



# DRINKING WATER QUALITY MANAGEMENT PLAN REPORT 2021

*Douglas Shire Council*

Reporting period: 1 July 2020 – 30 June 2021

SPID: 558

December 2021

**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 Drinking Water Quality Management Plan Report Guidance Note.

## Document Information

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# Drinking Water Quality Management Plan Report

## 1. Introduction

This report documents the performance of Douglas Shire Council (Council) as a Drinking Water Service Provider (SPID 558) during the financial year 2020-2021. Council is operating under an approved Drinking Water Quality Management Plan (DWQMP) to ensure consistent supply of safe drinking water in order to protect public health and as required under the *Water Supply (Safety and Reliability) Act 2008*.

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. 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 aspect of drinking water management. The Council Water and



Wastewater staff met fortnightly to relate messages, share updates 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.

Council's DWQMP was approved for an amendment on 4 December 2020 by Department of Regional Development, Manufacturing and Water. Within the amendment, the Council undertook a system assessment and a public health risk assessment. Through the risk assessment process, Council has 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 seen in [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 fast manner. CCP compliance is continually monitored via Supervisory Control and Data Acquisition (SCADA) control system and operational checks are performed by plant operators.

#### 4. Verification monitoring

Drinking water verification monitoring is undertaken weekly within the reticulation network to demonstrate the Council provides safe drinking water. For quality assurance, external analyses are undertaken at a National Association of Testing Authorities (NATA) certified laboratory. All data is recorded and reviewed in timely manner.

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

During the financial year 2020-2021, all physical, chemical and microbiological parameters measured 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 information and summary](#).

#### 5. 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 declares a high level of compliance imposed by the *Water Supply (Safety and Reliability) Act 2008* during the reporting period.

#### 6. 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 2020-2021.**

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

## 7. DWQMP review outcomes

Council's DWQMP was approved for an amendment on 4 December 2020 by Department of Regional Development, Manufacturing and Water. The amendment of the DWQMP was conducted following a review of Council's DWQMP (Table 3). The amended DWQMP provides up to date information including capital improvements, critical control points, risk management improvement plan and updated verification monitoring program. There is a regulatory requirement to review the DWQMP biannually, however Council may review the plan more frequently if required.

Table 3. DWQMP review outcomes.

Review Component	Findings	Outcomes	Status of actions
<b>Service description</b>	Include Daintree non-potable supply in service details. Contact details changed. Update population and water connection figures.	Contact and service details updated. Population and water connection figures updated.	Complete
<b>Details of infrastructure</b>	Backwash recovery plant added to Mossman – Port Douglas scheme. Schematics requiring updating on all water schemes. Interconnection between Mossman-Port Douglas and Whyanbeel Schemes.	Schematics and infrastructure information updated.	Complete
<b>Water quality and catchment characteristics</b>	Add Daintree Rainwater System as additional catchment. New set of water quality data is available.	Daintree rainwater system included. Water quality data updated.	Complete
<b>Risk Assessment</b>	With the new rainwater system, Daintree bore and backwash recovery plant, there are associated risks with water quality. These hazards should be assessed for risks and preventative measures identified and implemented.	Risk assessment updated.	Complete
<b>Operations and maintenance procedures</b>	The maintenance schedule should include the Daintree rainwater system, Daintree bore and backwash recovery plant. Review and update existing procedures. Identify and develop new procedures.	Maintenance schedule revised.  Existing procedures reviewed and new procedures developed.	Complete
<b>Management of incidents and emergencies</b>	Inclusion of cyber security risks.	Cyber security measures included in risk management.	Complete
<b>Risk management improvement program</b>	A number of improvement actions have been implemented and some are in progress.	Risk management improvement program revised.	Complete
<b>Service wide information management</b>	No changes	Not applicable.	Not applicable

<b>Operational monitoring</b>	Backwash recovery plant to be included in SCADA/telemetry monitoring with alarm set points for water quality parameters and disinfection dose rates.	Operational monitoring program revised.	Complete
<b>Verification monitoring</b>	As Sodium Hypochlorite is used as disinfection within the Daintree scheme, there is a risk of chlorate formation.	Investigative monitoring of chlorates within the Daintree scheme commenced.	Complete
<b>Other</b>	Changes in regulations, legislation and formal requirements.	Regulatory changes included.	Complete

## 8. DWQMP audit findings

A DWQMP audit was completed in June 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. The purpose of the audit was to:

- Audit the monitoring and performance data provided to the regulator under the plan;
- Assess the service provider's compliance with the plan; and
- Assess the relevance of the plan in relation to the provider's drinking water service.

No nonconformities with the Act and Regulation were noted during the audit. However, a number of opportunities for improvement (OFIs) were identified during the audit. The audit noted that the Council had made excellent progress within the audit period with respect to reducing risks and innovating in water quality management. Table 4. provides a summary of results presented against auditable elements.

**Table 4. Summary of DWQMP audit results.**

Topic area	Compliance
Audit topic	Summary of compliance status
<b>Verify accuracy of monitoring and performance data communicated to DRDMW</b>	
Verification monitoring	Compliant
Operational monitoring	Compliant
Additional monitoring and performance data (if any) as provided in the Annual Report	Not applicable
<b>Assessment of compliance with the DWQMP</b>	
Implementation of all preventive measures for Managing hazards and hazardous events (Including those applied in the distribution/reticulation network)	Compliant
Implementation of operational and maintenance procedures (including instrument calibration), including availability and currency of the procedures	Compliant
Implementation of the process for managing incidents and emergencies including reporting requirements to the regulator	Compliant

Implementation of the operational (including Critical control points, as relevant) and verification monitoring programs	Compliant
Implementation of the risk management Improvement program	Compliant
Maintaining records using the systems as described	Compliant
<b>Assessment of compliance with DWQMP conditions</b>	
Reporting incidents in relation to events that are beyond the control of the service provider and have the potential to impact public health and for failing to meet water quality criteria as defined in the approval notice, and whether preventative measures taken were adequate to control the hazard	Compliant
Undertaking regular reviews at the frequency specified in the approval notice	Compliant
The provision and conditions in the approval notice	Compliant



## Appendix A: Implementation of the DWQMP Risk Management Improvement Program

Table 5. Status update for RMIP

Scheme	Component	Improvement actions	Target date	Actions taken to date	Status	Hazardous Event
<b>Mossman/ Port Douglas</b>	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
<b>All schemes</b>	Raw water feed	Review SOP's	2019/20	SOP's reviewed	Complete	Turbidity above limit
<b>All schemes</b>	Ultrafiltration	Review SOP's	2019/20	SOP's reviewed	Complete	Loss of integrity
<b>Daintree</b>	Disinfection	Commence investigative monitoring in Daintree scheme.	2020/21	Investigative chlorate monitoring commenced.	Complete	Chemical breakdown
<b>Daintree</b>	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
<b>Wyanbeel</b>	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
<b>All Schemes</b>	Reticulation	Review SOP's	2020/21	SOP's reviewed	Complete	Ingress of contaminated water
<b>All Schemes</b>	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

<b>All Schemes</b>	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
<b>All Schemes</b>	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
<b>All Schemes</b>	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
<b>Mossman/Port Douglas</b>	System Wide	Install rechlorination at Cooya Beach Reservoir	2021/22	Design review and cost analysis undertaken to bring Cooya Beach reservoir online.	In progress	Limited supply
<b>Mossman/Port Douglas</b>	System Wide	Alternative intake	2021/22	Design construction plans finalised. Currently obtaining permits and licences.	In progress	Drought
<b>All Schemes</b>	System Wide	Ongoing training as required	2020/21	All operators accredited with Certificate III in Water Industry Treatment	Ongoing	Operator error
<b>All Schemes</b>	System Wide	More securely lock out bypass to prevent accidental use	2019/20	Bypass valves locked out securely.	Complete	Accidental use of bypass
<b>All Schemes</b>	System Wide	GIS system evaluation ongoing	2019/20	GIS system and asset management system management ongoing	Ongoing	Loss of knowledge
<b>All Schemes</b>	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
<b>All Schemes</b>	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 2021-22.	Ongoing	Cyber threat/attack

## Appendix B: Water quality information and summary

### Daintree water supply scheme – Verification monitoring results

Table 6. Daintree water supply scheme verification monitoring results for financial year 2020-2021.

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	3	N/A	0	0.01	0.6	0.3
Chlorine (mg/L)	26	30	5	0	<0.1	1.1	0.4
Colour (PCU)	12	14	N/A	N/A	<1	7.8	<5
Copper (mg/L)	12	14	2	0	0.002	0.005	0.004
E.coli (MPN/100mL)	26	33	<1	0	<1	<1	<1
Iron (mg/L)	12	14	N/A	N/A	<0.008	0.202	0.026
Lead (mg/L)	12	14	0.01	0	<0.0005	0.0014	<0.005
Manganese (mg/L)	12	14	0.5	0	<0.0002	0.0309	0.003
pH (pH units)	26	42	N/A	N/A	6.8	8.1	7.6

Table 7. Daintree water supply scheme E.coli compliance with annual value.

Year	2020-2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June
No. of samples collected	4	3	2	2	2	5	2	3	2	3	2	3
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	31	31	31	30	33	32	33	32	33	32	33
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

Table 8. Mossman/Port Douglas water supply scheme verification monitoring results for financial year 2020-2021.

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 <sub>3</sub> )*	36	27	N/A	N/A	1.9	16	7.4
Chlorine (mg/L)	154	194	5	0	<0.1	1.4	0.9
Colour (PCU)	84	95	N/A	N/A	<1	6.5	<1
Copper (mg/L)	84	95	2	0	0.001	0.041	0.010
E.coli (MPN/100mL)	190	208	<1	0	<1	<1	<1
Iron (mg/L)	84	95	N/A	N/A	<0.008	0.158	0.008
Lead (mg/L)	84	95	0.01	0	<0.0005	0.0036	0.0005
Manganese (mg/L)	84	95	0.5	0	<0.0002	0.0042	<0.0002
pH (pH units)	190	316	N/A	N/A	5.6	10.4	7.1

\*Numbers lower due to Craigie Park Reservoir being offline during reporting period.

Table 9. Mossman/ Port Douglas water supply scheme E.coli compliance with annual value.

Year	2020-2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June
No. of samples collected	20	14	20	14	14	23	14	16	17	23	14	19
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	198	194	200	194	192	201	198	201	202	209	203	208
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

Table 10. Whyanbeel water supply scheme verification monitoring results for financial year 2020-2021.

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 <sub>3</sub> )	12	12	N/A	N/A	8.2	13	11
Chlorine (mg/L)	52	68	5	0	<0.1	1.2	0.9
Colour (PCU)	24	27	N/A	N/A	<1	1.2	<1
Copper (mg/L)	24	27	2	0	0.001	0.008	0.002
E.coli (MPN/100mL)	64	73	<1	0	<1	<1	<1
Iron (mg/L)	24	27	N/A	N/A	<0.008	0.027	0.008
Lead (mg/L)	24	27	0.01	0	<0.0005	0.0007	<0.0005
Manganese (mg/L)	24	27	0.5	0	<0.0002	0.0005	0.0002
pH (pH units)	64	107	N/A	N/A	6.8	8.7	8.0

Table 11. Whyanbeel water supply scheme E.coli compliance with annual value.

Year	2020-2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June
No. of samples collected	7	5	7	5	5	8	5	6	6	8	5	6
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	70	69	71	69	68	71	70	71	71	73	72	73
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