

# **Drinking Water Quality Management Plan (DWQMP) report**

2016-2017

## **Yarrabah Aboriginal Shire Council**

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## Glossary of terms

ADWG 2004	Australian Drinking Water Guidelines (2004). Published by the National Health and Medical Research Council of Australia
ADWG 2011	Australian Drinking Water Guidelines (2011). Published by the National Health and Medical Research Council of Australia
<i>E. coli</i>	<i>Escherichia coli</i> , a bacterium which is considered to indicate the presence of faecal contamination and therefore potential health risk
HACCP	Hazard Analysis and Critical Control Points certification for protecting drinking water quality
mg/L	Milligrams per litre
NTU	Nephelometric Turbidity Units
MPN/100mL	Most probable number per 100 millilitres
CFU/100mL	Colony forming units per 100 millilitres
<	Less than
>	Greater than

## 1. Introduction

This report documents the performance of Yarrabah Aboriginal 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) as required under the *Water Supply (Safety and Reliability) Act 2008* (the Act).

The report assists the Regulator to determine whether the approved DWQMP and any approval conditions have been complied with and provides a mechanism for providers to report publicly on their performance in managing drinking water quality.

This template has been prepared in accordance with the *Water Industry Regulatory Reform – drinking water quality management plan report factsheet* published by the Department of Energy and Water Supply, Queensland, accessible at [www.dews.qld.gov.au](http://www.dews.qld.gov.au).

## 2. Overview of Operations (optional)

The Yarrabah treatment DWQMP sources water from the 4 bores located on Bukki Road. The treatment comprises of disinfection. Water is disinfected before reticulation.

YASC has planned for raw water to once again be sourced from the weir located on Reeves Creek in 2018.

## 3. Actions taken to implement the DWQMP

Operational limits have been set for chlorine dosing; however can be manually operated if required. Testing is undertaken daily to ensure water quality.

### **Progress in implementing the risk management improvement program.**

Refer to the Appendices for a summary of progress in implementing each of the Improvement Program actions.

### **Revisions made to the operational monitoring program to assist in maintaining the compliance with water quality criteria<sup>1</sup> in verification monitoring.**

Ecoli testing has commenced at YASC. During the initial 3 months, samples continued to be sent to Cairns Water Lab to verify test results.

### **Amendments made to the DWQMP**

Nil

## 4. Compliance with water quality criteria for drinking water

The data contained in the spreadsheets in Appendix A summarises the results of the verification monitoring of the Yarrabah drinking water.

## 5. Notifications to the Regulator under sections 102 and 102A of the Act

This financial year there were 2 instances where the Regulator was notified under sections 102 or 102A of the Act. Two of these notifications involved the detection of *E. coli* – an organism that may not directly represent a hazard to human health, but indicates the presence of recent faecal

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<sup>1</sup> Refer to *Water Quality and Reporting Guideline for a Drinking Water Service* for the water quality criteria for drinking water.

contamination. Two of these incidents required Yarrabah Aboriginal Shire Council to issue a boil water or do not drink notice in the communities.

### **Non-compliances with the water quality criteria and corrective and preventive actions undertaken**

**Incident Description:** The first non-compliance was a detection of *E. coli* from a routine sample taken on 20/7/2016 at Police Station estimate 1 *E. coli* organisms per 100 mL was detected.

**Corrective and Preventative Actions:** Mains flushed throughout the community, testing and ongoing monitoring.

On receipt of sufficient follow up samples were free of *E. coli* and Department of Health was satisfied that the issue had been rectified the Boil Water Alert was removed. All follow up samples were free of *E. coli*.

**Incident Description:** The first non-compliance was a detection of *E. coli* from a routine sample taken on 8/2/2017 at Aged Persons Hostel (14 CFU/100mL), Djenghi (10 CFU/100mL, Jilgi (17 CFU/100mL), Police Station (estimate 1 CFU/100mL), Primary School (23 CFU/100mL) and Workshop Street (17 CFU/100mL) was detected.

**Corrective and Preventative Actions:** On investigation it was found that the switchboard at Bore 6 had failed and the level of the reservoir was very low. The staff on call made the decision to switch to the Reeve Creek intake. The main were not flushed.

On receipt of the exceedance notification, the reticulation was flushed each day for three days. On the 9/2/2017, only 1 site came back with an exceedance (Police, estimate 3 CFU/100mL).

On receipt of sufficient follow up samples were free of *E. coli* and Department of Health was satisfied that the issue had been rectified the Boil Water Alert was removed. All follow up samples were free of *E. coli*.

### **Prescribed incidents or Events reported to the Regulator and corrective and preventive actions undertaken.**

NIL

## 6. Customer complaints related to water quality

Yarrabah Aboriginal Shire Council is required to report on the number of complaints, general details of complaints, and the responses undertaken.

Throughout the year the following complaints about water quality were received:

**Table 1 - complaints about water quality, (including per 1000 customers)**

	Suspected Illness	Discoloured water	Taste and odour	Total
Yarrabah	0	0	0	0
Total	0	0	0	0

### **Suspected Illness**

Whilst no complaints have been received, often comments are made within the community. When there is a perception that customers suspect their water may be associated with an illness they are experiencing, Council investigates each instance. Typically by testing the customers tap and closest reticulation sampling point for the presence of *E. coli*.

During 2016/17 there were NIL confirmed cases of illness arising from the water supply system.

### **Discoloured water**

NIL customer complaints were received.

On occasion comments will be made from residents that they have discoloured water coming from the taps inside the house; this has been as a result of a break in a large diameter water main.

Staff conducting the repair; try to ensure that the water quality is protected at all times. Council staff will flush the mains to remove the dirty water to achieve detectable chlorine residual results.

### **Taste and odour**

NIL customer complaints were received.

## 7. Findings and recommendations of the DWQMP auditor

The external audit of the DWQMP was completed by Viridis Consultants Pty Ltd on the 28 April 2017

The audit identified one (1) major non-conformance and four (4) minor non-compliances.

Both the external audit report and action plan prepared by Council were submitted to DEWS.

A resulting action from the external audit is the Memorandum of Understanding that YASC and CRC have entered into. The MoU provides a framework for CRC to provide assistance in both the operation and management weaknesses identified in the audit.

## 8. Outcome of the review of the DWQMP and how issues raised have been addressed

The next internal review of the DWQMP is due before 30 June 2018. The review will include relevant officers from council and staff from the local Department of Local Government, Infrastructure and Planning.

### **Hazards and hazardous events that affected the quality of drinking water during the year and which were not addressed in the DWQMP**

NIL events occurred.

Risk assessments of events that can occur as result of natural disasters are addressed in the local disaster management plans.

## Appendix A – Summary of compliance with water quality criteria

Table 2 - Verification monitoring results

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples in which parameter was detected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Limit of reporting	Laboratory name
Yarrabah	Source Water	Arsenic	mg/L	Annual	Samples not taken as 3 sets of samples were tested in previous financial year. The final set being taken just before the commencement of the 16/17 financial year.							Cairns Water Lab
		Lead	mg/L	Annual								
		Copper	mg/L	Annual								
		Manganese	mg/L	Annual								
		Aluminium	mg/L	Annual								
		Iron	mg/L	Annual								
		Fluoride	mg/L	Annual								
		Turbidity	NTU	Annual								
		Magnesium	mg/L	Annual								
		Calcium	mg/L	Annual								
		Colour	Pt/Co	Annual								
		Sulphate	mg/L	Annual								
		Potassium	mg/L	Annual								
		pH		Annual								
		Hardness	mg	Annual								
		Sodium	mg/L	Annual								
		Chloride	mg/L	Annual								
		Alkalinity	mg CaCO <sub>3</sub> /L	Annual								
		HPC	CFU/ml	Annual								
		Silicon	mg/L	Annual								
Total Dissolved Solids	mg/L	Annual										
Electrical Conductance	uS/cm	Annual										
Cadium	mg/L	Annual										
Ecoli	CFU/100ml	Annual										
Coliforms	CFU/100ml	Annual										

Scheme Name	Scheme component	ANALYTE	Units	Frequency	Total No of samples collected	Samples in which parameter was detected	Samples exceeding water quality criteria	LOR	Result			Laboratory name
Yarrabah	Reticulation	Apparent Colour	Pt/Co units	Annual	1	1	1	<1	1.6			Cairns Water Lab
		Calcium	mg/L	Annual	1	1	1	<0.20	2.7			
		Chloride	mg/L	Annual	1	1	1	<0.1	25			
		Electrical Conductance	µS/cm	Annual	1	1	1	<1	150			
		Fluoride	mg/L	Annual	1	1	1	<0.02	0.16			
		ICPMS Copper	mg/L	Annual	1	1	1	<0.001	0.047			
		ICPMS Iron	mg/L	Annual	1	1	1	<0.01	0.183			
		ICPMS Lead	mg/L	Annual	1	1	1	<0.001	0.002			
		ICPMS Manganese	mg/L	Annual	1	1	1	<0.001	0.006			
		ICPOES Silicon	mg/ L SiO2	Annual	1	1	1	<0.10	43			
		Magnesium	mg/L	Annual	1	1	1	<0.10	1.2			
		Potassium	mg/L	Annual	1	1	1	<0.10	3.9			
		Sodium	mg/L	Annual	1	1	1	<1	21			
		Sulphate	mg/L	Annual	1	1	1	<1	3.5			
		Total Alkalinity	mg CaCO3 / L	Annual	1	1	1	<1.5	26			
		Total Dissolved Salts (calc)	mg/L	Annual	1	1	1	<1	120			
Total Hardness	mg CaCO3 / L	Annual	1	1	1	<1	12					
Turbidity	NTU	Annual	1	1	1	<0.1	0.1					

Scheme Name	Scheme component	ANALYTE	Units	Frequency	Total No of samples collected	Samples in which parameter was detected	Samples exceeding water quality criteria	LOR	Min	Max	Average (Mean)	Laboratory name
Yarrabah	Reticulation	Apparent Colour	Pt/Co units	Monthly	11	11	9	<1	<1	6.4	2.3	Cairns Water Lab
		E. coli	CFU/100mL	Weekly	333	333	10	<1	<1	23	0.2	
		Heterotrophic Plate Count	CFU/mL	Bi-Weekly	23	23	5	<1	<1	10	0.7	
		pH	nil	Bi-Weekly	28	28	28	<0.1	6.1	7.4	6.6	
		Turbidity	NTU	Monthly	12	12	12.00	<0.1	0.1	0.6	0.3	



Double click to edit in Excel. Copy and paste table and caption for each scheme. The original Excel tool is accessible at [www.dews.qld.gov.au](http://www.dews.qld.gov.au).

**Table 3 - Reticulation *E. coli* verification monitoring**

Drinking water

scheme:

Yarrabah Aboriginal Shire Council

	July	Aug	Sept	Oct	Nov	Dec	July	Aug	Sept	Oct	Nov	Dec
<b>Year</b>	<b>2016/2017</b>											
<b>Month</b>	<b>July</b>	<b>Aug</b>	<b>Sept</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>June</b>
<b>No. of samples collected</b>	27	30	24	24	30	18	18	54	30	24	30	24
<b>No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)</b>	1	0	0	0	0	0	0	9	0	0	0	0
	<b>2016</b>											
<b>Month</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug</b>	<b>Sept</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
<b>No. of samples collected in previous 12 month period</b>	12	18	26	24	31	30	21	30	24	19	30	18
<b>No. of failures for previous 12 month period</b>	0	0	2	0	4	0	1	0	0	0	0	0
<b>% of samples that comply</b>	96.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	83.0%	100.0%	100.0%	100.0%	100.0%
<b>Compliance with 98% annual value</b>	No	YES	YES	YES	YES	YES	YES	No	YES	YES	YES	YES

**CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE**

The *Public Health Regulation 2005* (the regulation) requires that 98 per cent of samples taken in a 12 month period should contain no *E. Coli*. This requirement is referred to as the 'annual value' in Schedule 3A of the regulation.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

**Note: Table 3 is being amended to reflect the monthly data of the financial year so that it is consistent with the data that is being reported on in the annual report. Overall compliance for the 16/17 financial year is 96% as a result of the February 2017 ecoli incident. This is an anomaly.**

## Appendix B – Implementation of the DWQMP Risk Management Improvement Program

**Table 4 – Progress against the risk management improvement program in the approved DWQMP**

Item No.	Scheme Component / Sub-component	Action(s)	Target date/s	Status as at Dec 2017	(If implementing these actions will take longer than anticipated, please provide detail, as it may affect the approved DWQMP)
	<i>Catchment &amp; Source Infrastructure</i>	Commission PB4a as additional water source.	June 2013		<i>Insufficient funds – Applying for grant funding and has been identified as an unmet need</i>
		Investigate possibility of raw water turbidity testing and setting levels at which supply is ceased with respect to rainfall events.	June 2013		<i>Samples are sent to Cairns Laboratory for analysis monthly when Reeves Creek Intake is in use</i>
	<i>Disinfection Progress</i>	Connect pumps to SCADA to control operation.	Dec 2012	<i>Completed</i>	
		Investigate possibility for periodical testing of THM to re-assess risk level.	Dec 2012		<i>Insufficient funds</i>
	<i>Reticulation &amp; Distribution</i>	Change AC pipes to PVC. through to town Reticulation System	Dec 2014		<i>Insufficient funds – Applying for grant funding and has been identified as an unmet need</i>
	<i>Whole of Service</i>	Investigate possible opportunity for formal training for existing staff.	Dec 2012	<i>Complete</i>	
		Investigate possibility of having an administrative assistant for data recording and storing in electronic format.	June 2013	<i>NA</i>	
		Investigate possibility of having at least 2 dedicated vehicles for use by Essential Services team.	June 2013	<i>Completed</i>	
		Essential Services Supervisor needs a laptop with SCADA installed for remote operations.	Dec 2012	<i>NA</i>	
		Install flow meters at the water treatment plant	June 2013	<i>Completed</i>	
		Develop and maintain a proper complaints register (complaints and resolution)	June 2013	<i>Completed</i>	<i>To be reviewed in 2018</i>
		Development of written operating procedures as identified in the operation and maintenance procedures section.	Dec 2014	<i>Completed</i>	<i>To be reviewed in 2018</i>