



DRINKING WATER SERVICE ANNUAL REPORT 2022

Douglas Shire Council

SPID: 558

Reporting period: 1 July 2021 – 30 June 2022

December 2022

DOUGLAS SHIRE
COUNCIL

Improving Environmental Performance
Ngaral Kulji Bubungu - Eastern Kuku Yalanji
Pulmpa dakit jarral-a-kaling - Yirrganydji

This report has been prepared in accordance with the *Guideline for the preparation, review and audit of drinking water management plans V3*.

Document Information

Version	Created By	Approved by	Date
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Drinking Water Service Annual Report 2022

1. Introduction

This report has been prepared to comply with section 142 of the *Water Supply (Safety and Reliability) Act 2008* (the Act). It documents the performance of Douglas Shire Council (Council) as a Drinking Water Service Provider (SPID 558) during the financial year 2021-2022. Council operates under a Drinking Water Quality Management Plan (DWQMP) approved under section 95 of the Act to ensure consistent supply of safe drinking water in order to protect public health. The DWQMP in force during the reporting period is V3.1 dated September 2020.

The report provides a mechanism to report publicly on the performance in managing drinking water services and drinking water quality.

2. Summary of schemes operated

Council operates three principal water supply schemes that source water from highly protected catchments and treat water to Australian Drinking Water Guideline (ADWG) standards utilising a combination of ultrafiltration and chlorination, with the ability to use supplemental UV disinfection. Additionally, Whyanbeel Water Treatment Plant utilises sodium carbonate for pH adjustment (Table 1).

Table 1. Summary of the three drinking water schemes.

Scheme	Water Source	Treatment Processes	Treatment Capacity (ML/day)	Towns Supplies
Daintree	Intake Creek (Daintree Bore, Daintree Rainwater)	Pre-filtration, ultrafiltration, chlorination	0.49	Daintree Township
Mossman/Port Douglas	Rex Creek	Pre-filtration, ultrafiltration, chlorination	30.0	Mossman, North Mossman, Port Douglas, Craiglie, Newell Beach, Cooya Beach, Cassowary, Mowbray
Whyanbeel	Little Falls Creek	Pre-filtration, ultrafiltration, chlorination, sodium carbonate pH adjustment	4.9	Whyanbeel, Miallo, Bamboo, Rocky Point, Port Douglas Views, Wonga Beach

3. Report requirement notice

As there has been a recent review and update to the Drinking Water Quality Management Plan Guidelines (V3) this report has been prepared to comply with the requirements under section 9 of those guidelines.

4. DWQMP implementation

DWQMP is a public health-based risk management plan that demonstrates how public health risks to drinking water services are managed. All relevant staff are made aware of the DWQMP, and the plan is used as a tool when assessing different aspects of drinking water management. The Council Water and Wastewater Team Leaders met fortnightly to share updates and data, and to discuss matters relating to water quality and treatment operations. This provided the opportunity to refer to the approved DWQMP and emphasise the importance of using the plan. Each Water and Wastewater Team holds regular 'Tool-box Talks' to discuss relevant operational requirements covered by implementation of the plan.

Council's DWQMP was approved for an amendment on 4 December 2020 by Department of Regional Development, Manufacturing and Water (DRDMW). Under the approved amendment, the Council undertook a system reassessment and reviewed the public health risk assessment. All the Review Outcomes were completed and reported against in the previous annual report.

Through the risk assessment process, Council identified risks to the drinking water schemes that require improvements over time. These are detailed within the approved DWQMP Hazard Identification and Risk Assessment section. The actions undertaken and the progress of the Risk Management Improvement Plan (RMIP) can be viewed at [Appendix A: Implementation of the DWQMP Risk Management Improvement Program](#).

Additionally, the DWQMP includes Critical Control Points (CCP) which ensure that operators become aware of potential issues faster and can respond and rectify any issues in a timely manner. The CCP are detailed in Standard Operating Procedures for each Water Treatment Plant. CCP compliance is continually monitored via Supervisory Control and Data Acquisition (SCADA) control system and operational checks are performed by plant operators and reviewed by Team Leaders/Supervisors.

5. Verification monitoring

Drinking water verification monitoring is undertaken weekly to ensure Council provides safe drinking water to rate payers and the general public across the drinking water network. External chemical and *E. coli* analysis is undertaken at a National Association of Testing Authorities (NATA) certified laboratory, and all data is reviewed in timely manner and recorded in Council's data management system.

During the reporting period, Council undertook verification monitoring in accordance with the requirements of the approved DWQMP.

During the financial year 2021-2022, all physical, chemical, and microbiological parameters were within the ADWG health guideline values and the standards of the Public Health Regulation 2005. Water quality data is presented in [Appendix B: Water quality data 2021-22](#).

6. Notification to the Regulator under sections 102 and 201A of the Act

There were no incidents reported to the Regulator in financial year 2020-2021. This indicates a high level of compliance with the *Water Supply (Safety and Reliability) Act 2008* and the DWQMP during the reporting period.

7. Customer complaints

Douglas Shire Council values customer feedback. During the reporting period there were no water quality complaints within the three drinking water schemes (Table 2).

Table 2. Drinking water quality complaints during the financial year 2021-2022.

Scheme	Health concern	Discoloured Water	Taste and Odour	Other	Total
Daintree	0	0	0	0	0
Mossman / Port Douglas	0	0	0	0	0
Whyanbeel	0	0	0	0	0

8. DWQMP review

No review was required or conducted during the relevant financial year. The next review is due to be conducted before 31/5/2024.

Council reviewed its DWQMP during the first half of 2021 and the resulting updated DWQMP (V.4.1) was approved by DRDMW in August 2022.

As part of the review Council undertook a system reassessment and reviewed the public health risk assessment. Through the risk assessment process, Council has identified several risks to our drinking water schemes that require improvements over time. These are detailed in the risk assessment table, and in the risk management improvement plan of the updated DWQMP.

Council intends to use the risk management improvement program to inform capital and operational budgets in coming financial years.

Critical items that have been identified that require attention include:

- Connecting Cooya Beach Reservoirs, rechlorination and pipework to the network
- Mossman alternative intake
- Implementation of smart water metering
- Investigating chlorination options for workplace health and safety reasons
- Upgrading Security and Disaster Response at Water Treatment Infrastructure

9. DWQMP audit actions

No audit was required or conducted during the relevant financial year. The next audit of the DWQMP is to be conducted by 30 June 2025.

An audit was completed in 2021 by a consultant from Water Futures Pty Ltd, who are Exemplar Global certified drinking water quality management system auditors. The auditor submitted the audit report to the Regulator on 14 June 2021.

No non-conformances with the Act or Regulation were noted during the audit. However, four (4) Opportunities for Improvement (OFIs) were identified during the audit. Table 3. provides an update on the OFIs identified in the audit.

Table 3. Progress on OFIs identified in the DWQMP audit.

Topic Area	Opportunity for Improvement	Progress to date
<i>Assessment of compliance with the DWQMP</i>		
Implementation of all preventative measure for managing hazards and hazardous events including those applied in the distribution/reticulation network	<ul style="list-style-type: none"> Promoting and supporting efforts to control feral animal activity in the water supply catchment. Removing treatment process bypasses, or putting in place measures such as tags, locks and double-block-and-bleed, or similar protection, to prevent bypasses due to valve failure, leakage or mis-operation. 	<p>Standard operating procedures (SOP's) have been reviewed and amended by Team Leaders</p> <p>All valves have been identified and tagged out</p>
Implementation of operational and maintenance procedures (including instrument calibration), including availability and currency of the procedures.	<ul style="list-style-type: none"> Developing means of safely inspecting treated water reservoirs regularly and after high wind events to provide early warning of the opportunity for potential runoff or vermin ingress. Setting defined tolerances for acceptable discrepancies between online and benchtop results for critical limit monitoring instruments. 	<p>Reservoir inspections are conducted with IAuditor</p> <p>Procedure: WTP Routine Monitoring and Maintenance (SOP)</p>

Appendix A: Implementation of the DWQMP Risk Management Improvement Program

Updated to 30 June 2022

Scheme	Component	Improvement actions	Target date	Actions taken to date	Status	Hazardous Event
Mossman/ Port Douglas	Raw Water Feed	Project to line remaining area of race and angle Johnston screens to allow more self-cleaning,	2019/20	Remaining area of race lined, and angle of Johnston screens changed	Complete	Blocked Johnson screen
		Pre-filters electronically driven and automated	21/22	Auto flushing with electrical drive motors and pressure differential gauges installed	Complete	Limited shutdown due to pressure loss through filters during high turbidity events
All schemes	Raw water feed	Review SOP's	2019/20	SOP's reviewed	Complete	Turbidity above limit
All schemes	Ultrafiltration	Review SOP's	2019/20	SOP's reviewed	Complete	Loss of integrity
Daintree	Disinfection	Commence investigative monitoring in Daintree scheme.	2020/21	Investigative chlorate monitoring commenced.	Complete	Chemical breakdown
Daintree	Disinfection	Research alternative disinfection methods to reduce chlorate formation	2021/22	Using recommended best practice for management/storage of Sodium Hypochlorite. Research of other disinfection processes in progress.	In progress	Chemical breakdown
Whyanbeel	Treated water storage/ reservoir	Condition assessment on Wonga Reservoir to bring online	2020/21	Condition assessment undertaken together with investigation on disinfection requirements and firefighting flows. Due to major work requirements, it is expected that the reservoir will not be brought online in the near future.	Complete	Ingress into reservoirs
All Schemes	Reticulation	Review SOP's	2020/21	SOP's reviewed	Complete	Ingress of contaminated water
All Schemes	Reticulation	Backflow devices installed on standpipes available for hire. Review SOP.	2020/21	Backflow devices installed on standpipes available for hire. Conditions for hire and procedures for use of standpipes updated.	Complete	Backflow – e.g. from customer meters or standpipes

Scheme	Component	Improvement actions	Target date	Actions taken to date	Status	Hazardous Event
All Schemes	Reticulation	Long term meter replacement strategy. Set water extraction points within Shire.	2021/22 or beyond	Installation phase of smart water meters commencing early 2022. Water extraction points recommended by Team Leader Water Reticulation as case-by-case basis.	Ongoing	Backflow – e.g. from customer meters or standpipes
All Schemes	System Wide	Engage consultant to review current cyber security practices.	2021/22	Cyber security risk and vulnerability assessment completed with future actions to be undertaken.	Complete	SCADA/telemetry failure/Cyber attack
All Schemes	System Wide	Mossman/Port Douglas Scheme and Whyanbeel Scheme interconnection replaced.	2019/20	Mossman/Port Douglas Scheme and Whyanbeel Scheme interconnection replaced.	Complete	Demand exceeds supply
Mossman/Port Douglas	System Wide	Install rechlorination at Cooya Beach Reservoir	2021/22	Design review and cost analysis undertaken to bring Cooya Beach reservoir online, awaiting funding opportunities	In progress	Limited supply
Mossman/Port Douglas	System Wide	Alternative intake	2021/22 22/23	Design construction plans finalised. Currently obtaining permits, licences, and land acquisition	In progress	Drought & increased demand during peak tourist season
All Schemes	System Wide	Ongoing training as required	2020/21	All operators accredited with Certificate III in Water Industry Treatment, New staff members will be undertaking training 2023 Cert 3 and Cert 4	Ongoing	Operator error
All Schemes	System Wide	More securely lock out bypass to prevent accidental use	2019/20	Bypass valves locked out securely.	Complete	Accidental use of bypass
All Schemes	System Wide	GIS system evaluation ongoing	2019/20 22/23	GIS system and asset management system management ongoing, Implementation of Ascetic Asset system council wide for water and wastewater	Ongoing	Loss of knowledge
All Schemes	System Wide	Engage consultants to review current cybersecurity measures	2019/20	Cyber security risk and vulnerability assessment completed with future actions to be undertaken.	Complete	Cyber threat/attack

Scheme	Component	Improvement actions	Target date	Actions taken to date	Status	Hazardous Event
All Schemes	System Wide	Internal upgrade of water and wastewater networks and systems	2020/21	Assessment has been conducted and the environment will be rebuilt in a compliant fashion during 2021-23.	Ongoing	Cyber threat/attack

Appendix B: Water quality data 2021-22

Daintree water supply scheme – Verification monitoring results 2021-2022

Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	ADWG health guideline value	No. of non compliant samples	Summary of results		
					Min	Max	Avg
Chlorate	1	4	N/A	0	0.19	0.59	0.36
Chlorine (mg/L)	26	27	5	0	0.01	1.06	0.78
Colour (PCU)	12	13	N/A	N/A	<1	2.4	1.9
Copper (mg/L)	12	14	2	0	0.001	0.012	0.003
<i>E. coli</i> (MPN/100mL)	26	31	<1	0	<1	<1	<1
Iron (mg/L)	12	14	N/A	N/A	<0.015	<0.05	0.016
Lead (mg/L)	12	14	0.01	0	<0.0005	0.0021	0.008
Manganese (mg/L)	12	14	0.5	0	<0.0002	0.0.0018	0.00044
pH (pH units)	26	40	N/A	N/A	6.35	7.98	7.68

Daintree water supply scheme *E. coli* compliance with annual value.

Year	2021-2022												
	Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June
No. of samples collected		2	3	2	3	3	4	2	2	3	2	2	3
No. of samples collected in which <i>E. coli</i> 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		31	31	31	32	33	32	32	31	32	31	31	31
No. of failures for previous 12-month period		0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compliance with 98% annual value		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Mossman/Port Douglas water supply scheme – Verification monitoring results 2021-22

Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	ADWG health guideline value	No. of non compliant samples	Summary of results		
					Min	Max	Avg
Alkalinity (mg/L as CaCO3)*	36	9	N/A	N/A	<1	19	11
Chlorine (mg/L)	154	195	5	0	<0.01	1.32	0.82
Colour (PCU)	84	93	N/A	N/A	<1	3.2	1.88
Copper (mg/L)	84	93	2	0	0.001	0.035	0.0096
<i>E. coli</i> (MPN/100mL)	190	240	<1	0	<1	<1	<1
Iron (mg/L)	84	93	N/A	N/A	<0.015	0.681	0.166
Lead (mg/L)	84	94	0.01	0	<0.0005	0.0039	0.0014
Manganese (mg/L)	84	94	0.5	0	<0.0002	0.0051	0.0010
pH (pH units)	190	327	N/A	N/A	6.22	9.48	7.17

*Only tested in December as Craiglie Park Reservoir was offline for the remainder of the reporting period.

Mossman/ Port Douglas water supply scheme *E. coli* compliance with annual value.

Year	2021-2022												
	Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June
No. of samples collected		16	19	29	18	18	28	16	15	27	14	15	25
No. of samples collected in which <i>E. coli</i> 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		204	209	218	222	226	231	233	232	242	233	234	240
No. of failures for previous 12-month period		0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compliance with 98% annual value		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Whyanbeel water supply scheme – Verification monitoring results 2021-2022

Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	ADWG health guideline value	No. of non compliant samples	Summary of results		
					Min	Max	Avg
Alkalinity (mg/L as CaCO ₃)	12	3	N/A	N/A	<1	13	13
Chlorine (mg/L)	52	65	5	0	0.22	1.12	0.87
Colour (PCU)	24	26	N/A	N/A	<1	2	1.67
Copper (mg/L)	24	26	2	0	0.002	0.02	0.00623
<i>E. coli</i> (MPN/100mL)	64	76	<1	0	<1	<1	<1
Iron (mg/L)	24	26	N/A	N/A	<0.015	0.02	0.0172
Lead (mg/L)	24	26	0.01	0	<0.0005	0.0008	0.00057
Manganese (mg/L)	24	26	0.5	0	<0.0002	0.0005	0.00035
pH (pH units)	64	102	N/A	N/A	5.96	8.63	7.93

Whyanbeel water supply scheme *E. coli* compliance with annual value.

Year	2021-2022												
	Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June
No. of samples collected		5	6	9	6	6	9	5	5	9	3	5	8
No. of samples collected in which <i>E. coli</i> 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		71	72	74	75	76	77	77	76	79	74	74	76
No. of failures for previous 12-month period		0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compliance with 98% annual value		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y