

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

For the financial year: 2018-2019

Scheme: COOKTOWN

## **Cook Shire Council**

SPID: 511

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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
µg/L	Micrograms per litre
NTU	Nephelometric Turbidity Units
HU	Hazen units
µS/cm	Micro Siemens per centimetre
MPN/100mL	Most probable number per 100 millilitres
CFU/100mL	Colony forming units per 100 millilitres
<	Less than
>	Greater than
NATA Lab	Accredited by the National Association of Testing Authorities of Australia. Cook Shire Council currently uses the Cairns Regional Council Laboratory as its NATA registered Lab.
CCP's	Critical Control Point
RMIP	Risk Management Improvement Program

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## 1. Introduction

This is the Drinking Water Quality Management Plan (DWQMP) report for Cook Shire Council for the financial year 2018-2019 for the Cooktown Water Scheme.

Cook Shire Council is a registered service provider with identification (SPID) number 511. Cook Shire Council is operating under an approved DWQMP 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 risks associated with drinking water.

The DWQMP 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 DWQMP

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

## 2. Overview of Operations

Cooktown's Water is sourced from the Annan River which originates high in the rainforest from the North and North western sides of Mount Misery, Poverty and Mt Romeo which is North North West of Bloomfield. The catchment area of approx. 37,350 ha is in pristine rainforest and has very limited human impact apart from the ex Collingwood Tin Mine.

Water is pumped up from the Annan River to the Treatment Plant site where it undertakes the following treatment processes:

- Coagulation & Flocculation
- Sedimentation
- Filtration
- Chlorination
- Fluoridation

The treated water is pumped to a 2ML Reservoir on site, and then gravity feeds to the Cooktown High Level Reservoir, in Cooktown, as required via telemetry signals. The Cooktown Reservoir directly supplies water to the Cooktown after being re-chlorinated.

Cooktown currently has 940 Service connections which can be broken down to approximately:

- Residential - 79%
- Commercial / Industrial - 11%
- With the remaining 10% being Government, Council, Institutional or Other

Cooktown's water has historically been a very safe and reliable water supply and given its origins in the rainforest is also pleasant tasting as well. Cooktown's water won the Queensland Water Directorate's "Best Tasting Tap Water in Queensland" in 2013.

### 3. Actions taken to implement the DWQMP

Water and Wastewater department staff meet fortnightly to discuss the department's operational issues. This provided an opportunity to refer to the approved DWQMP and emphasise the importance of using the plan. These meetings are chaired by the Manager of Water and Wastewater and the Team Leader.

All Water and Wastewater Treatment Plant Operators have a Certificate III. Council will continue with Certificate III training for reticulation staff as it gives them a greater understanding of the importance of drinking water quality in their roles. They are responsible for sampling the water reticulation network and they can fill in at the Water and Wastewater Treatment Plants. Recruitment into Water and Wastewater Treatment Plant Operator positions can be difficult and training all staff allows a small Council such as Cook Shire Council to recruit reticulation staff into these positions.

Revisions were made to the DWQMP in the 2016-2017 years and the plan was approved on the 19/07/2018. The sampling schedule was updated in 2018 to match the DWQMP sampling commitments.

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Scheme	Component	Improvement Action and Origin of Action	Target Date	Actions undertaken to date	Status and revised target date	Responsible officer
Cooktown	Raw Water	E.coli monitoring in raw water	30 <sup>th</sup> June 2019	Commenced E.coli monitoring in raw Annan water	Completed. Sampling on-going	Manager
Cooktown	Reticulation	Develop reticulation infrastructure maintenance records (audit report 2017)	30 <sup>th</sup> June 2019	Reservoir inspections, cleaning, bore inspections, service and mains repairs etc... are all captured using the SWIM database and Council hazard inspections. Mains flushing records are yet to established	Completed apart from mains flushing	Manager
Cooktown	Annan Water Treatment Plant and Reticulation	Procedures for Cooktown (RMIP)	30 <sup>th</sup> June 2019	Procedures for Cooktown are still in progress. 32 procedures are available for Cooktown Water treatment plant and reticulation system.	In Progress/on-going	Manager/Team Leader Reticulation
Cooktown	Reticulation	Replaced 80mm AC water mains in sections of Walker, John and Howard Streets	30 <sup>th</sup> June 2018	Main replacement completed	Completed	Manager/Team Leader Reticulation
Cooktown	Reticulation	Temporary seal to stop 4 Mile Reservoir leaking	30 <sup>th</sup> August 2019	Reservoir has temporary seal to try to stop leak. Reservoir needs replacing. Replacement reservoir due in 2018/19 financial year	Started in 2018/19 financial year and due to finish in August 2019.	Manager/Team Leader Reticulation
Cooktown	Water supply	Contingent water supply for Cooktown if natural disaster or other issue renders the Annan WTP inoperable, borefield to be alternative water supply.	30 <sup>th</sup> June 2018	Investigating costs associated with reinstating borefield. Information note has gone to Council Meeting.	Grant funding sort for the 2019/2020 financial year	Manager/Workshop Manager
Cooktown	Reticulation	Install a second dosing pump at the Cooktown High Level Reservoir	30 <sup>th</sup> June 2019	Shed and chlorine dosing system being built next financial year. Shed has been designed.	In progress	Team Leader Reticulation/Building Supervisor
Cooktown	Annan Water Treatment Plant	Turbidity monitoring on individual filters	30 <sup>th</sup> June 2019	Combined Filter installed. Only 4 filters and if turbidity breakthrough occurs on one filter it is noticeable in combined meter.	Not being implemented	Manager Water and Wastewater

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<b>Scheme</b>	<b>Component</b>	<b>Improvement Action and Origin of Action</b>	<b>Target Date</b>	<b>Actions undertaken to date</b>	<b>Status and revised target date</b>	<b>Responsible officer</b>
Cooktown	Reticulation	Flushing program	30 <sup>th</sup> June 2020	Tasks being set up in the SWIM database tasks section to ensure flushing is done yearly.	Flushing information still needs to be captured better	Manager Water and Wastewater
Cooktown	Annan Water Treatment Plant and Reticulation	Training Staff in Certificate III Water Operations	30th December 2020	All operators are trained in Cert III. New training starting next year for the Network Operators (Reticulation staff)	In progress	Manager Water and Wastewater
Cooktown	Reticulation	Trihalomethane and chlorate sampling in reticulation (Q Health advice)	30 <sup>th</sup> June 2019	Sampling started January 2019 and ongoing	On-going	Manager Water and Wastewater
Cooktown	Raw Water	E. coli monitoring in raw water (Health based targets workshop)	30 <sup>th</sup> June 2019	Sampling started January 2019 and ongoing	On-going	Manager Water and Wastewater
Cooktown	Reticulation	Replacement of hydrants and valves	30 <sup>th</sup> June 2019	Numerous valves and hydrants replaced and on-going maintenance	On-going	Manager Water and Wastewater

#### 4. Operational and Verification Monitoring – Water Quality Information and Summary.

All drinking water in Cooktown met the recommended values in the Australian Drinking Water Guidelines and the Public Health Regulation for *E.coli*.

The following results for Cooktown are in Appendix A:

Table 2A: Cooktown Reticulation – Physical Chemical – (NATA Lab)
Table 2B: Cooktown Reticulation – Metals – (NATA Lab)
Table 2C: Cooktown Reticulation – E.coli (CSC Annan Lab and NATA Lab verification)
Table 2D: Cooktown Reticulation – Physical Chemical – (CSC Annan WTP Lab)
Table 2E: Cooktown Reticulation - Trihalomethanes and Chlorate
Table 2F: Cooktown Reticulation and Annan WTP Plant – Fluoride – (CSC Annan WTP Lab and NATA Verification)
Table 3A: Cooktown Annan WTP Treated Water Final – Physical Chemical (NATA Lab)
Table 3B: Cooktown Annan WTP Treated Water Final - Metals (NATA Lab)
Table 3C: Cooktown Annan WTP Treated Water Final – Physical Chemical including Free Chlorine – (CSC Annan WTP Lab and on-line analyser)
Table 3D: Cooktown Annan WTP Treated Water Final – <i>E.coli</i> monitoring (CSC Annan WTP Lab & NATA Lab verification)
Table 4A: Cooktown Raw Water - Physical Chemical (NATA Lab)
Table 4B: Cooktown Raw Water - Metals (NATA Lab)
Table 4C: Cooktown Raw Water – E. coli (CSC Annan WTP lab)
Table 4D: Cooktown Borefields Raw Water – Physical chemical (NATA Lab)
Table 4E: Cooktown Borefields Raw Water – Metals (NATA lab)
Table 5: Reticulation <i>E. coli</i> 12 Month Rolling Average



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**Table 1 Location of sampling sites within Cooktown's water reticulation network.**

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

Sample Location Name	Street Name	Site Chosen Because	GPS Coordinates *
Mobil Service Stn	Endeavour Valley Road	Towards the end of the line.	15°28'21.81"S - 145°13'13.98"E
Powder Magazine	Webber Esplanade	Towards the end of the line.	15°27'27.49"S - 145°15'14.33"E
Lions Park	Charlotte St	Ease of access	15°27'51.65"S - 145°15'2.91"E
Cooktown Library	Helen St	Centrally located in Residential area	15°28'16.08"S - 145°14'57.80"E
Simmo's	Furneaux St	Residential area	15°28'13.02"S - 145°15'22.46"E
Water Depot	Boundary St	Towards the end of the line.	15°28'29.80"S - 15°28'29.80"S
Cemetery	Charlotte	Ease of access	15°28'38.90"S - 145°14'30.40"E
Cooktown Hospital	Hope St	Close to Hospital & Medical Services	15°28'40.87"S - 145°14'58.82"E
Cooktown Kindergarten	Charles St	Close to Kindergarten and Schools	15°28'52.40"S - 145°15'10.27"E
Royce's Paddock	Ida St	Towards the end of the line.	15°28'51.64"S - 145°15'31.98"E
Ambrose old Service Racecourse Rd	Racecourse Rd	Centrally located in Residential area	15°28'51.85"S - 145°14'22.21"E
Peninsular Pump Station	Howard St	Towards the end of the line.	15°28'34.25"S - 145°15'26.40"E

## 5. Notifications to the Regulator

There were no incidents in the 2018-2019 financial year where the Regulator needed to be notified.

There were no events in the 2018-2019 financial year.

## 6. Customer complaints related to water quality

There were 3 customer water quality complaints in the 2018-2019 financial year regarding high colour in the water.

## 7. DWQMP review outcomes

An internal review of the DWQMP was done in the 2017-2018 financial year. Changes were made to the plan and the plan was approved on the 19/07/2018. Next review of the plan is due by 31 March 2020.

## 8. DWQMP audit findings

There was no audits on the DWQMP due in the 2018-2019 financial year. The next audit is due by 30 June 2021.

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Appendix A – Summary of compliance with water quality criteria

**Table 2A Cooktown Reticulation – Treated Water – Physical Chemical (NATA Lab)**

Date Sampled – 01/07/2018 – 30/06/2019									
Parameter	Unit	No of samples required to be collected	No of Samples collected	Summary of Results			ADWQ Guidelines Value (2011)	No of Samples exceeding ADWG	
				Min. Value	Max. Value	Avg. Value		Health	Aesthetic
Alkalinity	mg/L as CaCO <sub>3</sub>	12	12	36.0	56.0	48.58	-	-	-
Calcium	mg/L	12	12	12.0	20	17.6	-	-	-
Chloride	mg/L	12	12	14.0	21.0	16.31	< 250 mg/L	-	0
Colour	HU	12	12	1.0	10.0	2.11	< 15 HU	-	0
Electrical Conductance	µS/cm	12	12	150.0	200.0	174.17	-	-	-
Fluoride	mg/L	12	12	0.63	0.76	0.69	< 1.5 mg/L	0	-
Magnesium	mg/L	12	12	0.95	1.4	2.00	-	-	-
pH	pH units	12	12	7.7	8.2	7.92	6.5-8.5	-	0
Potassium	mg/L	12	12	0.98	11.0	2.00	-	-	-
SAR		12	12	0.82	3.0	1.13	-	-	-
Sodium	mg/L	12	12	14.0	67.0	19.66	< 180 mg/L	-	0
Sulphate	mg/L	12	12	8.7	14.0	10.77	< 250 mg/L	0	0
Total Dissolved Solids	mg/L	12	12	80.0	110.0	98.0	< 600 mg/L	-	0
Total Hardness	mg/L as CaCO <sub>3</sub>	12	12	34.0	94.0	51.50	1	-	4
Turbidity	NTU	12	12	0.10	1.8	0.42	< 5 NTU	-	0

Note: Correct number of samples taken. Some parameters not reported by laboratory.

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**Table 2B Cooktown Reticulation – Treated Water – Metals (NATA Lab)**

Date Sampled – 01/07/2018 – 30/06/2019									
Parameter	Unit	No of Samples required to be collected	No of Samples collected	Summary of Results			ADWQ Guidelines Value (2011)	No of Samples exceeding ADWG	
				Min. Value	Max. Value	Avg. Value		Health	Aesthetic
Arsenic	mg/L	12	13	0.0003	0.001	0.0006	0.01 mg/L	0	-
Barium	mg/L	12	13	0.004	0.006	0.0051	< 2 mg/L	0	-
Beryllium	mg/L	12	13	0.0001	0.001	0.0003	< 0.06 mg/L	0	-
Cadmium	mg/L	12	13	0.0001	0.001	0.0001	< 0.002 mg/L	0	-
Chromium	mg/L	12	13	0.0002	0.0022	0.0005	< 0.05 mg/L	0	-
Cobalt	mg/L	12	13	0.0005	0.001	0.0006	-	-	-
Copper	mg/L	12	13	0.001	0.039	0.0073	< 2 mg/L	0	0
Iron	mg/L	12	13	0.008	0.01	0.0086	< 0.3 mg/L	-	0
Lead	mg/L	12	13	0.0005	0.005	0.0009	< 0.01 mg/L	0	-
Manganese	mg/L	12	13	0.0001	0.001	0.0005	< 0.1 mg/L	0	0
Mercury	mg/L	12	13	0.00006	0.0001	0.00007	0.001 mg/L		
Nickel	mg/L	12	13	0.0005	0.001	0.0006	< 0.02 mg/L	0	-
Selenium	mg/L	12	13	0.002	0.005	0.0027	< 0.01 mg/L	0	-
Vanadium	mg/L	12	13	0.0001	0.001	0.0004	-	-	-
Zinc	mg/L	12	13	0.005	0.018	0.0088	< 3.0 mg/L	-	0

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**Table 2C Cooktown Reticulation – E.coli and coliform monitoring**

Date Sampled – 01/07/2018 – 30/06/2019								
	Parameter	Sampling Location	Time Period	No of samples required to be taken	No of samples taken	No of samples with E.coli detected	Public Health Regulation standard (2018)	Laboratory
<b>E.coli and Coliforms</b>	E.coli – MPN/100ml	12 sample points throughout Cooktown reticulation	01/07/18 – 30/06/19	156	156	0	0	Annan WTP
<b>E.coli and Coliforms</b>	E. coli cfu/100ml		01/07/18 – 30/06/19	12	15	0	0	Cairns Regional Council

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**Table 2D Cooktown Reticulation – Physical Chemical – (CSC Annan WTP Lab)**

Date Sampled – 01/07/2018 – 30/06/2019							
Parameter	Unit	Sample Site	No of samples required to be taken	No of Samples collected	Summary of Results		
					Min. Value	Max. Value	Avg. Value
<b>Daily Samples</b>							
Free Chlorine Residual	mg/L	Fire Station Reservoir	365	354*	0.40	1.34	0.80
Total Chlorine Residual	mg/L	Fire Station Reservoir	0	50	0.55	1.45	0.86
Free Chlorine Residual	mg/L	New Pump Station	365	364*	0.45	1.34	0.89
Total Chlorine Residual	mg/L	New Pump Station	0	49	0.41	1.31	0.93
Free Chlorine Residual	mg/L	Four Mile Reservoir	365	363*	0.30	1.23	0.77
Total Chlorine Residual	mg/L	Four Mile Reservoir	0	53	0.53	1.03	0.81
<b>Monthly</b>							
Free Chlorine Residual	mg/L	Reticulation	36	33	0.48	1.03	0.75
Colour	mg/L	Reticulation	36	33	0.00	26.0 <sup>#</sup>	0.32
Dissolved Oxygen	mg/L	Reticulation	36	33	5.85	7.99	6.54
Electrical Conductivity	mg/L	Reticulation	36	33	106.0	224.0	179.7
pH	mg/L	Reticulation	36	33	6.98	7.90	7.48
Total Dissolved Solids	mg/L	Reticulation	36	33	63.1	124.0	102.6
Total Hardness	mg/L	Reticulation	36	33	13.0	47.0	35.0
Turbidity	mg/L	Reticulation	36	33	0.1	1.62 <sup>#</sup>	0.25

Samples collected from Cooktown Reticulation sample points as listed in Table 1. No set number of sample required to be collected. These are operational samples to ensure a chlorine residual throughout Cooktown.

\*Fire Station Reservoir was off line for 10 days due to the replacement of the internal and external ladders. One day's record of free chlorine was lost in a vehicle roll over in January 2019 for all free chlorine residuals at the reservoirs and pump station. Four Mile Reservoir was inaccessible in December 2018 due to flooding.

<sup>#</sup>Dirty water complaint due to road workers and rollers on the road in the area. This resulted in a colour of 26 and a turbidity of 1.62. Mains were flushed.

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**Table 2E Cooktown Reticulation – Trihalomethanes and Chlorates (NATA Lab)**

Date Sampled – 01/07/2018 – 30/06/2019									
Parameter	Unit	No of Samples required to be collected	No of Samples collected	Summary of Results			ADWQ Guidelines Value (2011)	No of Samples exceeding ADWG or WHO	
				Min. Value	Max. Value	Avg. Value		Health	Aesthetic
Chloroform	µg/L	6	6	10	101	44	<250 µg/L	0	-
Bromodichloromethane	µg/L	6	6	14	34	23	<250 µg/L	0	-
Dibromochloromethane	µg/L	6	6	9	10	9	< 250 mg/L	0	-
Bromoform	µg/L	6	6	5	5	5	<250 µg/L	0	-
Total Trihalomethanes	µg/L	6	6	33	144	76	<250 µg/L	0	-
Chlorate	mg/L	6	6	0.600	1.570	1.170	<0.7 mg/L*	2	-

- WHO provisional guideline.

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**Table 2F Cooktown Reticulation and Annan Water Treatment Plant – Fluoride – (CSC Annan WTP Lab and NATA Lab)**

Date Sampled – 01/07/2018 – 30/06/2019								
Parameter (mg/L)	Laboratory	Sampling Location	No of samples required to be collected	No of samples collected	Summary of results			No of samples exceeding Australian Drinking Water Guidelines value
					Min. Value	Max. Value	Avg. Value	
Fluoride	Cook Shire Council Annan WTP	Annan WTP	365	353	0.50	0.85	0.70	0
Fluoride (2 sites)	Cook Shire Council Annan WTP	Reticulation	104	88	0.26	0.87	0.69	0
Fluoride	Cairns Regional Council NATA lab	Annan WTP	12	12	0.63	0.79	0.70	0
Fluoride (2 sites)	Cairns Regional Council NATA lab	Reticulation	24	24	0.59	0.76	0.69	0

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**Table 3A Cooktown Annan WTP Treated Water Final - Physical Chemical (NATA Lab)**

Date Sampled – 01/07/2018 – 30/06/2019									
Parameter	Unit	No of Samples required to be collected	No of Samples collected	Summary of Results			ADWQ Guidelines Value (2011)	No of Samples exceeding ADWG	
				Min. Value	Max. Value	Avg. Value		Health	Aesthetic
Alkalinity	mg/L as CaCO <sub>3</sub>	12	12	9.1	54.0	38.8	-	-	-
Calcium	mg/L	12	12	1.3	19.0	12.8	-	-	-
Chloride	mg/L	12	12	12.0	23.0	17.5	< 250 mg/L	-	0
Colour	HU	12	12	1.0	1.1	1.0	< 15 HU	-	0
Electrical Conductance	µS/cm	12	12	92.0	210.0	159.2	-	-	-
Fluoride	mg/L	12	12	0.03	0.75	0.65	< 1.5 mg/L	0	-
Magnesium	mg/L	12	12	1.1	2.2	1.6	-	-	-
pH	pH units	12	12	7.30	7.90	7.52	6.5-8.5	-	0
Potassium	mg/L	12	12	0.9	2.0	1.2	-	-	-
SAR		12	12	0.85	2.10	1.23	-	-	-
Salinity	mg/L	12	12	47.8	100.0	78.4	-	-	-
Silicon	mg/L	12	12	9.3	14.0	11.1	-	-	-
Sodium	mg/L	12	12	13.0	18.0	15.0	< 180 mg/L	-	0
Sulphate	mg/L	12	12	7.2	15.0	10.3	< 250 mg/L	0	0
Total Dissolved Solids	mg/L	12	12	56.0	110.0	92.4	< 600 mg/L	-	0
Total Hardness	mg/L as CaCO <sub>3</sub>	12	12	8.2	54.0	38.3	< 200 mg/L	-	4
Turbidity	NTU	12	12	0.1	0.4	0.2	<5 NTU	0	1



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**Table 3B Cooktown Annan WTP Treated Water Final – Metals – (NATA Lab)**

Date Sampled – 01/07/2018 – 30/06/2019									
Parameter	Unit	No of Samples required to be collected	No of Samples collected	Summary of Results			ADWQ Guidelines Value (2011)	No of Samples exceeding ADWG	
				Min. Value	Max. Value	Avg. Value		Health	Aesthetic
Arsenic	mg/L	4	4	0.0002	0.0010	0.0006	0.01 mg/L	0	-
Barium	mg/L	4	4	0.003	0.005	0.004	< 2 mg/L	0	-
Beryllium	mg/L	4	4	0.0001	0.0010	0.0003	< 0.06 mg/L	0	-
Cadmium	mg/L	4	4	0.0001	0.0001	0.0001	< 0.002 mg/L	0	-
Chromium	mg/L	4	4	0.0000	0.0010	0.0004	< 0.05 mg/L	0	-
Cobalt	mg/L	4	4	0.0005	0.0010	0.0006	-	-	-
Copper	mg/L	4	4	0.0010	0.0010	0.0010	< 2 mg/L	0	0
Iron	mg/L	4	4	0.0080	0.0100	0.0085	< 0.3 mg/L	-	0
Lead	mg/L	4	4	0.0005	0.0010	0.0006	< 0.01 mg/L	0	-
Manganese	mg/L	4	4	0.001	0.003	0.002	< 0.1 mg/L	0	0
Mercury	µg/L	4	4	0.06	0.10	0.07	<1.0 µg/L		
Nickel	mg/L	4	4	0.0005	0.0010	0.0006	< 0.02 mg/L	0	-
Selenium	mg/L	4	4	0.0020	0.0050	0.0028	< 0.01 mg/L	0	-
Vanadium	mg/L	4	4	0.0001	0.0010	0.0004	-	-	-
Zinc	mg/L	4	4	0.0050	0.0080	0.0073	< 3.0 mg/L	-	0

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

**Table 3C Cooktown Annan WTP Treated Water Final – Physical Chemical – (CSC Annan WTP Lab)**

Date Sampled – 01/07/2017 – 30/06/2018									
Parameter	Unit	No of samples required to be collected	No of Samples collected	Summary of Results			ADWQ Guidelines Value (2011)	No of Samples exceeding ADWG	
				Min. Value	Max. Value	Avg. Value		Health	Aesthetic
Free Chlorine Residual	mg/L	365	361	0.97	2.16	1.49	<5	0	-
Total Chlorine Residual	mg/L	365	17	1.21	2.17	1.60	<5	0	0
Alkalinity	mg/L as CaCo <sub>3</sub>	52	361	8.0	75.0	39.2	-	-	-
Aluminium	mg/L	52	263	0	0.06	0.002	0.2	-	0
Colour	HU	365	360	0	8	0.12	<15	-	0
Electrical Conductivity	µS/cm	52	360	89.4	223.7	161.6	-	-	-
pH	pH units	365	360	6.50	7.95	6.89	6.5-8.5	-	0
Total Dissolved Solids	mg/L	365	359	57.9	135.4	100.9	< 600 mg/L	-	0
Total Hardness	mg/L as CaCo <sub>3</sub>	365	222	8.00	55.00	37.43	< 200 mg/L	-	0
Calcium Hardness	mg/L as CaCo <sub>3</sub>	260	228	0	48	28	-	-	-
Turbidity	NTU	365	359	0.03	1.07	0.08	< 5 NTU	-	0

**Table 3D Cooktown Annan WTP Treated Water Final – E.coli monitoring – Cook Shire Council Annan WTP Lab**

Date Sampled – 01/07/2017 – 30/06/2018					
Parameter (MPN/100ml)	Sampling Location	No. of samples required to be collected	No of samples taken in time period	E.coli detected	No of samples exceeding Australian Drinking Water Guidelines guideline value
E.coli	Final Treated Water Annan Water Treatment Plant	52	52	0	0

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**Table 4A Cooktown Annan River Raw Water - Physical Chemical (NATA Analysed)**

Date Sampled – 01/07/2018 – 30/06/2019						
Parameter	Unit	No of Samples required to be collected	No of Samples collected	Summary of Results		
				Min. Value	Max. Value	Avg. Value
Alkalinity	mg/L as CaCO <sub>3</sub>	6	6	5.9	12.0	8.8
Calcium	mg/L	6	6	0.9	1.5	1.2
Chloride	mg/L	6	6	13.0	17.0	14.8
Colour	HU	6	6	12.0	40.0	22.8
Electrical Conductance	µS/cm	6	6	61.0	84.0	70.8
Fluoride	mg/L	6	6	0.03	0.42	0.11
Magnesium	mg/L	6	6	1.20	1.70	1.48
pH	pH units	6	6	7.00	7.30	7.20
Potassium	mg/L	6	6	0.9	1.2	1.1
SAR		6	6	1.20	1.40	1.35
Salinity	mg/L	6	6	34.1	93.0	47.4
Silicon	mg/L	6	6	11.0	15.0	12.5
Sodium	mg/L	6	6	7.8	10.0	9.2
Sulphate	mg/L	6	6	1.5	2.0	1.8
Total Dissolved Solids	mg/L	6	6	38.0	57.0	46.5
Total Hardness	mg/L as CaCO <sub>3</sub>	6	6	7.2	11.0	9.0
Turbidity	NTU	6	6	1.2	8.7	4.0

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**Table 4B Cooktown Annan River Raw Water – Metals (NATA Analysed)**

Date Sampled – 01/07/2018 – 30/06/2019						
Parameter	Unit	No of Samples required to be collected	No of Samples collected	Summary of Results		
				Min. Value	Max. Value	Avg. Value
Arsenic	mg/L	4	4	0.0002	0.0010	0.0006
Barium	mg/L	4	4	0.003	0.005	0.004
Beryllium	mg/L	4	4	0.0001	0.0010	0.0003
Cadmium	mg/L	4	4	0.0001	0.0001	0.0001
Chromium	mg/L	4	4	0.000	0.0010	0.0004
Cobalt	mg/L	4	4	0.0005	0.0010	0.0006
Copper	mg/L	4	4	0.0010	0.0010	0.0010
Iron	mg/L	4	4	0.0080	0.0100	0.0085
Lead	mg/L	4	4	0.0005	0.0010	0.0006
Manganese	mg/L	4	4	0.001	0.003	0.002
Mercury	µg/L	4	4	0.060	0.100	0.070
Nickel	mg/L	4	4	0.0005	0.0010	0.0006
Selenium	mg/L	4	4	0.0020	0.0050	0.0028
Vanadium	mg/L	4	4	0.0001	0.0010	0.0004
Zinc	mg/L	4	4	0.0050	0.0080	0.0073

**COOK SHIRE COUNCIL - DRINKING WATER QUALITY MANAGEMENT PLAN  
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Table 4C Cooktown Annan River Raw Water – E.coli (CSC Annan WTP Lab)

Date Sampled – 01/07/2018 – 30/06/2019							
Parameter (MPN/100ml)	Sampling Location	Time Period	Minimum	Maximum	Average	Number of samples taken	Laboratory
E.coli	Annan River intake	01/07/18 – 30/06/19	1	145	39	23	Annan WTP

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

Table 4D Cooktown Borefields Raw Water - Physical Chemical (NATA Analysed)

Date Sampled – 01/07/2018 – 30/06/2019						
Parameter	Unit	No of Samples required to be collected	No of Samples collected	Summary of Results		
				Min. Value	Max. Value	Avg. Value
Alkalinity	mg/L as CaCO <sub>3</sub>	3	2	160	170	165
Calcium	mg/L	3	2	21.0	28.0	24.5
Chloride	mg/L	3	2	87.0	100.0	93.5
Colour	HU	3	2	15.0	32.0	23.5
Electrical Conductance	µS/cm	3	2	610.0	650.0	630.0
Fluoride	mg/L	3	2	0.20	0.22	0.21
Magnesium	mg/L	3	2	16.0	18.0	17.0
pH	pH units	3	2	7.20	7.50	7.35
Potassium	mg/L	3	2	1.4	1.8	1.6
SAR		3	2	2.30	3.20	2.75
Salinity	mg/L	3	2	294.0	315.0	304.5
Silicon	mg/L	3	1	52.0	52.0	52.0
Sodium	mg/L	3	2	65.0	80.0	72.5
Sulphate	mg/L	3	2	5.3	6.2	5.83
Total Dissolved Solids	mg/L	3	2	350.0	370.0	360.0
Total Hardness	mg/L as CaCO <sub>3</sub>	3	2	120	140	130
Turbidity	NTU	3	2	4.4	18.0	11.2

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Table 4E Cooktown Borefields Raw Water – Metals (NATA Analysed)

Date Sampled – 01/07/2018 – 30/06/2019						
Parameter	Unit	No of Samples required to be collected	No of Samples collected	Summary of Results		
				Min. Value	Max. Value	Avg. Value
Arsenic	mg/L	2	2	0.0002	0.0003	0.0003
Barium	mg/L	2	2	0.007	0.008	0.008
Beryllium	mg/L	2	2	0.0000	0.0001	0.0001
Cadmium	mg/L	2	2	0.0001	0.0001	0.0001
Chromium	mg/L	2	2	0.0002	0.0002	0.0002
Cobalt	mg/L	2	2	0.0005	0.0005	0.0005
Copper	mg/L	2	2	0.0010	0.0020	0.0015
Iron	mg/L	2	2	0.5270	0.9160	0.7215
Lead	mg/L	2	2	0.0005	0.0005	0.0005
Manganese	mg/L	2	2	0.230	0.273	0.252
Mercury	µg/L	2	2	0.060	0.100	0.080
Nickel	mg/L	2	2	0.0005	0.0005	0.0005
Selenium	mg/L	2	2	0.0020	0.0020	0.0020
Vanadium	mg/L	2	2	0.0001	0.0002	0.0002
Zinc	mg/L	2	2	0.0170	0.0240	0.0205

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

Table 5 Cooktown Reticulation - *E. coli* - 12 Month Rolling Average

Drinking water scheme:	Cook Shire Council - Cooktown Water											
Year	2018/2019											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	18	12	12	15	12	12	12	12	12	15	12	12
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	156	159	159	159	159	159	159	93	105	117	132	156
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
<b><u>CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE</u></b>												
<p>The <i>Public Health Regulation 2005</i> (the regulation) requires that 98 per cent of samples taken in a 12 month period should contain no <i>E. Coli</i>. This requirement is referred to as the 'annual value' in Schedule 3A of the regulation.</p>												
<p>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).</p>												