

Drinking Water Quality Management Plan (DWQMP) report

For the financial year: 2018-2019

Scheme: COEN

Cook Shire Council

SPID: 511

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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 Coen 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. Operations

Coen has three water sources:

- Lankelly Creek – The Lankelly Creek originates high in the rainforest approximately 15km to the east of the township. The catchment area of approx. 5049 ha is in pristine rainforest and due to the terrain has very limited human impact.
- Coen Dam - Coen Dam, this is a ex gold mining dam. It contains elevated levels of natural arsenic and iron, and in the past has had blue green algae blooms during the warmer months, this is not an annual event, but has happened in the years when seasonal conditions have been favourable.
- Coen Borefield - Coen borefields consists of 3 bores located in the township.

The Lankelly water is treated with:

- Coagulation, Filtration (Pressure anthracite filter and Microfiltration), chlorination.

The Coen Dam is treated with:

- Coagulation, Dissolved Air Flotation, Filtration (Pressure anthracite filter and Microfiltration), chlorination.

The Coen Borefield is treated with:

- chlorination

The treated water is pumped to a 0.450ML Reservoir on site, and then gravity feeds directly into the Coen reticulation system.

Coen currently has 123 Service connections which can be broken down to approximately:

- Residential 55%
- Commercial 8%
- With the remaining 37% being Government, Council, Institutional or Other.

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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.

Cook Shire Council has written a draft Drinking Water Policy in the 2018-19 financial year. This policy confirms Council's management of water quality through the on-going implementation of the DWQMP. Presentations on the DWQMP's were given to high level management and Councillors on the purpose and regulatory requirements of the 4 Cook Shire Council DWQMP's.

In the 2018-2019 financial year, Cook Shire has expanded the use of the SWIM database to incorporate the Task function. This is being used for as a program for recording calibration of equipment, safety requirements such as safety showers, maintenance of equipment such as fluoride analysers, running emergency generators and maintaining verification records for temperature for Colisure E. coli analysis.

On-going work has been done on Standard Operating Procedures. Training of staff in procedures is on-going. Individual actions taken for the Coen Water Scheme are listed in the table below.

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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
Coen	Raw Water	E.coli monitoring in raw water	30 th June 2019	Commenced E. coli monitoring in raw water	Completed	Manager
Coen	Raw Water	Bore inspections	On-going	Bore inspections are part of hazard inspection of site and are done routinely every six months.	On-going	Manager
Coen	Reticulation	THM sampling	30 th June 2019	Commenced THM sampling	On-going	Manager
Coen	Coen Water Treatment Plant and Reticulation	Procedures for Coen (RMIP)	30 th June 2019	Procedures for Coen are still in progress. 14 procedures are available for Coen Water treatment plant and reticulation system.	In Progress/on-going	Manager/Team Leader
Coen	DAF	Investigate on-line turbidity meter for DAF	30 th June 2019	Turbidity meter is not required. Treated DAF water goes into raw water tank and is then treated through Anthracite filter and then membrane filtration	Completed	Manager
Coen	DAF	Install an overflow pipe to DAF sludge tank (investigation)	30 th June 2019	Overflow pipe is not required. System is working well. Probe needs to be cleaned regularly and all staff are aware. Probe cleaning has been added to the checklist	Investigation Completed	Manager
Coen	Filter	Online turbidity meter daily monitoring plus auto-dialler	30 th June 2019	Online turbidity is monitored daily. Auto-dialler is operational. SCADA needs additional items.	Funding not approved for SCADA upgrade. Apply for funding in 20/21 FY	Manager
Coen	Disinfection	Automatic change over for dual sodium hypochlorite pumps	30 th June 2019	To be done in conjunction with SCADA upgrade. However, was not funded. Dual disinfection pumps on-site but no automatic change over	System is currently being designed and funding will be sought in 19/20 FY	Manager

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

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

The following results for Coen are in Appendix A:

Table 2A: Coen Reticulation – Physical Chemical – (NATA Lab)
Table 2B: Coen Reticulation – Metals – (NATA Lab)
Table 2C: Coen Reticulation – E.coli & Coliforms monitoring – (NATA Lab)
Table 2D: Coen Reticulation – Physical Chemical – (Coen WTP Lab)
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Table 4G: Coen Treatment Plant Raw – Physical/Chemical (Coen WTP Lab)
Table 5: Reticulation E. coli 12 Month Rolling Average

Table 1 shows the sampling location in Coen.

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Table 1: Location of sampling sites within Coen's water reticulation network.

Sample Location Name	Street Name	Site Chosen Because	GPS Coordinates *
Kindy Corner	Cnr Peninsular Dev. Rd and Reservoir Rd	Water Main "Tees" at this point and close to the Kindy	13°56'38.31"S - 143°12'11.52"E
Heritage House	Regent Street	Ease of access and in the centre of the town	13°56'39.41"S - 143°11'56.84"E
Coen School	Taylor Street	Central, and close to the School	13°56'43.83"S - 143°11'59.12"E
Cultural Centre	Shephard Street	Towards the "End of Line"	13°56'58.55"S - 143°11'53.53"E
Guest House	Regent Street	Central and "Ease of Access"	13°56'39.19"S - 143°12'2.22"E
Old National Parks Office	Coleman Close	Towards the "End of Line"	13°56'23.50"S - 143°11'57.44"E
Lutheran Church	Off Port Stewart Road	Towards the "End of Line"	13°56'58.37"S - 143°12'1.14"E
CSC Depot	Lankelly Drive	Towards the "End of Line"	13°56'27.13"S - 143°12'17.21"E
Okalaka Street	Okalaka Street	Across bridge on the northern side of town	13°56'24"S - 143°12'05"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

Trihalomethane sampling commenced in Coen in January 2019. The regulator was notified of the following results:

- Chlorate – 1.69 mg/L - Coen Reticulation sample (Coen Guest House, Regent Street) in sample taken on the 07/01/2019
- Chlorate – 0.8 mg/L – Coen Reticulation Sample (Kindy Corner, Reservoir Road) in the sample taken on the 08/04/2019 (reported to the QWSR however, no Part A or B completed)

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

6. Customer complaints related to water quality

There were no water quality complaints in the 2018-2019 financial year.

7. Findings and recommendations of the DWQMP auditor

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

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: Coen Reticulation – 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 ₃	4	11	14.0	30.0	23.0	-	-	-
Calcium	mg/L	4	11	2.3	6.3	4.0	-	-	-
Chloride	mg/L	4	11	10.0	23.0	17.5	< 250 mg/L	-	0
Colour	HU	4	11	1.0	3.1	1.7	< 15 HU	-	0
Electrical Conductance	µS/cm	4	11	110.0	170.0	137.3	-	-	-
Fluoride	mg/L	4	11	0.06	0.19	0.12	< 1.5 mg/L	0	-
Magnesium	mg/L	4	11	0.43	0.7	1.1	-	-	-
pH	pH units	4	11	7.5	7.8	7.6	6.5-8.5	-	0
Potassium	mg/L	4	11	0.9	1.5	1.1	-	-	-
Salinity	mg/L	4	11	56.0	82.7	68.0	-	-	-
Sodium	mg/L	4	11	17.0	25.0	20.0	< 180 mg/L	-	0
Sulphate	mg/L	4	11	11.0	14.0	12.2	< 250 mg/L	0	0
Total Dissolved Solids	mg/L	4	11	78.0	100.0	89.2	< 600 mg/L	-	0
Total Hardness	mg/L as CaCO ₃	4	11	9.6	19.0	14.4	< 200 mg/L	-	4
Turbidity	NTU	4	11	0.1	0.7	0.3	< 5 NTU	-	0

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Table 2B: Coen Reticulation – 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	3	0.0008	0.0027	0.0018	0.01 mg/L	0	-
Barium	mg/L	4	3	0.010	0.033	0.018	< 2 mg/L	0	-
Beryllium	mg/L	4	3	0.0001	0.0001	0.0001	< 0.06 mg/L	0	-
Cadmium	mg/L	4	3	0.0001	0.0001	0.0001	< 0.002 mg/L	0	-
Chromium	mg/L	4	3	0.0002	0.0002	0.0002	< 0.05 mg/L	0	-
Cobalt	mg/L	4	3	0.0005	0.0005	0.0005	-	-	-
Copper	mg/L	4	3	0.0020	0.0310	0.0157	< 2 mg/L	0	0
Iron	mg/L	4	3	0.0080	0.0080	0.0080	< 0.3 mg/L	-	0
Lead	mg/L	4	3	0.0005	0.0005	0.0005	< 0.01 mg/L	0	-
Manganese	mg/L	4	3	0.000	0.004	0.002	< 0.1 mg/L	0	0
Mercury	µg/L	4	3	<0.06	0.06	0.06	<1.0 µg/L		
Nickel	mg/L	4	3	0.0005	0.0005	0.0005	< 0.02 mg/L	0	-
Selenium	mg/L	4	3	0.0020	0.0020	0.0020	< 0.01 mg/L	0	-
Vanadium	mg/L	4	3	0.0001	0.0031	0.0011	-	-	-
Zinc	mg/L	4	3	0.0080	0.0410	0.0203	< 3.0 mg/L	-	0

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Table 2C: Coen Reticulation – E.coli (NATA Lab)

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)
E.coli and Coliforms	E.coli – MPN/100ml	9 set Locations within the Coen Reticulation	01/07/18 – 30/06/19	52	155	0	0

Table 2D: Coen Reticulation – Physical/Chemical (Coen WTP On-site 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		
				Min. Value	Max. Value	Avg. Value
Free chlorine residual	mg/L	12	325	0.27	1.90	0.56
Alkalinity	mg/L	12	0	-	-	-
Colour	mg/L	12	40	0.000	12.00	2.85
Dissolved Oxygen	mg/L	12	40	0.0	7.21	3.57
Electrical Conductivity	µS/cm ²	12	40	4.4	1170.00	223.7
pH	mg/L	12	40	6.53	7.52	6.95
Turbidity	mg/L	12	40	0.21	1.16	0.51
Total Dissolved Solids	mg/L	12	39	7.2	560.0	103.6

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Table 2E Coen 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	3	3	5	65	33	<250 µg/L	0	
Bromodichloromethane	µg/L	3	3	5	19	10	<250 µg/L	0	
Dibromochloromethane	µg/L	3	3	5	5	5	< 250 mg/L	0	
Bromoform	µg/L	3	3	5	8	6	<250 µg/L	0	
Total Trihalomethanes	µg/L	3	3	8	84	43	<250 µg/L	0	
Chlorate	mg/L	3	3	0.0228	1.690	0.906	<0.7 mg/L*	2	NA

- WHO provisional guideline.

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Table 3A: Coen Treatment Plant Final – Physical Chemical – On-site 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		
				Min. Value	Max. Value	Avg. Value
Free chlorine residual	mg/L	365	361	0.31	1.67	0.92
Alkalinity	mg/L	52	20	10.0	37.0	22.1
Colour	mg/L	365	360	0.000	18.00	1.41
Electrical Conductivity	µS/cm ²	52	24	24.0	231.0	168.8
pH	mg/L	365	364	6.50	7.64	6.89
Turbidity	mg/L	365	363	0.00	0.98	0.41
Aluminium	mg/L	52	45	0.000	0.180	0.031

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Table 3B: Coen Treatment Plant 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 ₃	12	10	14.0	30.0	22.9	-	-	-
Calcium	mg/L	12	10	2.1	6.3	3.6	-	-	-
Chloride	mg/L	12	10	6.6	23.0	16.5	< 250 mg/L	-	0
Colour	HU	12	10	1.0	5.8	2.3	< 15 HU	-	0
Electrical Conductance	µS/cm	12	10	110.0	170.0	134.0	-	-	-
Fluoride	mg/L	12	10	0.07	0.19	0.11	< 1.5 mg/L	0	-
Magnesium	mg/L	12	10	0.71	1.80	1.23	-	-	-
pH	pH units	12	10	7.40	7.80	7.64	6.5-8.5	-	0
Potassium	mg/L	12	10	0.9	1.5	1.1	-	-	-
SAR		12	10	2.00	2.80	2.31	-	-	-
Salinity	mg/L	12	3	69.5	77.5	72.9	-	-	-
Sodium	mg/L	12	10	16.0	24.0	19.9	< 180 mg/L	-	0
Sulphate	mg/L	12	10	1.0	13.0	11.0	< 250 mg/L	0	0
Total Dissolved Solids	mg/L	12	10	75.0	110.0	88.1	< 600 mg/L	-	0
Total Hardness	mg/L as CaCO ₃	12	10	8.7	19.0	14.2	< 200 mg/L	-	4
Turbidity	NTU	12	10	0.1	0.4	0.2	<5 NTU	0	1

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Table 3C: Coen Treatment Plant 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	3	0.0010	0.0016	0.0014	0.01 mg/L	0	-
Barium	mg/L	4	3	0.017	0.023	0.020	< 2 mg/L	0	-
Beryllium	mg/L	4	3	0.001	0.0010	0.0004	< 0.06 mg/L	0	-
Cadmium	mg/L	4	3	0.0001	0.0001	0.0001	< 0.002 mg/L	0	-
Chromium	mg/L	4	3	0.0002	0.0010	0.0005	< 0.05 mg/L	0	-
Cobalt	mg/L	4	3	0.0005	0.0010	0.0007	-	-	-
Copper	mg/L	4	3	0.0020	0.0030	0.0027	< 2 mg/L	0	0
Iron	mg/L	4	3	0.0080	0.0130	0.0097	< 0.3 mg/L	-	0
Lead	mg/L	4	3	0.0005	0.0010	0.0007	< 0.01 mg/L	0	-
Manganese	mg/L	4	3	0.000	0.001	0.001	< 0.1 mg/L	0	0
Mercury	µg/L	4	3	0.0600	0.0600	0.0600	<1.0 µg/L	0	-
Nickel	mg/L	4	3	0.0005	0.0010	0.0007	< 0.02 mg/L	0	-
Selenium	mg/L	4	3	0.0020	0.0050	0.0030	< 0.01 mg/L	0	-
Vanadium	mg/L	4	3	0.0000	0.0010	0.0004	-	-	-
Zinc	mg/L	4	3	0.0050	0.0220	0.0117	< 3.0 mg/L	-	0

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Table 3D: Coen Treatment Plant Final – E. coli (NATA Lab)

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
E.coli and Coliforms	E. coli cfu/100ml	Coen Water Treatment Plant	01/07/18 – 30/06/19	26	21	0	0	Cairns Regional Council

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Table 4A: Lankelly Creek Raw 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		
				Min. Value	Max. Value	Avg. Value
Alkalinity	mg/L as CaCO ₃	1	1	8.8	8.8	8.8
Calcium	mg/L	1	1	0.7	0.7	0.7
Chloride	mg/L	1	1	13.0	13.0	13.0
Colour	HU	1	1	15.0	15.0	15.0
Electrical Conductance	µS/cm	1	1	62.0	62.0	62.0
Fluoride	mg/L	1	1	0.06	0.06	0.06
Magnesium	mg/L	1	1	0.7	0.7	0.7
pH	pH units	1	1	7.20	7.20	7.20
Potassium	mg/L	1	1	1.1	1.1	1.1
Salinity	psu	1	1	34.5	34.5	34.5
SAR	SAR units	1	1	1.8	1.8	1.8
Sodium	mg/L	1	1	9.1	9.1	9.1
Sulphate	mg/L	1	1	1.0	1.0	1.0
Total Dissolved Solids	mg/L	1	1	55.0	55.0	55.0
Total Hardness	mg/L as CaCO ₃	1	1	5.0	5.0	5.0
Turbidity	NTU	1	1	1.5	1.5	1.5

Raw water source was the Lankelly Creek for the month of June 2019.

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Table 4B: Coen Dam Raw 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		
				Min. Value	Max. Value	Avg. Value
Alkalinity	mg/L as CaCO ₃	6	7	13.0	34.0	23.9
Calcium	mg/L	6	7	1.8	4.8	3.4
Chloride	mg/L	6	7	5.1	20.0	12.1
Colour	HU	6	7	2.1	150.0	51.9
Electrical Conductance	µS/cm	6	7	41.0	150.0	9.3
Fluoride	mg/L	6	7	0.07	0.24	0.16
Magnesium	mg/L	6	7	0.83	1.9	1.39
pH	pH units	6	7	7.10	7.70	7.51
Potassium	mg/L	6	7	0.9	1.1	1.0
SAR	SAR units	6	7	0.75	2.30	1.39
Sodium	mg/L	6	7	4.8	23.0	12.5
Sulphate	mg/L	6	7	1.0	10.0	2.4
Total Dissolved Solids	mg/L	6	7	65.0	93.0	76.7
Total Hardness	mg/L as CaCO ₃	6	7	7.9	20.0	14.1
Turbidity	NTU	6	7	0.3	54.0	11.5

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Table 4C: Coen Bores Raw 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		
				Min. Value	Max. Value	Avg. Value
Alkalinity	mg/L as CaCO ₃	1	1	69.0	69.0	69.0
Calcium	mg/L	1	1	3.3	3.3	3.3
Chloride	mg/L	1	1	20.0	20.0	20.0
Colour	HU	1	1	23	23	23
Electrical Conductance	µS/cm	1	1	220	220	220
Fluoride	mg/L	1	1	0.09	0.09	0.09
Magnesium	mg/L	1	1	0.69	0.69	0.69
pH	pH units	1	1	7.2	7.2	7.2
Potassium	mg/L	1	1	2.9	2.9	2.9
Salinity	Psu	1	1	106	106	106
SAR	SAR units	1	1	4.8	4.8	4.8
Silicon	mg/L	1	1	13.0	13.0	13.0
Sodium	mg/L	1	1	37.0	37.0	37.0
Sulphate	mg/L	1	1	3.8	3.8	3.8
Total Dissolved Solids	mg/L	1	1	120	120	120
Total Hardness	mg/L as CaCO ₃	1	1	11.0	11.0	11.0
Turbidity	NTU	1	1	1.1	1.1	1.1

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Table 4D: Lankelly Creek Raw Water - Metals (NATA Lab)

There were no metals done on the Lankelly Creek raw water in the 2018 – 2019 financial year. In June 2019, raw water was taken from the Lankelly Creek for treatment, however the source was switched back to the Coen Dam and the raw water metals sample was taken from the dam.

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Table 4E: Coen Dam Raw 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		
				Min. Value	Max. Value	Avg. Value
Arsenic	mg/L	6	6	0.0090	0.0164	0.0125
Barium	mg/L	6	6	0.008	0.023	0.017
Beryllium	mg/L	6	6	0.0001	0.0010	0.0004
Cadmium	mg/L	6	6	0.0001	0.0069	0.0018
Chromium	mg/L	6	6	0.0002	0.0010	0.0005
Cobalt	mg/L	6	6	0.0005	0.0050	0.0014
Copper	mg/L	6	6	0.0010	0.1650	0.0297
Iron	mg/L	6	6	0.0420	0.3430	0.2052
Lead	mg/L	6	6	0.0005	0.0017	0.0009
Manganese	mg/L	6	6	0.0003	0.091	0.029
Nickel	mg/L	6	6	0.0005	0.0177	0.0035
Selenium	mg/L	6	6	0.0020	0.0050	0.0030
Vanadium	mg/L	6	6	0.0001	0.0010	0.0004
Zinc	mg/L	6	6	0.0060	0.1190	0.0280

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Table 4F: Coen Bores Raw 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		
				Min. Value	Max. Value	Avg. Value
Arsenic	mg/L	0	4	0.0054	0.0146	0.0095
Barium	mg/L	0	4	0.009	0.024	0.014
Beryllium	mg/L	0	4	0.0001	0.0010	0.0006
Cadmium	mg/L	0	4	0.0001	0.0001	0.0001
Chromium	mg/L	0	4	0.0002	0.0010	0.0006
Cobalt	mg/L	0	4	0.0005	0.0010	0.0008
Copper	mg/L	0	4	0.0020	0.0090	0.0043
Iron	mg/L	0	4	0.1690	1.400	0.5615
Lead	mg/L	0	4	0.0005	0.0020	0.0010
Manganese	mg/L	0	4	0.054	0.214	0.140
Mercury	Mg/L	0	4	0.00006	0.00006	0.00006
Nickel	mg/L	0	4	0.0005	0.0054	0.0022
Selenium	mg/L	0	4	0.0020	0.0050	0.0035
Vanadium	mg/L	0	4	0.0002	0.0070	0.0033
Zinc	mg/L	0	4	0.0080	0.0370	0.0218

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Table 4G: Coen Treatment Plant Raw – Physical Chemical – Coen WTP 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		
				Min. Value	Max. Value	Avg. Value
Alkalinity	mg/L	365	54	1.0	41.0	10.9
Colour	mg/L	365	270	9	441	74
Electrical Conductivity	µS/cm ²	365	36	0.00	142.3	32.9
pH	mg/L	365	278	3.19	7.12	6.27
Turbidity	mg/L	365	300	0.93	79.70	5.52

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

Drinking water scheme:		Cook Shire Council - Coen Water											
Year	2018/2019												
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	
No. of samples collected	15	12	12	18	16	10	12	12	9	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	146	147	147	147	150	154	155	100	111	119	133	155	
No. of failures for previous 12 month period	1	1	1	1	1	1	0	0	0	0	0	0	
% of samples that comply	99.3%	99.3%	99.3%	99.3%	99.3%	99.4%	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	
<u>CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE</u>													
<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>													