the treatment process, a sufficient portion remains to produce THMs following chlorine disinfection. The portion of NOM that remains in the water is typically low molecular weight and highly hydrophilic, which means typical treatment methods are largely ineffective at removing.

THM exceedances occur at times where raw water NOM is high and treatment process removal efficiency is lowered. An example of this would be a high water demand period while NOM characteristics are recalcitrant to removal.

Control measures currently available to minimise THM formation include:

- Maximising NOM removal through the treatment process
- Aeration of reservoirs where practicable. Aeration strips the THMs from the water within the aerated reservoir.
    - This has been implemented in the Maryborough water supply scheme which has been effective at reducing THM concentrations successfully and the long term incident has been closed with the Water Supply Regulator.
    - Capital projects are underway for the installation of further aeration sites in the Hervey Bay Scheme, with one complete in the 2023/24FY and one planned for completion in the 24/25FY
- Minimising chlorine dosing where practical.
    - Four new chlorine dosing stations were installed and commissioned in the Hervey Bay scheme. This will allow for more control over disinfection to decrease the peak chlorine requirements

Strategic planning and works to reduce THM concentrations to within ADWG limit consistently include:

- Guidance from the FCRC Water Strategy to consider options to decrease THM concentrations and outline the planning and expenditure moving forward.
- Further investigation into DOC removal technologies including MIEX® and nanofiltration.

FCRC continues to work through the options available in the THM Management Audit to realise improvements in THM levels in the short and medium term.

5.2 Bromate Exceedance

A bromate exceedance was identified and reported in the 2022/23 Drinking Water Quality Annual Report for the Tiaro Drinking Water Scheme, however, was not closed until the 2023/24 reporting period.

ADWG advises that bromate is unlikely to be found in Australian drinking water supplies unless ozonation is utilised in the treatment process. The Tiaro WTP does not include ozonation and therefore the detection of bromate is unexpected and improbable.

Further testing was carried out in the network for bromate with results returning a non-detect (<0.01mg/L) for all sites.

It was concluded that due to the lack of process where bromate could be formed in the Tiaro network, along with the results collected, that the initial positive results were not accurate and the risk of bromate in the Tiaro network is not credible.

6 CUSTOMER COMPAINTS

6.1 Customer Service Standards

The following data is reported annually to the relevant Queensland Government departments and provides a summary of performance statistics of the year 2022/23.

Service Standard / Performance Indicator	Target	Actual
Water at the point of delivery will meet National Health and Medical Research Council Health Guidelines for Australian Drinking Water	100%	98.15%[1]
Water quality at point of delivery (physical and chemical parameters) will meet National Health and Medical Research Council Aesthetic Drinking Water Guidelines	>95%	99.82%[2]
Minimum flow at the property boundary for 90% of connected properties (litres/minute)	>20	>20
Minimum water pressure at the property boundary for 99% of connected properties (on enquiry or complaint) (kPa)	>200	>200
Time for restoration of service within five hours – percentage of unplanned incidents	>95%	90.48%[3]
Drinking Water quality complaints – Odour and Taste (per 1,000 connections/year)	<5	1.98

[1]Due to THM exceedances in the Hervey Bay and Maryborough Drinking Water Schemes
[2]Due to hardness exceeding 200mg/L in the Tiaro drinking water scheme.
[3]Calculation has been amended, broken mains which are repaired without service interruptions are no longer included in the summary, which has dropped the percentage below the target. The current calculation is not an accurate reflection on the restoration of service and the target will be reviewed in future years

6.2 Water Quality Complaints

The following graphs provides data for taste / odour and colour complaints received for the Hervey Bay, Maryborough and Tiaro water supply schemes.