

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

For the financial year: 2015-2016

Scheme: LAKELAND

## **Cook Shire Council**

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# COOK SHIRE COUNCIL - DRINKING WATER QUALITY MANAGEMENT PLAN ANNUAL REPORT

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## Glossary of terms

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
mg/L	Milligrams per litre
NTU	Nephelometric Turbidity Units
MPN/100mL	Most probable number per 100 millilitres
<	Less than
>	Greater than
NATA Lab	Accredited by the National Association of Testing Authorities of Australia

**COOK SHIRE COUNCIL - DRINKING WATER QUALITY MANAGEMENT PLAN  
ANNUAL REPORT**

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1. Introduction .....	4
2. Overview of Operations.....	4
3. Actions taken to implement the DWQMP .....	5
Revisions made to the operational monitoring program to assist in maintaining the compliance with water quality criteria in verification monitoring.....	5
Amendments made to the DWQMP.....	5
4. Compliance with water quality criteria for drinking water.....	6
Table 1.0A Summary of Treated Water quality details – Sampled from: Lakeland Reticulation, Analysed by: SGS - Cairns (NATA Certified) .....	6
Table 1.0B Summary of All Treated Water quality details – Sampled from: Lakeland Reticulation, Analysed by: SGS - Cairns (NATA Certified).....	7
Table 1.1C Summary of E.coli & Coliforms monitoring – Sampled from: Lakeland Reticulation, Analysed by: Cook Shire Council.....	8
Table 1.2 Location of sampling sites within Lakeland’s water reticulation network.....	8
5. Notifications to the Regulator under sections 102 and 102A of the Act .....	9
6. Customer complaints related to water quality .....	9
Suspected Illness.....	9
Discoloured water .....	9
Taste and odour.....	9
7. Findings and recommendations of the DWQMP auditor .....	9
8. Outcome of the review of the DWQMP and how issues raised have been addressed .....	10
Appendix A – Summary of compliance with water quality criteria .....	10
9. Verification Monitoring Results.....	11
Table 1.3 - Verification monitoring results (Raw Water) - Physical Chemical (NATA Analysed).....	11
Table 1.4 - Verification monitoring results (Raw Water) – Metals (NATA Analysed).....	12
Table 1.5 - Verification monitoring results (Treated Water) - Physical Chemical (NATA Lab Analysed).....	13
Table 1.6 - Verification monitoring results (Treated Water) – Metals (NATA Lab Analysed).....	14
Table 1.7 - Verification monitoring results - (Coliforms / E.coli) .....	15
Table 2 - Reticulation <i>E. coli</i> verification monitoring .....	16
Appendix B – Implementation of the DWQMP Risk Management Improvement Program.....	17
Appendix C – Implementation of the 2016/17 Budgeted Capital Works Improvement Program ..	18

## 1. Introduction

This report documents the performance of Cook 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.

## 2. Overview of Operations

Lakeland's Water is sourced solely from 3 bores, 2 of which are located within the Lakeland Compound (1/RP741362) the 3<sup>rd</sup> being Army bore which is situated on the road reserve of the Peninsular Development Road

Water is pumped from the bores to a ground level Reservoir, where it's chlorinated. A bank of 3 pressure pumps maintains a constant pressure within the reticulation

The bore water undertakes the following treatment processes

Chlorination

The Lakeland Reservoir directly supplies water to the Lakeland reticulation after being chlorinated

Lakeland currently has 43 Service connections which can be broken down to approximately:

Residential 64%

Commercial / Industrial 24%

With the remaining 12% being Council, Institutional or Other

### 3. Actions taken to implement the DWQMP

The water sampling schedule is now more rigorously adhered to than prior to the plan being approved, a database was set up with all the schedule details in it, this was given to all that collect samples. By typing in the "Week start date" a list of the required samples for that week is displayed, and can be printed. It tells the sample collectors the following information

Week Commencing Date

Type of sample to be collected e.g. E.coli & Total Coliforms, Fluoride, Reticulation Metals - (Suite of 15) etc

Scheme e.g. Cooktown, Lakeland or Laura

Who the sample is to be analysed by e.g. CSC Annan Lab., or NATA Lab.

A description e.g. 3 Samples from Reticulation - Sample sites listed, 1 T/Plant Final Water Sample

Sample Site - displays where the sample is to be taken from

A copy of the Sampling Matrix was sent to the NATA Lab, they now supply the appropriate sample bottles for each week as well as each scheme month by month. At approx the 3rd week of every month we receive the entire sample bottles for the following month. This seems to be working well

Implementation of the DWQMP Risk Management Improvement Program is well under way with the major item being bought forward from a stated completion year of 2018 this item is now completed.

#### **Revisions made to the operational monitoring program to assist in maintaining the compliance with water quality criteria in verification monitoring.**

To date there has been no revisions to the operational monitoring since the DWQMP was approved

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

A thorough review of the DWQMP was conducted with some extensive alterations being made to the original plan.

The revised plan was submitted to the Regulator on 26<sup>th</sup> April 2016

The revised plan, as submitted, was approved by the Regulator on 27<sup>th</sup> July 2016

**COOK SHIRE COUNCIL - DRINKING WATER QUALITY MANAGEMENT PLAN  
ANNUAL REPORT**

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

**Table 1.0A Summary of Treated Water quality details – Sampled from: Lakeland Reticulation, Analysed by: SGS - Cairns (NATA Certified)**

**Sample Period 1/7/2015 - 30/6/2016**

### Physical and Chemical Characteristics

Parameter	Unit	No of Samples collected	Summary of Results			ADWQ Guidelines Value (2011)	No of Samples exceeding ADWG	
			Max. Value	Min. Value	Avg. Value		Health	Aesthetic
Alkalinity	mg/L as CaCO <sub>3</sub>	4	300.0	290.0	292.5	-	-	-
Calcium	mg/L	4	43.0	39.0	40.5	-	-	-
Chloride	mg/L	4	130.0	120.0	125.0	< 250 - mg/L	-	0
Colour	HU	4	<5.0	<5.0	<5.0	< 15 - HU	-	0
Electrical Conductance	µs/cm	4	910.0	820.0	877.5	-	-	-
Fluoride	mg/L	4	0.31	0.26	0.283	< 1.5 - mg/L	0	-
Magnesium	mg/L	4	50.0	44.0	46.5	-	-	-
pH	pH units	4	8.0	7.7	7.88	6.5-8.5	-	0
Potassium	mg/L	4	2.10	1.98-0	1.98	-	-	-
Salinity	mg/L	4	600	570	587	-	-	-
SAR		4	2.10	1.90	1.98	-	-	-
Silica, Soluble	mg/L	4	100	91.0	95.75	< 80 - mg/L	-	4
Sodium	mg/L	4	82	71.0	77.75	< 180 - mg/L	-	0
Sulfate	mg/L	4	3.50	2.50	3.10	< 250 - mg/L	0	0
Total Dissolved Solids	mg/L	4	550.0	530.0	540.0	< 600 - mg/L	-	0
Total Hardness	mg/L as CaCO <sub>3</sub>	4	310.0	280.0	290.0	< 200 - mg/L	-	4
Turbidity	NTU	4	<0.50	<0.50	<0.50	< 5 - NTU	-	0

\* - Indicates no Guideline value set for this parameter

Silica and Total Hardness both above the ADWG value set for Aesthetic's only. Neither parameter has a Health guideline value, so no Health implications

Samples collected from set sample points throughout the Reticulation including high and low flow areas.

Each month samples are collected from 3 locations, systematically rotated to ensure all sample points are captured

## COOK SHIRE COUNCIL - DRINKING WATER QUALITY MANAGEMENT PLAN ANNUAL REPORT

**Table 1.0B Summary of All Treated Water quality details – Sampled from: Lakeland Reticulation, Analysed by: SGS - Cairns (NATA Certified)**

**Sample Period 1/7/2015 - 30/6/2016**

### Metals

Parameter	Unit	No of Samples collected	Summary of Results			ADWQ Guidelines Value (2011)	No of Samples exceeding ADWG	
			Max. Value	Min. Value	Avg. Value		Health	Aesthetic
Arsenic	mg/L	3	<0.003	<0.003	<0.003	0.01-mg/L	0	-
Barium	mg/L	3	0.018	0.017	0.0175	< 2 - mg/L	0	-
Beryllium	mg/L	3	<0.0001	<0.0001	<0.0001	< 0.06 - mg/L	0	-
Cadmium	mg/L	3	<0.0001	<0.0001	<0.0001	< 0.002 - mg/L	0	-
Chromium	mg/L	3	<0.001	<0.001	<0.001	< 0.05 - mg/L	0	-
Cobalt	mg/L	3	<0.001	<0.001	<0.001	-	-	-
Copper	mg/L	3	0.067	0.017	0.036	< 2 - mg/L	0	0
Iron	mg/L	3	<0.005	<0.005	<0.005	< 0.3 - mg/L	-	0
Lead	mg/L	3	0.005	0.001	0.0027	< 0.01 - mg/L	0	-
Manganese	mg/L	3	<0.005	<0.005	<0.005	< 0.1 - mg/L	0	0
Mercury	mg/L	3	<0.00005	<0.00005	<0.00005	< 0.001 - mg/L	0	-
Nickel	mg/L	3	<0.001	<0.001	<0.001	< 0.02 - mg/L	0	-
Selenium	mg/L	3	<0.003	<0.003	<0.003	< 0.01 - mg/L	0	-
Vanadium	mg/L	3	0.028	0.024	0.026	-	-	-
Zinc	mg/L	3	0.031	0.010	0.022	< 3.0 - mg/L	-	0

\* - Indicates no guideline value set for this parameter

Samples collected from set sample points throughout the Reticulation including high and low flow areas.

Each month samples are collected from 3 locations, systematically rotated to ensure all sample points are captured

## COOK SHIRE COUNCIL - DRINKING WATER QUALITY MANAGEMENT PLAN ANNUAL REPORT

**Table 1.1C Summary of E.coli & Coliforms monitoring – Sampled from: Lakeland Reticulation, Analysed by: Cook Shire Council**

**Sample Period 1/7/2015 - 30/6/2016**

	Parameter	Sampling Location	Time Period	No of samples taken in time period	Summary of results		Australian Drinking Water Guidelines guideline value (2011)	No of samples exceeding Australian Drinking Water Guidelines guideline value
					E.coli detected	No of Coliforms detected		
<b>E.coli and Coliforms</b>	E.coli – MPN/100ml	Various set Locations within the Lakeland Reticulation	July 2015 – June 2016	62	0	-	0	0
	Coliforms – MPN/100ml			62	-	0	0	0

Nil E.coli detected from the samples collected and analysed

**Table 1.2 Location of sampling sites within Lakeland's water reticulation network.**

Sample Location Name	Street Name	Site Chosen Because	GPS Coordinates *
SES	Peninsular Development Road	Towards the end of the line	15°51'42.27"S - 144°51'21.53"E
MRD Depot	Cooktown Development Road	Ease of access, Central	15°51'32.22"S - 144°51'27.84"E
Lakeland Library	Sesame Street	Ease of access, Central	15°51'31.05"S - 144°51'18.66"E
Wash Down Bay	Peninsular Development Road	End of the Line	15°51'49.78"S - 144°51'28.11"E
Lakeland Lodge	Back Street	Northern end of Town	15°51'23.10"S - 144°51'19.75"E

All reticulation sampling for all parameters are collected from these fixed sites for the reasons listed



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

For the financial year 2015-2016 there were nil instances where the Regulator needed to be notified under sections 102 or 102A of the Act. There was no detection of E. coli – an organism that may not directly represent a hazard to human health, in any samples but indicates the presence of recent faecal contamination. There were nil incidents that required a “Boil Water Alert” to be issued, or “Do not drink Water” notices displayed in the community.

## 6. Customer complaints related to water quality

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

Cook Shire maintains a “Register of Complaints” which includes Water & Sewerage. Customer Services officers generally receive the initial complaints, which if it’s in the form of a letter, or email, then it is then filed in the “TRIM” Database, a Task is then generated from “Authority” and dispersed to the relevant officer/s for actioning. The relevant officer/s must record the actioned details in “Authority” to complete the Task. So a record of the complaint and the action taken to rectify the problem is all recorded. At the end, the complainant is notified of the outcome of the original complaint

A search of both the “Trim” database and the CRM (Customer Request Management) in “Authority” for the financial year 2015-2016 has failed to locate any Customer Complaints regarding Water Quality

### **Suspected Illness**

Cook Shire Council (Water & Wastewater) are not aware of any customers who suspect their water from the Lakeland Reticulated Water Supply may in some way be associated with an illness or sickness they are experiencing.

### **Discoloured water**

Cook Shire Council had not had any Discoloured water incidents / complaints from the Lakeland Reticulated Water Supply in this reporting period

### **Taste and odour**

Cook Shire Council had not had any Taste & Odour water incidents / complaints for the Lakeland Reticulated Water Supply in this reporting period.

## 7. Findings and recommendations of the DWQMP auditor

Cook Shire Council was not required to conduct a regular audit of the approved DWQMP during the current reporting period, 2015/2016

The first regular audit of Cook Shire’s DWQMP’s must be conducted by 30<sup>th</sup> June 2017

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

Cook Shire Council's first review of the DWQMP's was completed prior to 31<sup>st</sup> March 2016.

Michael Lawrence was engaged through Bligh Tanner to conduct the first review, in conjunction with Cook Shire Officers. Michael is highly qualified and experienced to perform these reviews, which in our case was quite extensive with some major changes to the original plan

The revised plans were submitted to the Regulator on 26/4/2016.

A notification of approval of the "As submitted" plan was received on the 3/8/2016

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

Cook Shire Council has a Water sampling Schedule which shows which samples are to be collected and sent off for analysis on a weekly Basis. This is broken up into the 4 water Schemes. The Coen operator is responsible for the collection and dispatch of all the Coen Sampling, whilst the Cooktown Reticulation team is responsible for the collection and dispatch of all the Cooktown, Lakeland and Laura Samples. Verification monitoring has generally been carried out as per the stated program; some samples have had to be collected on the week before, or after, the dates in the Water Sampling Schedule, due to operational issues / commitments

Being in a remote location, the nearest NATA laboratories are located in Cairns which is over 400km from Cooktown, this has presented various challenges over the years in getting samples to the laboratory.

In the past samples collected have:

- Been taken to the airport only to be told that the flight was cancelled (This seriously affects bacteriological samples)
- Courier company in Cairns failed to pick up the samples at all
- Courier company in Cairns picks up samples but fails to deliver on time ( one instance where the courier picked up Bacto. samples on a Tuesday morning and delivered to the lab on Thursday afternoon)
- Airline or Courier Company completely loses esky containing water samples

So despite our best intentions, not all samples that are collected get to be analysed due to reasons beyond our control. This becomes a huge inconvenience and cost to council to have to re-sample particularly from the even more remote schemes of Lakeland and Laura

Verification monitoring is a tool to verify that the water we are producing and supplying to consumers is a Safe drinking water and that it complies with the ADWG's

**COOK SHIRE COUNCIL - DRINKING WATER QUALITY MANAGEMENT PLAN  
ANNUAL REPORT**

## 9. Verification Monitoring Results

**Table 1.3 - Verification monitoring results (Raw Water) - Physical Chemical (NATA Analysed)**

**Sample Period 1/7/2015 - 30/6/2016**

Scheme component	Parameter Physical / Chemical	Units	Total No. samples collected	Max	Min	Average	Limit of reporting
Raw Water	Alkalinity as CaCO <sub>3</sub>	mg/L as CaCO <sub>3</sub>	4	300.0	280.0	292.5	5
	Calcium, Ca	mg/L	4	40.0	36.0	38.8	0.05
	Chloride, Cl	mg/L	4	130.0	120.0	125.0	1
	Colour Apparent	PCU	4	<5.0	<5.0	<5.0	5
	Conductivity @ 25°C	uS/cm	4	950.0	840.0	897.5	5
	Fluoride, by ISE	mg/L	4	0.310	0.230	0.275	0.05
	L.I.		4	0.5	0.40	0.425	-10
	Magnesium, Mg	mg/L	4	46.0	43.0	45.0	0.05
	pH	pH units	4	7.9	7.7	7.8	0.1
	Potassium, K	mg/L	4	2.2	1.9	2.0	0.05
	Salinity	mg/L	4	620.0	550.0	585.0	10
	SAR		4	2.1	1.8	2.0	
	Silica	mg/L	4	97.0	90.0	93.0	0.05
	Sodium, Na	mg/L	4	81.0	69.0	75.8	05
	Sulphate, SO <sub>4</sub>	mg/L	4	3.2	2.7	3.0	0.5
	TDS	mg/L	4	570.0	500.0	537.5	10
Total Hardness	mg/L as CaCO <sub>3</sub>	4	290.0	270.0	285.0	1	
Turbidity	NTU	4	<0.50	<0.50	<0.50	0.5	

*Analysed by SGS Cairns*

**COOK SHIRE COUNCIL - DRINKING WATER QUALITY MANAGEMENT PLAN  
ANNUAL REPORT**

**Table 1.4 - Verification monitoring results (Raw Water) – Metals (NATA Analysed)**

**Sample Period 1/7/2015 - 30/6/2016**

Scheme component	Parameter Metals	Units	Total No. samples collected	Max	Min	Average	Limit of reporting
Raw Water	Arsenic	mg/L	4	<0.003	<0.003	<0.003	0.003
	Barium	mg/L	4	0.017	0.010	0.014	0.005
	Beryllium	mg/L	4	<0.0001	<0.0001	<0.0001	0.0001
	Cadmium	mg/L	4	<0.0001	<0.0001	<0.0001	0.0001
	Chromium	mg/L	4	<0.001	<0.001	<0.001	0.001
	Cobalt	mg/L	4	<0.001	<0.001	<0.001	0.001
	Copper	mg/L	4	0.020	0.010	0.0155	0.001
	Iron	mg/L	4	<0.005	<0.005	<0.005	0.005
	Lead	mg/L	4	0.002	0.001	0.015	0.001
	Manganese	mg/L	4	<0.005	<0.005	<0.005	0.005
	Mercury	mg/L	4	<0.00005	<0.00005	<0.00005	0.00005
	Nickel	mg/L	4	<0.001	<0.001	<0.001	0.001
	Selenium	mg/L	4	<0.003	<0.003	<0.003	0.003
	Vanadium	mg/L	4	0.025	0.021	0.023	0.005
Zinc	mg/L	4	0.024	0.005	0.010	0.005	

*Analysed by SGS Cairns*

**COOK SHIRE COUNCIL - DRINKING WATER QUALITY MANAGEMENT PLAN  
ANNUAL REPORT**

**Table 1.5 - Verification monitoring results (Treated Water) - Physical Chemical (NATA Lab Analysed)**

**Sample Period 1/7/2015 - 30/6/2016**

Scheme component	Parameter Physical / Chemical	Units	Total No. samples collected	Min Recorded Value	Max Recorded Value	Average (Mean)	Limit of reporting	No. of samples exceeding water quality criteria for AWDG Health or Aesthetic Guidelines	
								Health	Aesthetic
<b>Compound Final Treated Water and Reticulation</b>	Alkalinity as CaCO <sub>3</sub>	mg/L as CaCO <sub>3</sub>	8	260	290	276.25	5	-	-
	Calcium, Ca	mg/L	8	35.0	40.0	36.25	0.05	-	-
	Chloride, Cl	mg/L	8	100.00	120.00	111.25	1	0	-
	Colour Apparent	PCU	8	<5.0	<5.0	<5.0	5	0	-
	Conductivity @ 25°C	uS/cm	8	820	860	841	5	-	-
	Fluoride, by ISE	mg/L	8	0.28	0.39	0.32	0.05	0	0
	L.I.		8	0.4	0.7	0.5	-10	-	-
	Magnesium, Mg	mg/L	8	39.0	46.0	41.5	0.05	-	-
	pH	pH units	8	7.8	8.1	7.88	0.1	0	-
	Potassium, K	mg/L	8	1.80	2.00	1.93	0.05	-	-
	Salinity	mg/L	8	530.0	560.0	548.0	10	-	-
	SAR		8	1.80	2.20	1.98			
	Silica	mg/L	8	92.0	110.0	97.0	0.05	-	8
	Sodium, Na	mg/L	8	65.0	81.0	73.62	0.5	0	-
	Sulphate, SO <sub>4</sub>	mg/L	8	2.90	3.30	3.07	0.5	-	-
	TDS	mg/L	8	490.0	520.0	506.25	10	-	0
Total Hardness	mg/L as CaCO <sub>3</sub>	8	250.0	290.0	263.75	1	-	8	
Turbidity	NTU	8	<0.5	<0.5	<0.5	0.5	0	-	

*Analysed by SGS Cairns*

## COOK SHIRE COUNCIL - DRINKING WATER QUALITY MANAGEMENT PLAN ANNUAL REPORT

**Table 1.6 - Verification monitoring results (Treated Water) – Metals (NATA Lab Analysed)**

**Sample Period 1/7/2015 - 30/6/2016**

Scheme component	Parameter Metals	Units	Total No. samples collected	Max Recorded Value	Min Recorded Value	Average (Mean)	Limit of reporting	No. of samples exceeding water quality criteria for Health or Aesthetic Guidelines	
								Health	Aesthetic
<b>Treatment Plant Final Treated Water and Reticulation</b>	Arsenic	mg/L	5	<0.003	<0.003	<0.003	0.003	0	-
	Barium	mg/L	5	0.018	0.0001	0.0172	0.005	0	-
	Beryllium	mg/L	5	<0.0001	<0.0001	<0.0001	0.0001	0	-
	Cadmium	mg/L	5	<0.0001	<0.0001	<0.0001	0.0001	0	-
	Chromium	mg/L	5	<0.001	<0.001	<0.001	0.001	0	-
	Cobalt	mg/L	5	<0.001	<0.001	<0.001	0.001	-	-
	Copper	mg/L	5	0.067	0.016	0.0328	0.001	0	0
	Iron	mg/L	5	<0.005	<0.005	<0.005	0.005	-	0
	Lead	mg/L	5	0.005	0.001	0.0022	0.001	0	-
	Manganese	mg/L	5	<0.005	<0.005	<0.005	0.005	0	0
	Mercury	mg/L	5	<0.00005	<0.00005	<0.00005	0.00005	0	-
	Nickel	mg/L	5	<0.001	<0.001	<0.001	0.001	0	-
	Selenium	mg/L	5	<0.003	<0.003	<0.003	0.003	0	-
	Vanadium	mg/L	5	0.028	0.024	0.0254	0.005	-	-
Zinc	mg/L	5	0.0310	<0.005	0.0154	0.005	-	0	

*Analysed by SGS Cairns*

**COOK SHIRE COUNCIL - DRINKING WATER QUALITY MANAGEMENT PLAN  
ANNUAL REPORT**

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**Table 1.7 - Verification monitoring results - (Coliforms / E.coli)**

**Sample Period 1/7/2015 - 30/6/2016**

Lakeland	Parameter Coliforms / E.coli	Units	Total No. samples collected	No. of samples in which parameter was detected	No. of samples exceeding water quality criteria
<b>Lakeland Reticulation</b>	Coliforms	MPM / 100 ml	69	0	0
	E.coli	MPM / 100 ml	69	0	0

*Analysed by CSC at the Annan T/Plant Lab. or SGS Cairns*

## COOK SHIRE COUNCIL - DRINKING WATER QUALITY MANAGEMENT PLAN ANNUAL REPORT

**Table 2 - Reticulation *E. coli* verification monitoring**

Lakeland's rolling average for *E.coli* compliance is 100%, in any month of the reporting period

Drinking water scheme: Lakeland

Year	2015/16											
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	5	9	5	4	5	8	4	9	4	4	8	4
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	56	60	60	60	61	63	63	67	66	66	69	69
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	YES	YES	YES	YES	YES	YES	YES	YES	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).



**COOK SHIRE COUNCIL - DRINKING WATER QUALITY MANAGEMENT PLAN  
ANNUAL REPORT**

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

### Progress in implementing the risk management improvement program

Existing Risk Management Improvement Program with “Progress to Completion” column added

Scheme Component / Sub- component	Hazard/ Hazardous event	Priority	Action(s)			Target date/s	Progress to Completion
			interim	short-term	long-term		
Sodium Hypochlorite dosing	Only one dosing pump No duty / Standby arrangement	High	Maintain monitoring of Chlorine Residual at Treatment Plant	Maintain a new pump on site at all times and maintain stocks of spare parts	Install a second dosing pump with associated wiring, switchboard alterations and integration into the PLC and SCADA	Short term – Costings June 2014 (Inclusion in 2015-16 Budget) Completion - May 2017	Currently in Progress – Equipment Purchased – Not yet installed
Loss of Mains Power (No power utility network damage)	Periods of loss of mains power	High	Rely on the Ergon Energy Generators located in Cooktown		Purchase of suitable sized generator / investigate alternative power sources	June 2018	Currently in Progress – Equipment Purchased – Not yet installed – Will be installed prior to the upcoming wet season
Loss of Mains Power (Due to natural Disaster/s)	Extended periods of No mains Power due to power utilities distribution network severely damaged	High	N.A.	Hire of suitable sized generator if power not available at the Treatment Plant	Purchase of suitable sized generator / installation of alternative power sources	June 2018	
Staff	Loss of Key & Trained Staff	High	Maintain existing recruitment practices	Offer further training within their field to try and encourage employees to develop and attain certification certificates so that positions can be filled from “In House”		On Going	A recent Council “Restructure” saw 3 Water operations staff members with nearly 30 years combined experience, including 2 with Cert 3 in “Water & Wastewater Operations” lost to Redundancy
Operational & Maintenance Procedures	N.A	Medium	Identify outdated procedures, update and obtain approval and implement	Identify new procedures needed, develop and obtain approval and implement		Dec 2016	CSC Recently rolled out the new SafePlan throughout the Shire

**COOK SHIRE COUNCIL - DRINKING WATER QUALITY MANAGEMENT PLAN  
ANNUAL REPORT**

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## Appendix C – Implementation of the 2016/17 Budgeted Capital Works Improvement Program

### Progress in implementing the 2016/17 Budget Capital Works improvement program

Capital Works Item	Priority	Completion Target Date	Progress to Completion
Replacement of Treated Water Reservoir	High	Completion - June 2017	Not yet Started
Install permanent Diesel Generator to operate all Water infrastructure with auto changeover on Power failure	High	Completion - June 2017	75% Completed
New Bore to replace existing Bore (Collapsed Casing)	High	Completion - June 2017	Completed