

Torres Strait Island
REGIONAL COUNCIL

Engineering Services

DRINKING WATER QUALITY MANAGEMENT PLAN

ANNUAL REPORT 2019-20

Torres Strait Island Regional Council
Service Provider SP500

DWQMP Annual Report 2019-20
ECM # 297893

This report has been prepared in accordance with the Drinking Water Quality Management Plan Report Guidance Note.

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1 Introduction

This is the Drinking Water Quality Management Plan (DWQMP) Annual Report for Torres Strait Island Regional Council (TSIRC) for the financial year 2019-2020.

TSIRC is a registered service provider, identification (SPID) number 500, serving 4,520 people across 15 communities on 14 islands in the Torres Strait. Implementation of the approved DWQMP ensures safe drinking water in order to protect public health. An overview of the water services provided by TSIRC are listed in Table 1.

Table 1: TSIRC Overview

Population Served	No. of Raw Water Storage Facilities
4,520	12 Lagoons
No. of Treated Water Storage Facilities	Length of Delivery Mains
19 Reservoirs	105 km
No. of Sampling Locations	No. of Customer Complaints
15 communities x 5 = 75	1

This report summarises compliance with the approved plan over the financial year and includes:

- Activities undertaken during the year in operating the drinking water schemes
- Drinking water quality results for the year
- Summary of events that affected water quality during the year
- DWQMP review findings

This report is submitted to the Queensland Water Supply Regulator (Department of Natural Resources, Mines and Energy) and is made available to the public through our website or for inspection upon request at council office.

2 Summary of Schemes Operated

Table 2 summarises the drinking water schemes operated by TSIRC.

Table 2: Scheme Details

Scheme Name	Population Served	Connections	Catchment Characteristics	Treatment Process
Badu	813	234	3 x Wells (Ground water)	Aeration Coagulation (Alum) Chlorine Disinfection pH adjustment Media filtration
Boigu	271	93	3 x Desalination Units Lagoon (rainfall)	Clarifier Media Filtration RO Desalination Chlorine Disinfection
Dauan	191	63	4 x Wells Lagoon (rainfall)	Media Filtration Chlorine Disinfection
Erub	328	126	1 x Well Lagoon (rainfall) 1 x Desalination Unit (mobile)	Clarifier Sand Filtration Chlorine Disinfection pH Adjustment
Iama	319	101	2 x Desalination Units 1 x Desalination Unit (mobile)	Settling Tank Media Filtration RO Desalination
Kirriiri	268	80	1 x Well Torres Shire Council (TSC) Water Supply	Ultra-Filtration by TSC Media Filtration Chlorine Disinfection Bag filtration
Kubin	187	92	1 x Well 1 x Weir Lagoon (rainfall)	Media Filtration Chlorine Disinfection
Mabuiag	210	53	1 x Desalination Unit (mobile) Lagoon (rainfall)	Media Filtration Chlorine Disinfection
Masig	270	109	1 x Desalination Unit (mobile) Lagoon (rainfall)	Settling Tank Media Filtration RO Desalination Chlorine Disinfection
Mer	453	137	3 x Desalination Unit 1 x Desalination Unit (mobile) Lagoon (rainfall)	Settling Tank Media Filtration RO Desalination Bag filtration
Poruma	167	82	1 x Desalination Unit (mobile) Lagoon (rainfall)	Settling Tank Media Filtration RO Desalination
Saibai	465	109	Lagoon (rainfall)	Media Filtration

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Scheme Name	Population Served	Connections	Catchment Characteristics	Treatment Process
				Chlorine Disinfection Bag Filtration
St Pauls	248	107	3 x Well 1 x Weir 1 x Desalination Units (mobile)	Media Filtration Chlorine Disinfection
Ugar	85	36	2 x Wells Lagoon (rainfall) 1 x Desalination Unit (mobile)	Media Filtration Chlorine Disinfection
Warraber	245	80	Lagoon (rainfall) 1 x Desalination Unit 1 x Desalination Unit (mobile)	Media Filtration Chlorine Disinfection
<i>Note: Mobile desalination units are listed in the location they were set up on 30 June 2020</i>				

3 Implementation of Drinking Water Quality Management Plan

Implementation of the DWQMP is an ongoing process, and an assessment of the implementation actions in 2019-20 has been undertaken.

There have been slight improvements in the following DWQMP areas in the 2019-20 year:

- Risk Management Improvement Program
- Operational and verification monitoring
- Review and continual improvements

When compared with previous annual performance, commitment to implementation is demonstrated in the areas of information gathering and assessment of risks. Further work is still needed in areas such as operational and maintenance procedures, hazard identification, and incident management.

3.1 Risk Management Improvement Plan

The Risk Management Improvement Plan (RMIP) captures actions for improving the management of risks identified within the DWQMP.

The actions implemented from the RMIP for the reporting period 1 July 2019 to 30 June 2020 are outlined in Table 3.

Table 3: Implementation Status of Risk Management Improvement Program

Scheme Name	Ref	Improvement Actions Taken	Status
Hammond	RAM-18-124	Install online turbidity meter integrated to SCADA	Commissioned October 2019
Mer	RAM-18-042	Install automated duty/standby chlorine dosing and monitoring linked to SCADA	Commissioned and Online October 2019
Masig	RAM-18-041	Install automated duty/standby chlorine dosing and monitoring linked to SCADA	Commissioned and Online October 2019
Ugar	RAM-18-044	Install automated duty/standby chlorine dosing and monitoring linked to SCADA	Commissioned and Online October 2019
All	REC-18-02	Update DWQMP to identify preventative measures that are relevant to each scheme	Completed February 2020
St Pauls	REC-18-007	Update DWQMP and supporting documents to reflect the source of water for the drinking water scheme	Completed February 2020
All	REC-18-008	Review DWQMP to confirm that the catchment characteristics are documented accurately, and all sources of water are identified	Completed February 2020
All	OFI-18-012	Correct minor inconsistencies in documentation	Completed February 2020
Warraber	RAM-19-141	Improved maintenance activities implemented through ensuring fire breaks onsite	Ongoing as required onsite
Ugar	RAM-19-144		
St Pauls	RAM-19-140		
Saibai	RAM-19-137		
Poruma	RAM-19-142		
Mer	RAM-19-146		
Masig	RAM-19-143		
Mabuiag	RAM-19-138		
Kubin	RAM-19-139		
Erub	RAM-19-145		
Dauan	RAM-19-136		
Boigu	RAM-19-135		

During early-mid 2020 several significant impacts were experienced as a result of Covid-19 pandemic. The most prevalent impacts were due to restrictions in travel and as a result several actions from the RMIP have been deferred. Additional details of completed, deferred and future planned actions under the RMIP are included in Appendix A.

3.2 Water Operator Training

A total of 10 TSIRC employees successfully completed a Cert III Water & Wastewater Treatment Operations. Funding for the training is provided through the Major Infrastructure Program 6 (MIP6). This training provides the knowledge and skills required to monitor, operate, and maintain scheme operations. Further Cert II and Cert III training is planned to be conducted in 2021. Funding limitations and the remote location of operators makes Certificate II and III training for all staff difficult.

TSIRC's eLearning (online) platform is available for use for in-house training programs and includes specific training on the DWQMP. During 2019-2020 financial year training for the drinking water quality management plan was completed by multiple staff from across the business including engineering services, environmental and health services, and the executive office.

Since the roll out of the eLearning platform in 2018 additional modules have been included focusing on training in the key aspects of maintenance for filtration, disinfection monitoring,

sampling and calibration, water treatment log sheet completion and details on the importance of safe water.

3.3 Water Log Sheet Compliance

Tracking the completion of log sheets is a method used by TSIRC to ensure operations and maintenance activities as part of the DWQMP. This process has been in place for three consecutive years. Figure 1 reveals the 2019-2020 completion rate, which ranges between 80-100% across all water schemes. When compared to historical completion rates, this demonstrates steady improvements. Typically, log sheet completion is lower over the Christmas closure period.

As of 1 July 2020, all log sheet data is being input directly into the **SWIM Local Operations** database to move away from hand-written logsheets.

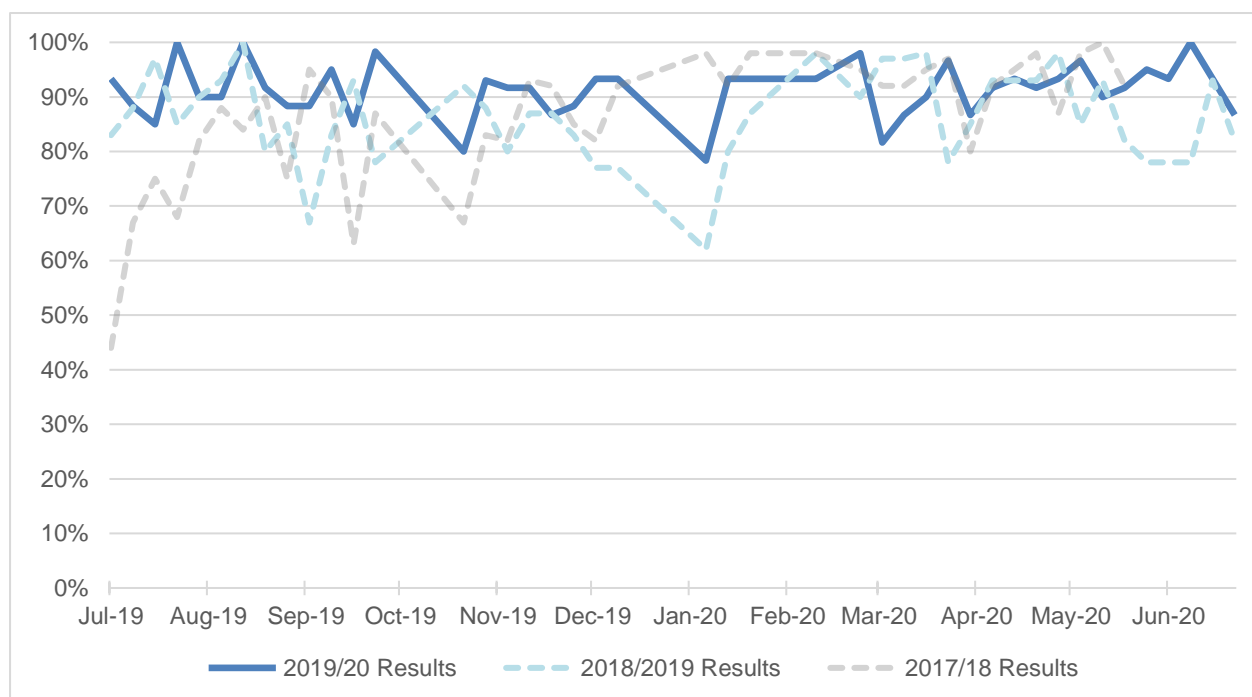


Figure 1 Overall Log sheet Compliance 2019-20

3.4 Future Projects to Improve Water Quality

In addition to items in the RMIP, the following capital projects have been planned for 2020-21 demonstrating TSIRC's commitment to improving water quality:

Division	Project	Project Dates
Badu	Construct New Ultra Filtration Plant	2021 – Q2 to Q3
Boigu	Upgrade Clarifier – Increase capacity to Improve settling time	2021 – Q3 to Q4
Dauan	WTP Upgrade <ul style="list-style-type: none"> - Increase media filter size to optimise treatment flow rate - Replace media to optimise filtration capacity - Install bag filters Construct New Rising Main - Redirect Well 1, 2 & 3 to lagoon, have 1 treatment location (WTP)	2021 – Q1 to Q3
Erub	Construct New Ultra Filtration Plant	2021 – Q1 to Q2
Iama	Upgrade Clarifier – Increase capacity to Improve settling time	2021 – Q1 to Q2
Kubin	WTP Upgrade <ul style="list-style-type: none"> - Increase media filter size to optimise treatment flow rate - Replace media to optimise filtration capacity - Install bag filters 	2021 - Q2 to Q4
Mabuiag	WTP Upgrade <ul style="list-style-type: none"> - Increase media filter size to optimise treatment flow rate - Replace media to optimise filtration capacity - Install bag filters 	2021 – Q2 to Q3
Poruma	WTP Upgrade <ul style="list-style-type: none"> - Increase media filter size to optimise treatment flow rate - Replace media to optimise filtration capacity - Install bag filters 	2021 – Q3 to Q4
Saibai	WTP Upgrade <ul style="list-style-type: none"> - Increase media filter size to optimise treatment flow rate 	2021 – Q1
St Pauls	WTP Upgrade <ul style="list-style-type: none"> - Increase media filter size to optimise treatment flow rate - Replace media to optimise filtration capacity - Install bag filters 	2021 – Q2 to Q4
Ugar	Install Bag Filters at Bore 1 & 2	2021 – Q1 to Q2

4 Verification Monitoring

The approved DWQMP requires 6-monthly sampling for all schemes for metals, nutrients, anions and physical properties. Table 44 summarises the water quality sample results from the Cairns Laboratory.

Table 4: Drinking Water Quality Performance - Verification Monitoring

Scheme name	Parameter	Water quality criteria	No. of samples required to be collected per year**	No. of samples collected and tested	No. of non-compliant samples	Comments	
Badu	Alkalinity	-	2	1	0		
	Calcium	-	0	1	0		
	Chloride	250 mg/L	2	1	0		
	Colour	≤ 15.0 Hu	2	1	0		
	Conductivity	< 1000 μS/cm	2	1	0		
	Fluoride	1.5 mg/L	2	1	0		
	Hardness	60-200 mg/L CaCO ₃	2	1	1 (16/06/2020)	Reported result was <60mg/L CaCO ₃ which is below ADWG for aesthetics, not reported to the regulator since aesthetic quality	
	Heterotrophic Plate Count (HPC)	20 – 200 /mL	2	5	0		
	Iron	0.3 mg/L	2	1	0		
	Magnesium	-	0	1	0		
	Manganese	< 0.05 mg/L	2	1	0		
	pH	6.5 – 8.5	2	1	0		
	Potassium	-	0	1	0		
	Silicon	-	0	1	0		
	Sodium	180 mg/L			1	0	
	Sulphate	≤ 250 mg/L	2	1	0		
Total Dissolved Salts	-	0	1	0			

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	Turbidity	< 1 NTU	2	1	0	
Boigu	Alkalinity	-	2	1	0	
	Calcium	-	0	1	0	
	Chloride	250 mg/L	2	1	0	
	Colour	≤ 15.0 Hu	2	1	0	
	Conductivity	< 1000 μS/cm	2	1	0	
	Fluoride	1.5 mg/L	2	1	0	
	Hardness	60-200 mg/L CaCO ₃	2	1	1 (16/06/2020)	Reported result was <60mg/L CaCO ₃ which is below ADWG for aesthetics, not reported to the regulator since aesthetic quality
	Heterotrophic Plate Count (HPC)	20 – 200 /mL	2	8	0	
	Iron	0.3 mg/L	2	1	0	
	Magnesium	-	0	1	0	
	Manganese	< 0.05 mg/L	2	1	0	
	pH	6.5 – 8.5	2	1	0	
	Potassium	-	0	1	0	
	Silicon	-	0	1	0	
	Sodium	180 mg/L		1	0	
	Sulphate	≤ 250 mg/L	2	1	0	
	Total Dissolved Salts	-	0	1	0	
Turbidity	< 1 NTU	2	1	0		
Erub	Heterotrophic Plate Count (HPC)	20 – 200 /mL	2	5	0	
Masig	Alkalinity	-	2	1	0	
	Calcium	-	0	1	0	
	Chloride	250 mg/L	2	1	0	
	Colour	≤ 15.0 Hu	2	1	0	
	Conductivity	< 1000 μS/cm	2	1	0	

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	Fluoride	1.5 mg/L	2	1	0	
	Hardness	60-200 mg/L CaCO ₃	2	1	1 (16/06/2020)	Reported result was <60mg/L CaCO ₃ which is below ADWG for aesthetics, not reported to the regulator since aesthetic quality
	Heterotrophic Plate Count (HPC)	20 – 200 /mL	2	6	0	
	Iron	0.3 mg/L	2	1	0	
	Magnesium	-	0	1	0	
	Manganese	< 0.05 mg/L	2	1	0	
	pH	6.5 – 8.5	2	1	0	
	Potassium	-	0	1	0	
	Silicon	-	0	1	0	
	Sodium	180 mg/L		1	0	
	Sulphate	≤ 250 mg/L	2	1	0	
	Total Dissolved Salts	-	0	1	0	
	Turbidity	< 1 NTU	2	1	0	
Poruma	Alkalinity	-	2	1	0	
	Calcium	-	0	1	0	
	Chloride	250 mg/L	2	1	0	
	Colour	≤ 15.0 Hu	2	1	0	
	Conductivity	< 1000 μS/cm	2	1	0	
	Fluoride	1.5 mg/L	2	1	0	
	Hardness	60-200 mg/L CaCO ₃	2	1	1 (16/06/2020)	Reported result was <60mg/L CaCO ₃ which is below ADWG for aesthetics, not reported to the regulator since aesthetic quality
	Heterotrophic Plate Count (HPC)	20 – 200 /mL	2	4	0	
	Iron	0.3 mg/L	2	1	0	
	Magnesium	-	0	1	0	
	Manganese	< 0.05 mg/L	2	1	0	

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	pH	6.5 – 8.5	2	1	0	
	Potassium	-	0	1	0	
	Silicon	-	0	1	0	
	Sodium	180 mg/L		1	0	
	Sulphate	≤ 250 mg/L	2	1	0	
	Total Dissolved Salts	-	0	1	0	
	Turbidity	< 1 NTU	2	1	0	
Saibai	Alkalinity	-	2	1	0	
	Calcium	-	0	1	0	
	Chloride	250 mg/L	2	1	0	
	Colour	≤ 15.0 Hu	2	2	1 (26/08/2019)	Result was 22 HU. Not reported to the regulator since AQWG value is for aesthetics.
	Conductivity	< 1000 µS/cm	2	1	0	
	Fluoride	1.5 mg/L	2	1	0	
	Hardness	60-200 mg/L CaCO ₃	2	1	1 (26/8/2019)	Reported result was <60mg/L CaCO ₃ which is below ADWG for aesthetics, not reported to the regulator since aesthetic quality
	Iron	0.3 mg/L	2	1	0	
	Magnesium	-	0	1	0	
	Manganese	< 0.05 mg/L	2	1	0	
	pH	6.5 – 8.5	2	1	1 (26/08/2019)	Non-compliant result was pH 9.3, not reported as value is for aesthetics (pH >11 considered extreme and may affect health)
	Potassium	-	0	1	0	
	Silicon	-	0	1	0	
	Sodium	180 mg/L		1	0	
	Sulphate	≤ 250 mg/L	2	1	0	
	Total Dissolved Salts	-	0	1	0	
	Turbidity	< 1 NTU	2	1	1 (26/08/2019)	Non-compliant result was 32 NTU, not reported to regulator since aesthetic quality,

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						however <1 NTU is the target for effective disinfection
St Pauls	Heterotrophic Plate Count (HPC)	20 – 200 /mL	2	5	0	
Warraber	Alkalinity	-	2	1	0	
	Calcium	-	0	1	0	
	Chloride	250 mg/L	2	1	0	
	Colour	≤ 15.0 Hu	2	1	0	
	Conductivity	< 1000 μS/cm	2	1	0	
	Fluoride	1.5 mg/L	2	1	0	
	Hardness	60-200 mg/L CaCO ₃	2	1	1 (03/09/2019)	Reported result was <60mg/L CaCO ₃ which is below ADWG for aesthetics, not reported to the regulator since aesthetic quality
	Heterotrophic Plate Count (HPC)	20 – 200 /mL	2	5	0	
	Magnesium	-	0	1	0	
	pH	6.5 – 8.5	2	1	0	
	Potassium	-	0	1	0	
	Silicon	-	0	1	0	
	Sodium	180 mg/L		1	0	
	Sulphate	≤ 250 mg/L	2	1	0	
	Total Dissolved Salts	-	0	1	0	
Turbidity	< 1 NTU	2	1	0		
*(i.e. ADWG health guideline value) **(per approved DWQMP)						

Interim facilities for monitoring and testing were established to mitigate impacts to water services during the Covid-19 pandemic. Due to logistical issues the six-monthly testing for Dauan, Erub, lama, Kirriri, Kubin and Mabuiaq have not been included. The testing has been re-scheduled to occur in Feb 2021.

4.1 E. coli Results

Error! Reference source not found. summarises the E. coli results for the year to June 2020. Compliance has improved from prior years, with 12 out of the 15 schemes having 100% of samples complying at the end of the year which is comparable to 13 out of 15 in 2019 and an improvement on 11 in 2018 and 9 in 2017.

Table 5: E. coli Results

Drinking Water Scheme	Badu											
Year	2019 – 2020											
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	5	0	0	5	0	5	5	5	5	5	5	0
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	44	39	34	35	32	37	38	39	40	40	40	40
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100%	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

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Drinking Water Scheme	Boigu											
Year	2019 – 2020											
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	0	0	5	0	5	0	5	0	5	5	5	5
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	30	25	25	25	25	25	30	30	30	30	30	35
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100%	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

Drinking Water Scheme	Dauan											
Year	2019 – 2020											
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	3	0	0	3	4	0	5	4	5	0	5	5
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	1	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	23	20	15	18	22	22	27	28	30	27	29	34
No. of failures for previous 12 month period	0	0	0	0	1	1	1	1	1	1	1	1
% of samples that comply	100%	100%	100%	100%	95.5%	95.5%	96.3	96.4	96.7	96.3	96.6	97.1
Compliance with 98% annual value	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No

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Drinking Water Scheme	Erub											
Year	2019 – 2020											
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	5	0	5	5	5	0	0	5	5	5	5	0
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	1	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	35	30	30	30	30	30	30	35	40	40	45	40
No. of failures for previous 12 month period	5	5	5	0	1	1	1	1	1	1	1	1
% of samples that comply	85.7%	83.3%	83.3%	100%	96.7%	96.7%	96.7%	97.1%	97.5%	97.5%	97.8%	97.5%
Compliance with 98% annual value	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO
Comments												

Drinking Water Scheme	Iama											
Year	2019 – 2020											
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	5	0	0	5	5	5	0	5	0	5	5	0
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	58	53	48	48	48	48	43	43	38	38	38	35
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100%	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

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Drinking Water Scheme	Kiriri											
Year	2019 – 2020											
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	4	0	0	0	0	0	0	0	5	4	0	0
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	41	37	33	28	25	17	17	13	18	18	18	13
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100%	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

Drinking Water Scheme	Kubin											
Year	2019 – 2020											
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	5	0	0	5	5	5	5	0	5	5	0	0
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	40	35	30	30	30	35	35	30	30	35	35	35
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100%	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

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Drinking Water Scheme	Mabuiag											
Year	2019 – 2020											
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	0	0	0	5	0	5	5	0	0	4	5	0
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	36	36	36	36	31	36	36	36	31	30	30	24
No. of failures for previous 12 month period	1	1	1	1	1	1	0	0	0	0	0	0
% of samples that comply	97.2%	97.2%	97.2%	97.2%	96.8%	97.2%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes

Drinking Water Scheme	Masig											
Year	2019 – 2020											
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	5	0	0	5	0	5	5	5	5	5	5	5
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	57	52	47	52	46	46	46	46	46	46	46	45
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100%	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

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Drinking Water Scheme	Mer											
Year	2019 – 2020											
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	0	0	0	5	5	5	5	5	5	5	5	5
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	2	1
No. of samples collected in previous 12 month period	33	28	24	29	34	39	39	44	44	44	40	45
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	2	3
% of samples that comply	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	95%	93.3%
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No

Drinking Water Scheme	Poruma											
Year	2019 – 2020											
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	5	0	0	5	0	5	5	0	5	5	5	5
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	49	44	39	44	39	44	44	39	39	39	39	40
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100%	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

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Drinking Water Scheme	Saibai											
Year	2019 – 2020											
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	5	0	5	4	5	5	0	0	0	5	5	0
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	38	38	38	37	39	44	39	39	34	34	34	34
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100%	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

Drinking Water Scheme	St Pauls											
Year	2019 – 2020											
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	5	0	0	5	5	0	5	0	5	5	5	0
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	40	35	35	40	40	40	40	35	35	35	40	35
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100%	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

Drinking Water Scheme	Ugar											
Year	2019 – 2020											
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	5	0	5	5	5	5	0	5	0	0	5	0
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	29	29	29	30	35	40	35	40	40	35	40	35
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100%	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

Drinking Water Scheme	Warraber											
Year	2019 – 2020											
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	5	0	0	5	5	5	5	5	0	5	5	5
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	43	38	33	38	38	43	48	48	44	44	44	45
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100%	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

5 Events that Affected Water Quality in 2019-20

Table 66 summarises the drinking water events that occurred during the reporting period from 1 July 2019 to 30 June 2020.

Table 6: Water Quality Failures Reported to Regulator

Incident Number	Incident Date	Location	Parameter Failure / Issue	Incident Response Steps
DWI-7-500-00076	19/08/2019	Saibai	Benzo(a)pyrene Vinyl chloride Hexachlorobutadiene	Bushfire burned lagoon cover and liner. Switched water supply to Emergency lagoons. Samples taken. No BWA issued.
Not allocated	05/11/2019	Erub	E.coli failure	Erub community already on BWA. BWA notice recirculated throughout community. Follow up testing not required. BWA remains in place on island, Community water supply is currently being solely supplied by RO filtration.
DWI-5000-20-08422	19/05/2020	Mer	E.coli failure	Resamples collected and chlorine and log sheet data checked. Boiled Water Alert issued until tests confirmed negative results. Alert was lifted on 27/05/20.

6 Customer Complaints

Complaints are managed in accordance with the TSIRC Complaints Management Procedure. A complaints register has been developed to capture any complaints in relation to key water quality components, such as health, aesthetics, taste and odour. In the 2019-20 year only one formal complaint was received by TSIRC Management which has been listed in Table 7 below, the lack of complaints is likely due to a lack of understanding and training in the area for water officers and other council staff.

Training will be developed in the 2019-20 period for water officers on how to handle complaints received from the community, especially verbally, to ensure data is captured. Water Officers are prompted to notify management of complaints on weekly log sheets.

Table 7: Customer Complaints

Scheme Name	Health Concern	Dirty Water	Taste and Odour	Other
Badu	0	1	0	0
Total	0	1	0	0

6.1 Alleged Illness

Alleged illness complaints are received from customers who believe their water supply is the cause of an illness. In these cases, recent laboratory samples are reviewed to supply information to the customer to reassure the water supply is meeting the Australian Drinking Water guidelines for health-related parameters. During 2019-20, there was no confirmed illness due to drinking water supplied to the community.

6.2 Colour Complaints

Discoloured water can predominantly be attributed to emergency works being conducted on the water mains in the area. A change in flow direction can cause sediment to be disturbed in the pipe and push this into legs of water meters at resident's properties. While Water and Wastewater endeavour to plan works were possible and deliver letters to residents explaining works, duration of time without water and potential effects such as dirty/milky water after the water is returned to service, emergencies still occur that require urgent attention and cannot be planned.

Water and Wastewater staff advise residents to run external taps to flush any dirty water trapped in their connection and if the water is still discoloured, Water and Wastewater staff return to the area and flush the delivery mains again.

During 2019-20, a complaint was made relating to discoloured/turbid water running from the tap of a resident's house. Testing revealed no exceedance of health parameters evident in the water supply network. The resident's water storage tank was subsequently flushed. Follow up samples were taken from the residents taps which returned compliant levels of pH, conductivity, residual chlorine, and turbidity.

6.3 Taste and Odour Complaints

The taste and odour complaints received are often related to chlorine in the network. Individual customers have very different tolerance levels and while as low as possible, this can be detected by customers with very sensitive taste and smell.

Chlorine can also react with organics in the pipe network, be affected by periods of low flow and also temperature in the pipe network.

Water and Wastewater staff investigate all chlorine complaints and if recent results are not available for that area from daily testing, officers will attend the location and take a chlorine reading using a handheld chlorine meter.

7 DWQMP Review Outcomes

During the reporting period 1 July 2019 to 30 June 2020 a review of the DWQMP was undertaken. Table 8 summarises the outcomes of the review. A revised DWQMP was submitted to the regulator on 3rd March 2020. The amended DWQMP was approved by the regulator on 3 June 2020.

Table 8: January 2020 Review Outcomes and Action Status

Review Component	Description of Change	Outcome	Status of action
Service Description	No change	Not Applicable	Not Applicable
Details of infrastructure	SCADA controlled Chlorine Dosing/Monitoring rolled out across TSIRC at the WTP process stage	SCADA Monitoring parameters for each scheme included into DNRME appendix	Completed
Water Quality and catchment characteristics	No change	Not Applicable	Not Applicable
Risk assessment	Due to the integration of SCADA for asset and data management and control, risk of exposure to cyber security/theft is heightened.	Improve security by creating Virtual Machines and introducing firewall, virus protection, access control via Active Directory (AD) logging and use of local accounts to avoid data being accessed via network vulnerabilities	Completed
Operations and Maintenance Procedures	No change	Not Applicable	Not Applicable
Management of incidents and emergencies	No change No change	Not Applicable Not Applicable	Not Applicable Not Applicable
Service wide information management	No change	Not Applicable	Not Applicable

Operational monitoring	No change	Not Applicable	Not Applicable
Verification monitoring	No change	Not Applicable	Not Applicable
Other	No change	Not Applicable	Not Applicable

The next review is due to be completed by 30 June 2021.

8 DWQMP Audit Findings

No audit was conducted during the reporting period 1 July 2019 to 30 June 2020. The next regular audit of the approved DWQMP is due in June 2022.

Appendix A

Risk Management Improvement Plan