

# Annual Report 2019-20

# **Drinking Water Quality Management Plan**

Cloncurry Shire Council February 2021





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A. Improvement Plan



# 1. INTRODUCTION

This is the Drinking Water Quality Management Plan (DWQMP) Annual Report for Cloncurry Shire Council (CSC or Council) for the financial year 2019-20.

The DWQMP has been established and is being adhered to in order to protect public health through the identification and minimisation of public health related risks associated with drinking water. Council is operating under an approved DWQMP, with the approval granted by the Water Supply Regulation unit (WSR), Department of Resources.

This Annual Report summarises Council's drinking water quality performance for the reporting period and progress on the implementation of the improvement plan. The report will be made available to customers on Council's website and for inspection upon request at the Council office.

### 1.1. Scope

This report documents the performance of Cloncurry Shire Council's drinking water service with respect to water quality and performance in implementing the actions detailed in the drinking water quality management plan (DWQMP). The report has been prepared to fulfil the legislative DWQMP reporting requirements set out in the *Water Supply (Safety and Reliability) Act 2008* (the Act).

### 1.2. Purpose

This Annual Report aims to:

- be a reference document for the Regulator, as well as customers, on Council's performance in relation to the DWQMP reporting obligations under the Act, for the reporting period
- provide a summary of Council's performance in implementing the DWQMP.

## 2. DRINKING WATER SCHEME

Under the Act, water service providers are required to register as a drinking water service provider for the delivery of a drinking water service. Cloncurry Shire Council is a registered drinking water service provider, with the service provider identification (SPID) number 036.

Council manages the Cloncurry drinking water supply scheme and distributes treated water to the Cloncurry community. The water supply scheme is comprised of multiple facets: Raw water sources (Chinaman Creek Dam, Cloncurry River and Lake Julius), a Water Treatment Plant, Reservoirs, Pump stations and distribution network.



# 3. DWQMP IMPLEMENTATION

The implementation of the DWQMP is discussed in this section, and also captured in the other sections that follow.

### 3.1. Risk Management

The process of keeping drinking water safe is one of risk management. Through efficient operations and implementation of the DWQMP, Council has ensured effective risk management to assure safe quality of drinking water to our customers. Council has been working hard, in relation to water quality monitoring and mentoring.

During the reporting period, Council supplied drinking water that complied with the water quality criteria set in the Australian Drinking Water Guidelines. There were no major incidents or events that compromised Council's ability to supply safe quality drinking water to customers. A review of the DWQMP was undertaken in November 2019, the results of which are summarised in section 7. The review has identified relevant improvement actions to strengthen water quality management.

### 3.2. Monitoring

Council maintains monitoring programs to verify that the quality of water supplied to customers is safe. The monitoring programs assist to identify any issue before it becomes a significant water quality incident. The results from the verification monitoring for the reporting period are discussed in Section 5.

Council has the following quality management systems in place:

- microbiology samples are sent to the Queensland Forensic and Scientific Services, which is a NATA accredited laboratory
- operations staff have been appropriately trained to undertake sampling.

#### 3.3. Improvement Plan

Council maintains a culture of continuous improvement and are implementing the Improvement Plan of the DWQMP and making progress towards strengthening the management of the water supply. During the 2019 review 7 improvement items were added. During the reporting period, Council implemented a number of actions including:

- Drinking Water Quality Policy approved by council in 2020
- Improvements to data management including storing verification monitoring in excel spreadsheet
- Enhanced use of InfoXpert.

Detailed status on the Improvement Plan implementation is presented in Appendix A.

## 4. **REPORTING TO THE REGULATOR**

There were no reportable incidents for the reporting period.



# 5. COMPLIANCE WITH WATER QUALITY CRITERIA

Verification of drinking water quality provides an assessment of the overall performance of the system and the ultimate quality of the drinking water being supplied to customers. It confirms compliance with water quality criteria set by the Department of Resources, Queensland Health and any other formal requirements. Council undertakes regular sampling and testing to assess whether water quality is complying with the DWQMP water quality criteria.

Details of data used in the report and treatments applied to the data are as follows:

- data sources: verification monitoring data provided by Council
- data analysis: undertaken using Microsoft Excel software
- identified errors, if any: removed from statistical analysis, and noted at the respective place.
- <LOD and >UL: <LOD (limit of detection) was treated as LOD/2 and >UL (upper limit specified for test) was taken as UL.
- Outliers: considered in the statistical analysis, unless classed as specific error.

Source waters are tested to keep a tab on the inherent risk present in the supply and to guide any required adjustments to the treatment processes. The inherent risks are reduced to acceptable levels as the drinking water undergoes treatment.

The source waters are not subject to the water quality criteria since it is pre-treatment. The source water data is shown in Table 2

Compliance of treated water monitoring is discussed in Table 2. The following variations were noted:

• Conflicting monitoring frequencies between raw and treated water resulted in SWA analysis being undertaken every 6 months rather than monthly for treated water as mentioned the plan. The monthly frequency will be reviewed for feasibility and implemented according to the outcome. The next review of the DWQMP will capture this.

Microbial monitoring revealed no *E. coli* detections and limited coliform detections indicating good system hygiene. There was 100% compliance for E. *coli* results.

Table 1 Microbial	Verification	Monitoring Resul	ts
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Location	Parameter	Average	Min	Max	Count
Treated	Coliforms (mpn/100mL)	0	0	0	42
Water Reservoir	<i>E. coli</i> (mpn/100mL)	0	0	0	42
Clear Water	Coliforms (mpn/100mL)	0	0	0	42
Reservoir	<i>E. coli</i> (mpn/100mL)	0	0	0	42
Depot	Coliforms (mpn/100mL)	0.1	0	3	42
	<i>E. coli</i> (mpn/100mL)	0	0	0	42
Hospital	Coliforms (mpn/100mL)	0.1	0	3	42
	<i>E. coli</i> (mpn/100mL)	0	0	0	42
Office	Coliforms (mpn/100mL)	0.07	0	3	42
	<i>E. coli</i> (mpn/100mL)	0	0	0	42



#### Table 2 Verification Monitoring SWA Results

Parameter	Unit	Limits	Compliance	Clear Wate	r Reservoir	Counci	l Depot	Council Office		ice Hospital		Treated Water Reservoir		Raw Water
				30/6/20	19/8/19	30/6/20	19/8/19	30/6/20	19/8/19	30/6/20	19/8/19	30/6/20	19/8/19	19/11/19
Conductivity @ 25°C	μS/cm		NA	322	391	310	361	324	392	334	389	324	393	797
рН		6.5-8.5 (A)	100% Compliant	7.56	7.89	7.65	8.12	7.82	8	7.89	8.07	7.73	7.96	8.41
(pH Temp.)	°C		NA	22	21	22	21	22	21	22	21	22	21	20
Total Hardness	mg CaCO3/L	200 (A)	100% Compliant	97	102	95	98	98	103	101	103	97	102	167
Temporary Hardness	mg CaCO3/L		NA	97	102	95	98	98	103	101	103	97	102	167
Alkalinity	mg CaCO3/L		NA	134	133	129	126	134	135	137	134	132	133	278
Residual Alkalinity	meq/L		NA	0.7	0.6	0.7	0.6	0.7	0.6	0.7	0.6	0.7	0.6	2.2
Silica	mg/L	80 (A)	100% Compliant	16	17	15	16	16	17	16	16	16	17	26
Total Dissolved Ions	mg/L		NA	261	298	250	276	261	300	270	298	259	299	625
Total Dissolved Solids	mg/L	600 (A)	100% Compliant	194	233	186	216	195	234	202	232	194	234	484
True Colour	Hazen	15 (A)	100% Compliant excl. TWR 30/6/20	1	1	1	1	1	<1	2	1	1	<1	10
Turbidity	NTU	5 (A)	100% Compliant excl. TWR 30/6/20	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2
pH Sat.* (calc. for CaCO3)			NA	7.9	7.9	7.9	8	7.9	7.9	7.9	7.9	7.9	7.9	7.5
Saturation Index			NA	-0.3	0	-0.3	0.2	-0.1	0.1	0	0.2	-0.2	0	0.9
Mole Ratio			NA	2	1.8	1.9	1.6	1.7	1.7	1.7	1.7	1.8	1.8	1.3

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			1			1				1		1	1	1
Sodium Absorpt. Ratio			NA	1.4	1.9	1.2	1.7	1.4	1.8	1.4	1.8	1.3	1.9	3.9
Figure of Merit Ratio			NA	1.4	1.1	1.6	1.2	1.5	1.1	1.4	1.1	1.5	1.1	0.7
Sodium	mg/L	180 (A)	100%	31	43	28	38	31	43	32	42	31	44	120
Potassium	mg/L		NA	4	4.7	4	4.6	4.1	4.6	4.1	4.6	4.1	4.8	6.2
Calcium	mg/L		NA	27	27	27	27	27	28	28	28	27	27	34
Magnesium	mg/L		NA	7.2	8.2	6.8	7.6	7.3	8.2	7.7	8.2	7.3	8.2	20
Hydrogen	mg/L		NA	0	0	0	0	0	0	0	0	0	0	0
Bicarbonate	mg/L		NA	163	161	156	151	162	163	165	162	160	161	329
Carbonate	mg/L		NA	0.3	0.7	0.4	1.1	0.6	0.9	0.7	1.1	0.6	0.8	4.6
Hydroxide	mg/L		NA	0	0	0	0	0	0	0	0	0	0	0
Chloride	mg/L	250 (H)	100% Compliant	19	29	18	26	19	29	20	28	19	29	61
Fluoride	mg/L	1.5 (H)	100% Compliant	0.24	0.25	0.22	0.21	0.24	0.24	0.25	0.24	0.24	0.25	0.69
Nitrate	mg/L	50 (H)	100% Compliant	0.29	<0.5	0.32	<0.5	0.3	<0.5	0.37	<0.5	0.3	<0.5	0.26
Sulfate	mg/L		NA	9.8	23	8.8	20	9.8	23	11	23	9.9	23	52
Iron	mg/L	0.3 (A)	100% Compliant excl. TWR 30/6/20	< 0.01	<0.01	< 0.01	<0.01	< 0.01	<0.01	< 0.01	<0.01	< 0.01	<0.01	<0.01
Manganese	mg/L	0.1 (A) 0.5 (H)	100% Compliant excl. TWR 30/6/20	< 0.001	<0.01	0.001	<0.01	< 0.001	<0.01	< 0.001	<0.01	< 0.001	<0.01	<0.001
Zinc	mg/L	3 (A)	100% Compliant	< 0.06	<0.01	< 0.06	0.01	< 0.06	<0.01	< 0.06	<0.01	< 0.06	<0.01	<0.06
Aluminium	mg/L	0.2 (A)	100% Compliant	< 0.03	<0.05	< 0.03	<0.05	< 0.03	<0.05	< 0.03	<0.05	< 0.03	<0.05	<0.03
Boron	mg/L	4 (H)	100% Compliant	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.06

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Copper	mg/L	1 (A)	100% Compliant	0.003	<0.03	0.015	<0.03	0.016	<0.03	< 0.003	<0.03	< 0.003	<0.03	0.004
		2 (H)												1



## 6. CUSTOMER COMPLAINTS

There were no water quality related customer complaints recorded for the reporting period. A summary is presented in Table 3 below.

Table 3 Customer complaints about water quality

Scheme	Health concern	Dirty water	Taste and odour	Other
Cloncurry	0	0	0	0
Total	0	0	0	0

## 7. DWQMP REVIEW

A review of the DWQMP was undertaken in November 2019 and an updated DWQMP was approved by the regulator on 1<sup>st</sup> October 2020. All required actions were considered in the updated plan.

Key required actions were as follows:

- Risk Assessment should identify water age as an issue from less demand.
- Once the works have completed to make Dajarra a potable scheme make application to the regulator to amend registration details (under s23A of the Act).
- The catchment description and risk assessment need to be reviewed to take into consideration changes to Chinaman Creek.
- Check if corrective actions being applied to alert/critical limits are still appropriate.
- Add development of a cyber security plan to the improvement plan.
- CCP1 must be implemented. It should also be reviewed to determine if the proposed online monitoring of ORP and flow would be a better option than grab samples to monitor the CCP.
- Operation of the depth intake at Chinaman Creek Dam needs to be reviewed.
- Ensure returned water is less than 10% of total plant flow by completing WQ1
- Develop a calibration program for on line instruments in accordance with manufacture's specifications. Records of calibrations must be maintained.
- The chemical procurement section of the DWQMP (6.1.4) should accurately reflect the process.
- Update the emergency contact list and include a revision date.
- Update the emergency contact list and include a revision date.
- Undertake DWQMP reviews within the timeframe required under the Approval Notice.
- Data records must be maintained to verify water quality.
- Ensure that SOPs are accessible and implemented.
- Ensure CCP critical limit excursions are recorded, as required in the plan.



- Develop a calibration program for online instruments in accordance with manufacture's specifications.
- Currently there is no documented calibration schedule. However, instruments are calibrated and documented in operational diary.
- Commence monitoring of Uranium in raw water.
- Update the Monitoring Plan with the current process for storing operational monitoring data.
- Update section 6.2 of the DWQMP based on the new corporate structure.
- Ensure that there is a process to undertake improvement actions and progress is recorded.

## 8. **DWQMP AUDIT**

There was no audit undertaken in the reporting period.

### 9. **REFERENCES**

Cloncurry Shire Council. (2019). DWQMP. Cloncurry Shire Council Office, Cloncurry.

NHMRC & NRMMC. (2011). National Water Quality Management Strategy: Australian Drinking Water Guidelines. 6th Ed., National Health and Medical Research Council and Natural Resource Management Ministerial Council, Australian Government, Canberra.

Public Health Regulation 2018. Queensland Government.

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# A. IMPROVEMENT PLAN

#### Improvement Plan Register

#### Date reviewed: 18-Feb-21

Ref	Source	Improvement Action	Responsibility	Priority	Original Timeframe*	Revised Timeframe	Status	Comments
WQ1	Risk register 2015	Document procedure on use of reclaimed water or supernatant return	Water and Sewerage Specialist	Medium	Mar-20	Jul-21	In progress	SOP project is underway, due to some internal staffing changes there has been some delays.
WQ2	Risk register 2015	Implement CCP for manganese control	Water and Sewerage Specialist	High	Jun-20	Dec-21	In progress	This is being implemented. Some new staff have joined hence a refresher will be undertaken to ensure all operators understand the requirements of the DWQMP and CCPs. Status will be checked at the next review of the DWQMP later in 21.
<del>WQ3</del>	Risk register 2015	Implement the CCP for filtration.	Water and Sewerage Specialist	High	Jun-15	NA	Completed	The CCP values have been entered into SCADA.
WQ4	Risk register 2015	Investigate engaging professional divers to inspect- and clean the tanks.	Water and Sewerage- Specialist-	Medium	Dec-17	NA	Completed	Maintenance occurred on the clear water tank. Its has been cleaned, relined and new roof supports installed. Divers were not available.
WQ5	Risk register 2015 and IP- 2012 Review	Investigate DBP levels (THMs) in treated water.	Environmental Health Technical Officer	Medium	Jun-16	NA	Completed	THMs have been tested, no issues noted. Will remain part of the monitoring plan.
wqe	IP 2012 Review	Develop a drinking water quality specific incident- and emergency response plan, and provide training- to staff on use.	Environmental Health Technical Officer	High	Dec-15	NA	Completed	A specific IERP has been developed, is a supporting document of the DWQMP. The contact details and positions updated as part of the 2019 Review.
<del>WQ7</del>	I <del>P 2012 Review and DW</del> System Analysis 2015	All monitoring results should be recorded- electronically in a format that allows data analysis- (continuous timeline and column-wise), including- those from external lab.	Environmental Health Technical Officer	Medium	Jun-20	NA	Completed	A Water Daily logsheet (excel spreadsheet) has been developed and use has started, includes verification monitoring data also.
WQ8	IP 2012 Review	Develop a procedure for site inspection at WTP of locks, hatches, security fences, include reservoir inspections.	Water and Sewerage Specialist	Medium	Mar-20	Jul-21	In progress	SOP project is underway, due to some internal staffing changes there has been some delays. Also, the Master Planning process is underway, which will also look into plant operations.
WQ9	Risk register 2017	Investigate re-location options for river wells electronics.	Water and Sewerage Specialist	Medium	Dec-18	Dec-21	In progress	Investigation has happened to look into new locations for electrical boards (and some new river wells possibly). Currently with the new project and management team to progress further. Status will be checked at the next review of the DWQMP later in 21.
WQ10	Risk register 2017	Repair the offtake level option for the Chinaman- Creek Dam.	Water and Sewerage- Specialist-	High	Jun-18	NA	Completed	Done. Next review can investigate if variable offtake is a practical option or better used during emergency only, as needed.
WQ11	Risk register 2017	Develop a SOP for PAC dosing, including dose rates required.	Water and Sewerage Specialist	Medium	Mar-20	Jul-21	In progress	SOP project is underway, due to some internal staffing changes there has been some delays.

Ref	Source	Improvement Action	Responsibility	Priority	Original Timeframe*	Revised Timeframe	Status	Comments
WQ12	Risk register 2017	Include option to shutdown return water pumps if the plant flow rate is decreased.	Water and Sewerage Specialist	High	Jun-18	Jul-21	In progress	Related to WQ 1. SOP project is underway, due to some internal staffing changes there has been some delays.
WQ13	Risk register 2017	Compile a SOP document list, based on process control.	Water and Sewerage Specialist	Medium	Mar-20	Jul-21	In progress	SOP project is underway, due to some internal staffing changes there has been some delays.
<del>WQ14</del>	DWQMP Review 2017	WTP daily logsheet which records operational- monitoring data should be expanded to include- results for verification monitoring.	Environmental Health Technical Officer	Medium	<del>Dec-17</del>	NA	Completed	Being used now.
WQ15	DWQMP Review 2017	Develop calibration program for online analysers (e.g. annual calibration externally).	Water and Sewerage Specialist	Medium	Dec-18	Dec-21	In progress	The calibration schedule is followed via the white board at the WTP. Some automation of this process is needed (e.g. tasks and reminders) to investigate. Discuss at next review of the DWQMP.
WQ16	DWQMP Review 2017	Develop SOP for chemical quality control (e.g. present during delivery, obtain certificate of analysis).	Water and Sewerage Specialist	Medium	Dec-18	Jul-21	In progress	SOP project is underway, due to some internal staffing changes there has been some delays.
WQ17	DWQMP Audit 2017	Conditionally format the WTP Daily logsheet to flag unsatisfactory results and data validation to reduce data entry errors.	Water and Sewerage Specialist	High	Dec-17	Dec-21	In progress	Conditional formatting was done. It needs to be verified that it is still working well and any issues found resolved. To be checked again at the next review of the DWQMP.
<del>WQ18</del>	DWQMP Audit 2017	Enhance use of InfoXpert to improve document- management to ensure that documents (e.g DWQMP, procedures) are accessible and are- reviewed regularly to ensure currency.	Environmental Health Technical Officer	Low	<del>Jun-19</del>	NA	Completed	There is backup of the electronic document management system and the server.
<del>WQ19</del>	DWQMP Review 2017	Obtain council endorsement of the Drinking Water- Quality Policy	Environmental Health Technical Officer /- Director	Low	Jun-18	NA	Completed	Approved by Council in 2020.
<del>WQ20</del>	DWQMP Review 2017	Undertake first round of the 6 monthly SWA and- uranium testing for raw water sources,	Water and Sewerage Specialist	Medium	Dec-17	NA	Completed	Being undertaken.
WQ21	DEWS Feedback / Review of IERP	Develop a formal BGA response protocol, including workflow.	Environmental Health Technical Officer / Water and Sewerage Specialist	Medium	Mar-20	Jul-21	In progress	SOP project is underway, due to some internal staffing changes there has been some delays. Discuss practical approach - cant sample Lake Julius.
WQ22	DWQMP Review 2019	Council will need to amend their registration and included the Dajarra Scheme has a potable scheme prior to potable supply.	Manager Planning and Environment	High	Jun-20	Dec-22	To start	Making Dajarra potable is being investigated, an RO plant has been installed, capacity is not sufficient. Further investigations will continue. This is a long-term project hence timeframe revised.
WQ23	DWQMP Review 2019	Council will have one year to complete a DWQMP for Dajarra and gain approval from the regulator once potable supply commences.	Manager Planning and Environment	High	Mar-21	Dec-22	To start	As per above

Ref	Source	Improvement Action	Responsibility	Priority	Original Timeframe*	Revised Timeframe	Status	Comments
WQ24	DWQMP Review 2019	Council commissioned a condition report for the Cloncurry Town Water Reservoir which was inspected in October 2019. A number of maintenance actions are required out of the report.	Manager Planning and Environment	Medium	Dec-21	Dec-21	In progress	Forms part of the Master Planning project and will be implemented from there.
WQ25	DWQMP Review 2019	Review alert limits, critical limits and corrective actions for turbidity on all filters. Improve awareness of corrective actions and their triggers required for filtration to appropriately mitigate the risk of pathogenic contamination. If corrective actions are being applied when alert limits have been reached, then the corrective actions themselves should be reviewed.	Water and Sewer Supervisor	High	Mar-20	Dec-21	In progress	Some new staff on board hence a refresher discussion/training will be provided to ensure CCPs are understood. Will be checked again at the next DWQMP review.
WQ26	DWQMP Review 2019	Review ability to access network and threat from a cyber attack. Review Councils cybersecurity and security strategies.	Water and Sewer Supervisor	High	Aug-20	Dec-21	In progress	There are appropriate security measures at the plant, a corporate strategy/plan is being looked at by the IT section.
WQ27	DWQMP Review 2019	Develop an operator induction program	Water and Sewer Supervisor	High	Feb-21	Dec-21	To start	There is overall corporate induction program, some specifics will be reviewed for operators to ensure they are aware of or understand the DWQMP, CCPs, SOPs etc.

Priority has been agreed by risk review team, and is based on risk level and impact on risk outcomes. Timeframe is linked to priority, e.g. high priority has shorter timeframe. \*As per approved DWQMP Oct 20 (Approval Notice).