



Drinking Water Quality Management Plan Annual Report

Croydon Shire Council

SPID: 39

2020-2021

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

Table of contents

1	Introduction.....	1
2	Summary of scheme/s operated.....	2
3	DWQMP implementation.....	3
4	Verification monitoring - water quality information and summary	6
5	Incidents reported to the regulator.....	10
6	Customer complaints.....	11
7	DWQMP review outcomes	12
8	DWQMP audit findings.....	13

Table of tables

Table 1 – Summary of schemes	2
Table 2 – Risk management improvement program implementation status	5
Table 3 – Drinking water quality performance - verification monitoring.....	6
Table 4. E. coli compliance with annual value	9
Table 5 – Incidents reported to the regulator	10
Table 6 – Example: customer complaints about water quality	11
Table 7 – DWQMP review outcomes.....	12
Table 8 – DWQMP audit findings and status	Error! Bookmark not defined.

1 Introduction

This is the Drinking Water Quality Management Plan (DWQMP) Annual Report for Croydon Shire Council for the financial year 2020-2021.

Croydon Shire Council is registered service provider with identification (SPID) number 39.

Croydon Shire Council is operating under an approved Drinking Water Quality Management Plan to ensure consistent supply of safe quality drinking water in order to protect public health. This is done through proactive identification and minimisation of public health related risks associated with drinking water.

This Drinking Water Quality Management Plan Annual Report includes:

- The activities undertaken over the financial year in operating our drinking water service
- Drinking water quality summary
- Summary of our performance in implementing our approved Drinking Water Quality Management Plan

This report is submitted to the Regulator to fulfil our regulatory requirement, and is made available to our customers through our website or for inspection upon request at the Croydon Shire Council Administration Office.

2 Summary of scheme/s operated

Table 1 – Summary of schemes

	<i>Water Source</i>	<i>Treatment processes</i>	<i>Treatment capacity</i>	<i>Towns supplied</i>
Croydon Drinking Water Supply	Lake Belmore 100%	Pre-chlorination, flocculation, filtration, disinfection	0.95ML/day	Croydon
	Butterfly North Emergency Supply Only			

3 DWQMP implementation

Water staff met weekly to discuss water issues. This provides opportunity to refer to the approved Drinking Water Quality Management Plan and emphasise the importance of using the plan.

Discussions include the following key topics:

1. Risk Management

The process of keeping drinking water safe is a high priority. Through efficient operations and implementation of the DWQMP, Council has ensured effective risk management to assure safe quality of drinking water. During the reporting period, Council supplied drinking water that complied with the water quality standards set in the Australian Drinking Water Guidelines (ADWG).

2. Monitoring

Council maintains comprehensive monitoring programs to ensure that the quality of water supplied to customers is safe. The monitoring program assist to identify any issue before it becomes a significant water quality incident.

Council also undertakes operational monitoring, which includes the planned sequence of measurements and observations to assess and confirm the performance of our preventive or control measures.

Council sends monthly, microbiology samples to the Cairns Regional Council Water Laboratory, which is NATA accredited, as per the DWQMP.

3. Improvement plan

Council maintains a culture of continuous improvement and are implementing the Improvement Plan of the DWQMP.

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The actions undertaken to implement the risk management improvement program are discussed in Table 2.

Table 2 – Risk management improvement program implementation status

Scheme name	Ref	Component	Improvement actions	Target date	Actions taken to date	Status and revised target date	Responsible Officer / Position
Croydon Drinking Water Supply	1	Water Source	Construction and commissioning of a new bore		Completed	Completed	Director of Engineering Services
Croydon Drinking Water Supply	2	Reticulation	Chlorate monitoring - Sample collection - Test for chlorates		Completed	Completed	Director of Engineering Services
Croydon Drinking Water Supply	3	Storage and Reticulation	Develop mains network procedure and operations and maintenance manual including a procedure for: - Main breaks - Mains flushing - Reservoir cleaning		Completed	Completed	Water Officer
Croydon Drinking Water Supply	4	Reticulation	Capital works project to install interconnected main and eliminate reticulation dead ends	June 2025	Progression dependant on budget funds allocation	Ongoing to June 2025	Works Manager Water Officer
Croydon Drinking Water Supply	5	Reservoir	Capital works project to clean and seal the inside of the reservoir tank		Completed	Completed	Works Manager Water Officer

4 Verification monitoring - water quality information and summary

This section discusses the compliance with the water quality criteria.

Table 3 – Drinking water quality performance - verification monitoring

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e ADWG health guideline value)	No. of non compliant samples	Comments
Croydon Drinking Water Supply – Reticulation (5 test locations)	E coli	60	60	<1.0 CFU/100mL	0	
	Heterotrophic Plate Count	60	54		0	
	Aluminium	2	72	<0.2	0	
	Arsenic	2	13	<0.01	0	
	Cadmium	2	13	<.002	0	
	Chromium	2	13	<0.05	0	
	Copper	2	13	<1.0	0	
	Iron	2	58	<0.3	0	
	Lead	2	13	<0.01	0	
	Manganese	2	56	<0.1	0	
	Nickel	2	13	<0.02	0	
	Zinc	2	13	<3.0	0	
	Fluoride	2	8	<1.5	0	
Croydon Drinking Water Supply – Reticulation at Reservoir Tank	Chlorine Free	260	306	>5	0	
	Chlorine Total	260	179	>5	0	
	Fluoride	260	259	>1.5	0	

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e ADWG health guideline value)	No. of non compliant samples	Comments
	pH	260	306	6.5-7.5	0	
	Turbidity	260	306		0	
	EP131A Pesticide Organochlorine Pesticides (ult)	2	1	42-143	0	
	EP234A Organophosphate Pesticides (ult)	2	1	14-166	0	
Croydon Drinking Water Supply – Raw Water – Lake Belmore	Aluminium	2	108		0	
	Arsenic	2	2	<0.01	0	
	Cadmium	2	2	<.002	0	
	Chromium	2	2	<0.05	0	
	Copper	2	2	<2	0	
	Iron	2	108	<0.3	0	
	Lead	2	2	<0.1	0	
	Manganese	2	106	<0.1	0	
	Nickel	2	2	<0.02	0	
	Zinc	2	2		0	
Fluoride	2	26	<1.5	0		
Croydon Drinking Water Supply – Raw Water – Butterfly North	Aluminium	2	1		0	
	Arsenic	2	1	<0.01	0	
	Cadmium	2	1	<.002	0	
	Chromium	2	1	<0.05	0	

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e ADWG health guideline value)	No. of non compliant samples	Comments
	Copper	2	1	<2	0	
	Iron	2	1		0	
	Lead	2	1	<0.1	0	
	Manganese	2	0	<0.5	0	
	Nickel	2	0	<0.02	0	
	Zinc	2	1		0	
	Cyanide	2	1		0	
	Fluoride	2	0	<1.5	0	
Croydon Drinking Water Supply – Raw Water – Bore	Aluminium	0	0		0	Council has not used the water from the Bore during this period therefore no testing has been carried out.
	Arsenic	0	0	<0.01	0	
	Cadmium	0	0	<.002	0	
	Chromium	0	0	<0.05	0	
	Copper	0	0	<2	0	
	Iron	0	0		0	
	Lead	0	0	<0.1	0	
	Manganese	0	0	<0.5	0	
	Nickel	0	0	<0.02	0	
	Zinc	0	0		0	
	Fluoride	0	0	<1.5	0	

Table 4. E. coli compliance with annual value

Drinking water scheme: Croydon Drinking Water Supply

Year	2020 – 2021											
	Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
No. of samples collected	6	7	13	5	5	4	5	5	10	0	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	5	5	5	5	5	5	5	5	5	5	5	5
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%			
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			

NOTE: E.coli Compliance testing not completed in April, May & June due to ongoing Boiled water Alerts in Place, Recruitment of Trained Qualified staff and miscommunication between relieving water operational staff.

5 Incidents reported to the regulator

The incidents reported to the regulator and management actions undertaken over the financial year are provided in this section.

Table 5 – Incidents reported to the regulator

Incident date	Scheme / location	Parameter / issue	Preventive actions
11/09/2020	Croydon WTP	Turbidity – High Range	Issue “Boiled Water Alert” to community. Replace media in media/sand pressure filters to reduce turbidity Increase water coagulant to decrease turbidity New Filter system has been ordered
28/09/2020	Croydon WTP and Community Test Points	Aluminium – High Range	Issue “Boiled Water Alert” to Community. Replace media in media/sand pressure filters to reduce turbidity Reduce water coagulant to reduce aluminium level New Filter system Has been ordered

6 Customer complaints

This section discusses details of any complaints received about the drinking water service

Refer to section 2.3.6 in the Guidance Note.

Table 6 – Example: customer complaints about water quality

Scheme	Health concern	Dirty water	Taste and odour	Other
Croydon Drinking Water Supply	Nil	Nil	Nil	1
Total	Nil	Nil	Nil	1

7 DWQMP review outcomes

A summary of the outcomes of the review and how issues/changes raised in the review, were actioned is provided in this section.

Table 7 – DWQMP review outcomes

Review Date: 30/06/2021

Review component	Findings	Outcomes	Status of actions	Responsible Officer / Position
Service description	No changes	Not applicable	Not applicable	
Details of infrastructure	New Variable Speed Drives for pumps and new switch board at Lake Belmore Pump Shed	Schematic and infrastructure information needs to be updated in the approved DWQMP	Completed	Water Officer
Water quality and catchment characteristics	No changes	Not applicable	Not applicable	
Risk assessment	No changes	Not applicable	Not applicable	
Operations and maintenance procedures	Reservoir requires repairs to stop leakage	Completed – tanks cleaned and sealed	Completed	Works Manager
Management of incidents and emergencies	Implement changes to increase record keeping	Completed - SWIM local program	Completed & Ongoing	Works Manager
Risk management improvement program	No changes	Not applicable	Not applicable	
Service wide information management	No changes	Not applicable	Not applicable	
Operational monitoring	Implement changes to increase record keeping	Completed - Additional staff engaged	Ongoing	Works Manager
Verification monitoring	Implement changes to increase record keeping	Completed – SWIM local program	Ongoing	Works Manager

8 DWQMP audit findings

The audit findings and any recommendations and/or opportunities for improvement (OFI), including how these were actioned are discussed below.

8.1. Purpose

The audit of Croydon Shire Council's Drinking Water Quality Management Plan was undertaken through the engagement of Water Future Pty Ltd, Certified drinking water quality management system auditors. The auditors submitted the audit report to the regulator in July 2021.

The objective the audit was to:

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

8.2. Methodology

The audit was conducted on behalf of the Department of Regional Development, Manufacturing and Water (DRDMW) (formerly the Department of Natural Resources, Mines and Energy (DNRME), under the Water Supply, Safety and Reliability Act 2008 (Qld) (the ACT). The findings of the audit are hereby reported to the DRDMW.

The principal documents that set the standard for the audit were as follows:

- Chapter 2 Infrastructure and service, Part 4 Service provider obligations, Division 2 Audit reports and reviews, Clause 108 to 109 and Section 99(2)c of the Act.
- Drinking Water Quality Management Review and Audit Guideline (DNRME 2019)
- ISO 19011:2011 – Guidelines for auditing management systems (the generic auditing Guideline).

The audit involved review of hard copy documentation, review of electronic records, interviews with staff and inspections of assets and systems.

The version of the DWQMP audited was the Drinking Water Quality Management Plan 2017, as previously approved and noting the 2020 update that still in progress (the regulator has granted an extension until June 2021 for its completion). The audit covered the Croydon Shire Council (CSC) drinking water scheme including recharge area, bore, water treatment and distribution systems.

Although some notice was given as to which sites were to be visited, there was only very general guidance given to precisely what would be inspected in what area.

All assets were considered subject to audit and some were randomly inspected during the field audit.

All records from within the audit period were considered to be within the scope and portions were randomly selected for inspection during the desktop and field audit.

8.3. Results

8.3.1 Accuracy of data provided to the regulator,

Data from three principal sources were audited:

- Third-Party laboratory verification monitoring.
- CSC field verification.
- CSC operational monitoring

The data provided to the regulator was found to be accurate. This included operational monitoring by CSC operators and third-party laboratory monitoring laboratories that maintain relevant NATA accreditation.

In summary, the auditor concluded that CSC had provided accurate data to the regulator.

8.3.2 Compliance with the DWQMP and its conditions

The CSC system was audited to assess compliance with its obligation under the Act, Regulations and Audit Guidelines. The audit covered CSC's infrastructure, documents and records under the DWQMP as it currently stands.

The CSC water supply system was consistent with its description in the DWQMP and there was largely adequate compliance between the current version of the DWQMP in use by CSC and the observations made during the audit.

The DWQMP was found to be fully relevant, representing an accurate reflection of CSC's infrastructure and the way in which it operated.

In summary, the auditor concluded that CSC's DWQMP was largely accurate, current and relevant,

The relatively remote location of Croydon and the limited organisational capacity of Council had resulted in some operational monitoring not occurring in the manner and frequency indicated in the DWQMP. Specifically, operational monitoring of chlorine, turbidity and pH by operators was not daily, online constant monitoring of chlorine, turbidity and pH was not reliable, and calibration reagents were not all within their warranted dates.

Consideration was given as to whether the risk posed by these limitations in operational monitoring were sufficient that they triggered a non-compliance or the need for immediate notification to DRDMW

It was considered that the risk warranted a Non-Compliant finding being made by the auditor under the Act on behalf of DRDMW.

However, immediate notification to DRDMW was not considered warranted given the level of buffering provided by the large treated water storage reservoir containing a chlorine residual.

A number of Opportunities for Improvement (OFS's) were identified during the audit. These OFIs, summarised in Table 8.6 and in context in the body of the audit report, may help improve efficiency, reliability or reduce the risk of future non-compliances.

8.4 Acknowledgements

The auditor wishes to acknowledge the full and proactive participation of all CSC staff involved in this audit and thanks them for their openness and preparedness for the interviews.

In Particular, Garry Pickering, Ethan Foley and Rebecca Fitzgerald are thanked for their time throughout the audit

8.5 Summary of audit findings against auditable elements

Table 8 provides a summary of audit findings against auditable elements

Table 8.

TOPIC AREA	COMPLIANCE
Audit Topic	Summary of Compliance Status
Verify accuracy of monitoring and performance data communicated to	
Verification Monitoring	<p>Compliant</p> <p>As an OFI (low priority) CSC may wish to consider:</p> <ul style="list-style-type: none"> • The use of contained sample taps to reduce the risk of false positives due to contamination of sampling taps.
Operational Monitoring	Compliant
Additional monitoring and performance data(if any) as provided in the Annual Report	Not Applicable
Assessment of compliance with the DWQMP	
Implementation of all preventative measures for managing hazards and hazardous events including those applied in the distribution/reticulation network.	<p>Compliant</p> <p>As OFIs, CSC may wish to consider:</p> <ul style="list-style-type: none"> • Sealing the vulnerabilities in the whirlybirds on the treated water storage tank and ensuring that such seals are maintained over time. • Requiring relevant customers to meet the requirement of the plumbing code with respect to backflow prevention and ensuring that over time CSC's fleet of water meters are replaced with those that have dual check valve or similar protection. • Storing all drinking water parts and fitting such that they are protected from sunlight and from potential contamination. • Making a decision on the level of physical security required for its treated water storage reservoir and seeking to maintain protection at those levels.
Implementation of operational and maintenance procedures (including instrumentation and calibration) also including availability and currency of the procedures.	Compliant

Implementation of the process for managing incidents and emergencies including reporting requirements to the regulator.	Compliant As an OFI, CSC may wish to consider: <ul style="list-style-type: none"> How tourist accommodation facilities advise non-residents of a boil water alert being in place noting that some may miss the billboard coming into town.
Implementation of the operational (including critical control points, as relevant) and verification monitoring programs	NON Compliant It is recommended that CSC; <ul style="list-style-type: none"> Upscale its organisational capacity to enable operation, calibration and maintenance of online monitoring instruments and SCADA systems, undertake operational monitoring at a daily frequency, and keep calibration reagents within their warranted dates.
Implementation of the risk management improvement program	Compliant
Maintaining records using the systems as described	Compliant
Assessment of compliance with DWQMP conditions	
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 As an OFI, CSC may wish to consider: <ul style="list-style-type: none"> Stating clearing within the DWQMP whether the reticulation pump will continue to be in place and if so, how it will be operated.
The Provisions and conditions in the approval notice	Compliant

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