WIDE BAY water

A Business Unit of Fraser Coast Regional Council

Drinking Water Quality Management Plan Report

Financial Year 2020/21

eDOCS #4445530

water today water tomorrow

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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 2020/21 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 2.1 DWQMP Reviews

DWQMP reviews are required every two years. A review was completed in June 2019 and submitted to the Department of Natural Resources, Mines and Energy 8th August 2019.

The 2019 review outcomes were:

- Review, analysis and update of drinking water quality data
- Review and update of DWQMP structure and content for completeness and relevance
- Review and update of Risk Management Improvement Program (consolidated improvement plan for all schemes) with new actions based on review
- Review of roles, responsibilities and contact details.

The Department of Natural Resources, Mines and Energy approved the amended DWQMP 5 May 2020. The next review is due by 30 June 2022 as per the DWQMP approval letter.

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.

Table 1: 2019/20 DWQMP Audit Recommendations

Ref. Number	Description	Corrective Action Plans	
			Due Date
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**	30/06/2022
		Action for this already exists in the Drinking Water Quality Management Action Plan. Action # N7	
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**	30/06/2022
		Action for this already exists in the Drinking Water Quality Management Action Plan. Action # N7	
OFI 3	It is suggested that the recording of verification information to worksheets be automated by using electronic tablets;	**Action**	31/12/2021
		To be investigated for inclusion in the work force mobility project in "coast to cloud"	
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;	**Action**	Complete
		SCADA systems have appropriate information to indicate whether or not pump is operational for chlorine.	
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;	**Action**	30/09/2021
		Investigate a verification process for pH and Chlorine parameters.	
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;	**Action**	Complete
		Update procedure as required to include disinfection and cross contamination management	

Ref. Number	Description	Corrective Action Plans	
			Due Date
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;	**Action** The bulk chemical tender needs to include the requirement of mandatory QA certificates with the delivery of chemicals. Delivery dockets MUST be links to the QA certificate of the batch delivered.	31/12/2021
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;	**Action** The FCRC procurement policy is under review. Procurement Manager to investigate the implications of changing the wording of the policy.	Complete
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 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.	**Action** Review and clean-up of M drive to reinforce the quality awareness and quality management of WBW systems. WBW operators are working with the Quality Officer to formalise procedures into the DOC portal. Raw Water Quality Thresholds management to be included in the Treatment Plant Operator Manuals	31/12/2021
OFI 10	Monitoring Instruments: Undertake a regular check of operational calibration record checks to ensure that the instruments are being calibrated regularly and effectively;	**Action** Investigate options for implementation.	Complete

Ref. Number	Description	Corrective Action Plans	
			Due Date
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;	**Action**	31/12/2021
		Investigate a training needs specifically to the DWQMP and associated processes of the management of water treatment for new staff in key roles.	
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.	**Action**	Complete
		Move rain gauge to more appropriate location.	

3 Risk Management Improvement Program

The following table is a record of the DWQMP risk management improvement program as at June 2021, which has been summarised for clarity.

Table 2: Risk Management Improvement Program – DWQMT Action Plan

Ref	Hazard/ Hazardous Event	Actions	Priority	Target Date (revised)	Status as at 30/6/2021
WBW Region – Network and WTPs					
N7	Establish permanent sample sites for sampling drinking water in all WBW reticulation systems	Identify and establish permanent sample sites for sampling drinking water. Operations Manager to define project – how we do it, cost involved and identification of sites.	Low	30/06/2022	In progress
N6	Inefficient distribution system - reservoirs pump stations, chlorine sensors and re-chlorination stations	Undertake review of all network chlorine analysers and dose stations to check suitability of locations and equipment	Medium	31/12/2022	In progress
CYBER SECURITY					
Under s575 of the Water Supply (Safety and Reliability) Act 2008 cybersecurity information is not published.					
ALL WATER TREATMENT PLANTS					
2	All risks except cyber security	Update DWQMP risk assessments for catchments, Water Treatment Plants and distribution networks	High	Jan 22	In progress
2.1	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	Dec-21	In progress
2.2	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	Jun-22	In Progress
2.3	Raw water supply - Unsewered dwellings within inner catchments	Review provisions in FCRC planning approval process to protect drinking water catchments	Med	Jun-20	Complete

Ref	Hazard/ Hazardous Event	Actions	Priority	Target Date (revised)	Status as at 30/6/2021
2.4	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.	Med	Dec-21	In progress
2.5	Raw water supply -Increased pathogens from runoff	Implement event monitoring at extraction points during flood events	Med	Dec-21	In Progress
2.6	Protozoa not removed through filtration	Update procedures to target turbidity recommendations in ADWG	High	Dec-20	Complete
2.7	Protozoa not removed through filtration	Develop statistical reporting framework to assess filter performance against ADWG	High	Mar-20	Complete
2.8	Protozoa not removed through filtration	Update procedures to include detailed filter performance/condition inspection and coagulation optimisation requirements	High	Dec-20	Complete
2.9	Insufficient multiple barriers to manage protozoa	Inform FCRC Water Strategy 2020 of risks for identification of further planning requirements e.g. installation of UV disinfection.	Med	Jul 2022	In Progress
2.10	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	Med	Jun 2022	In Progress
2.11	Potential for instruments to be out of calibration and calibration procedures to result in erroneous values recorded	Review instrument calibration/maintenance scheduling and procedures	Med	Dec-20	Complete
2.12	Disinfection by-products 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	Jun-22	In Progress
2.13	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-22	In progress
2.14	Insufficient documentation on operation and maintenance of WTP's	Update Operation and Maintenance Manuals	Med	Jun-22	In progress
HERVEY BAY – BURGOWAN WTP SPECIFIC					

Ref	Hazard/ Hazardous Event	Actions	Priority	Target Date (revised)	Status as at 30/6/2021
3	High turbidity from ballasted floc process	Investigate zeta potential of coagulated water before and after sand addition. Action: Review of the literature concludes that ballasting agent does not affect coagulation chemistry.	Med	Oct-21	Complete
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	Dec-21	In progress
3.2	TEMA process not able to meet turbidity targets for protozoa removal	Review performance following finalisation of polymer doing upgrade. Do not operate if performance remains insufficient.	Med	Jun-22	Yet to commence
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	Jun-22	In progress
3.4	Disinfection by-products in exceedance of ADWG Health Limits	Inform FCRC Water Strategy 2020 with investigations and options analysis for management of DBP's delivered by consultant 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	High	Jun-22	In progress
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	Jun-22	Yet to commence

Ref	Hazard/ Hazardous Event	Actions	Priority	Target Date (revised)	Status as at 30/6/2021
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	Jun-23	Follows 3.6
HERVEY BAY – HOWARD WTP SPECIFIC					
4	Risk of poor asset condition and process performance	See action #3.3			
4.1	Disinfection by-products in exceedance of ADWG Health Limits	See action #3.4			
MARYBOROUGH – TEDDINGTON WTP SPECIFIC					
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	Dec-21	Yet to commence
5.1	Disinfection By-products in exceedance of ADWG Health Limits	Inform FCRC Water Strategy 2020 with investigations and options analysis for management of DBP's delivered by consultant 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	Jul-22	In Progress
5.2	Sludge management capacity exceeded	Design of sludge dewatering and management facilities	High	Jun-22	In Progress
5.3	Sludge management capacity exceeded	Construction of sludge dewatering and management facilities	High	Jun-23	Follows 5.2
TIARO WTP SPECIFIC					

Ref	Hazard/ Hazardous Event	Actions	Priority	Target Date (revised)	Status as at 30/6/2021
6	High pathogen loading from runoff	Update procedures to formalise practice of shutting down during flood periods while treated water storage volumes allow.	High	Dec-21	Yet to commence
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	Jun-22	In Progress
6.2	Disinfection By-products 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 Consultant in 2019 (EDOCS #3815522, #3931456) Options include: · Powder activated Carbon Dosing	High	Jun-22	In Progress

4 Verification Monitoring Program

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 3: Monitoring Site Details

Drinking water supply scheme	Quantity of verification monitoring sites	Locations of verification monitoring sites
Hervey Bay	22	See 9.3.2 DWQMP
Maryborough	12	See 10.9.1 DWQMP
Tiaro	4	See 11.7.2 DWQMP

Verification monitoring parameters and frequencies are outlined below:

Table 4: Verification Monitoring Schedule

Physical and Chemical Parameters	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 guideline, 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
Microbiological Parameters				
Heterotrophic plate count (37^0C) *	No guideline value <100 cfu/mL desirable for disinfected, filtered supply	Weekly	Weekly	Monthly
Total coliforms *	No health guideline set, monitor trends for system sanitation	Weekly	Weekly	Monthly
Escherichia coli	Zero in 100mL	Weekly	Weekly	Monthly

4.1 Verification Results

The water quality monitoring data captured throughout the reporting period is summarised in the following table.

4.1.1 Hervey Bay Drinking Water Supply Scheme

Table 5: Hervey Bay 2020-21 Water Quality Compliance - ADWG Health Guidelines

Hervey Bay Retic Jul 2020 - Jun 2021	Manganese	Copper	*Escherichia coli*	Total Chlorine	Total THMs*
	mg/L	mg/L	MPN/100mL	mg/L	µg/L
Maximum	0.016	0.233	0	4.40	422
Minimum	0.000	0.000	0	0.04	96
Average	0.000	0.006	0	1.29	244
Guideline value, ADWG (2011)	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	0.003	0.013	0	2.87	385
Number of Samples tested	600	600	1197	1197	92
Number of exceedances of guideline value	0	0	0	0	40
% Compliance with ADWG	**100%**	**100%**	**100.0%**	**100.0%**	**56.5%**

**Total THMs - WBW is continuing with operational and capital programs to improve THM levels in the network. There is an open incident for THM exceedances in the Hervey Bay network and the regulator is aware of the issue and WBW's improvement plans.*

Table 6: Hervey Bay 2020/21 Water Quality Compliance - ADWG Aesthetic Guidelines

Hervey Bay Retic Jul 2020 - Jun 2021	Aluminium	Iron	pH	Total Hardness	True Colour	Turbidity	Zinc
	mg/L	mg/L		$mgCaCO_3/L$	PtCo Units	NTU	mg/L
Maximum	0.262	0.157	8.4	91	0	3.50	0.167
Minimum	0.000	0.000	7.2	23	0	0.06	0.000
Average	0.073	0.003	7.79	71	0	0.19	0.003
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	0.125	0.014	8.10	81	0.0	0.33	0.011
Number of Samples tested	577	600	600	600	600	601	600
Number of exceedances of guideline value	6	0		0	0	0	0
% Compliance with ADWG	**99.0%***	**100%**	**100%**	**100%**	**100%**	**100.0%**	**100%**

**Aluminium – Differing testing methodologies between the onsite laboratory and our NATA certified laboratory have brought to our attention discrepancies in the values which require operational teams to assess and align measurements*

4.1.2 Maryborough Drinking Water Supply Scheme

Table 7: Maryborough 2020/21 Water Quality Compliance - ADWG Health Guidelines

Maryborough Retic Jul 2020 - Jun 2021	Manganese	Copper	*Escherichia coli**	Total Chlorine	Total THMs
	mg/L	mg/L	MPN/100mL	mg/L	µg/L
Maximum	0.008	0.098	1	3.40	248
Minimum	0.000	0.000	0	0.47	95
Average	0.000	0.009	0	1.57	162
Guideline value, ADWG (2011)	0.1mg/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	0.003	0.026	0	2.40	207
Number of Samples tested	344	344	706	702	51
Number of exceedances of guideline value	0	0	1*	0	0
% Compliance with ADWG	**100%**	**100%**	**99.9%**	**100%**	**100%***

**An E.coli measurement was recorded in the Maryborough scheme 15/6/2020 and reported to the regulator. Emergency flushing procedures undertaken; retesting conducted. Further investigation confirmed no E.coli in the reticulation system, and the result was likely due to contamination of the sample at the sample site. Incident closed out with regulator 2/7/2020. Incident ID DWI -585-21-08988*

Table 8: Maryborough 2020/21 Water Quality Compliance - ADWG Aesthetic Guidelines

Maryborough Retic Jul 2020 - Jun 2021	Aluminium	Iron	pH	Total Hardness	True Colour	Turbidity	Zinc
	mg/L	mg/L		$mgCaCO_3/L$	PtCo Units	NTU	mg/L
Maximum	0.099	0.108	8.4	110	0	4.08	0.026
Minimum	0.000	0.000	7.2	64	0	0.00	0.000
Average	0.022	0.009	7.80	93	0	0.16	0.002
Guideline value, ADWG (2011)	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	0.061	0.028	8.20	106	0.0	0.28	0.009
Number of Samples tested	344	344	344	344	344	347	344
Number of exceedances of guideline value	0	0	0	0	0	0	0
% Compliance with ADWG	**100%**	**100%**	**100%**	**100%**	**100%**	**100.0%**	**100%**

4.1.3 Tiaro Drinking Water Supply Scheme

Table 9: Tiaro 2020/21 Water Quality Compliance - ADWG Health Guidelines

Tiaro Retic Jul 2020 - Jun 2021	Manganese	Copper	*Escherichia coli*	Total Chlorine*	Total THMs
	mg/L	mg/L	MPN/100mL	mg/L	µg/L
Maximum	0.012	0.033	0	1.80	199
Minimum	0.000	0.000	0	0.88	75
Average	0.000	0.002	0	1.30	125
Guideline value, ADWG (2011)	0.1mg/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	0.010	0	1.76	177
Number of Samples tested	48	48	49	48	166
Number of exceedances of guideline value	0	0	0	0	0
% Compliance with ADWG	**100%**	**100%**	**100%**	**100%**	**100%**

Table 10: Tiaro 2020/21 Water Quality Compliance - ADWG Aesthetic Guidelines

Tiaro Retic Jul 2020 - Jun 2021	Aluminium	Iron	pH	Total Hardness	True Colour	Turbidity	Zinc
	mg/L	mg/L		$mgCaCO_3/L$	PtCo Units	NTU	mg/L
Maximum	0.090	0.196	8.1	139	0	0.34	0.018
Minimum	0.000	0.000	7.7	50	0	0.08	0.000
Average	0.000	0.000	7.90	94	0	0.20	0.000
Guideline value, ADWG (2011)	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	0.073	0.000	8.10	138	0.0	0.31	0.008
Number of Samples tested	48	48	48	48	48	48	48
Number of exceedances of guideline value	0	0	0	0	0	0	0
% Compliance with ADWG	**100%**	**100%**	**100%**	**100%**	**100%**	**100.0%**	**100%**

5 Exceedances of ADWG Health Guidelines

5.1 Exceedance Summary

Where water quality parameters exceed the health values as prescribes in the ADWG, the incident was reported to the Drinking Water Regulator. Occurrences from the reporting period, or open from previous periods are outlined in the following table:

Table 11: Water Quality Parameter Exceedance Summary

Drinking Water Supply Scheme	Description	Exceedance	Drinking Water Regulator specific ID	Date reported	Date closed
Maryborough	Elevated THMs	>250µg/L	TBC	28/7/2014	Open
Hervey Bay	Elevated THMs	>250µg/L	TBC	13/4/2017	Open
Maryborough	E.coli exceedance	1MPN/100ML	DWI -585-21-08988	15/06/2021	02/07/2021

5.2 THM Exceedances

The cause of elevated trihalomethanes (THM) is due to high concentrations of Natural Organic Matter (NOM) in the raw water supplies for Hervey Bay and Maryborough. While NOM is substantially removed through the treatment process, a sufficient amount remains to produce THM's following chlorine addition for disinfection.

THM exceedances occur at times where raw water NOM is high and when treatment processes removal efficiency is lower, for example during high demand conditions or where NOM characteristics are recalcitrant to removal.

Control measures to minimise THM formation currently implemented include:

- Maximising NOM removal through the treatment process
- Minimising Chlorine residual where practical
- Aeration of reservoirs in Maryborough. While aeration strips THM's within the reservoirs, THM reformation occurs downstream.

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

- The FCRC Water Strategy 2020 review (due to commence 2021) will consider options to decrease THM formation and outline the planning and expenditure necessary moving forward
- An Advanced Catalytic Oxidation pilot plant is being trialed to evaluate new treatment technologies
- A chlorine model has been completed for Hervey Bay drinking water supply allowing identification of additional rechlorination sites to decrease the magnitude of rechlorination dose rates throughout the network. Construction of additional rechlorination sites has been planned to occur over the 2020/21 and 2021/2022 financial years
- A chlorine model for Maryborough is to be completed prior to completion of the FCRC Water Strategy 2020 review (due to commence 2021) to allow planning and expenditure as necessary moving forward.

A THM Management Audit report was completed June 2020 which highlighted options and opportunities for improvement of THM levels in the short to medium term. WBW&WS has adopted the recommendations of the report and is in the process of implementing into the capital and operational programs.

It should be noted that programs in place have reduced THMs in the Maryborough scheme to the extent that no new reportable THM incidents occurred in the 2020/21 financial year.

5.3 E. coli Detection

An E.coli detection of 1MPN, accompanied by adequate chlorine residual, was recorded in the Maryborough scheme 15/6/2020 and reported to the regulator. Emergency flushing procedures undertaken; retesting conducted. Further investigation confirmed no E.coli in the reticulation system, and that there was adequate chlorine residual. It was concluded that the result was likely due to contamination of the sample at the sample site. The incident was closed out with regulator 2/7/2020. Incident ID DWI -585-21-08988

6 Customer Complaints

6.1 Customer Service Standards

Customer service standards regarding water quality and continuity of supply were fully achieved during the reporting period, with the exception of incidents mentioned previously, as shown in the following table:

Table 12: Supply Process and Water Quality Performance 2020/21

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%	99.3% (#1)
Water quality at point of delivery (physical and chemical parameters) will meet National Health and Medical Research Council Aesthetic Drinking Water Guidelines	>95%	99.9%
Minimum flow (available at boundary for 90% of the year) 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%	100%
Drinking Water quality complaints – Odour and Taste (per 1,000 connections/year)	<5	2.16

#1 – 40 parameter exceedances for THMs

6.2

6.2 Water Quality Complaints

The following graph indicates the water quality complaints for taste, odor and colour received for Hervey Bay, Maryborough and Tiaro for the 2020/21 financial year.