

Drinking Water Quality Management Plan (DWQMP) report

For the financial year: 2016-2017

Scheme: COEN

Cook Shire Council

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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

1. Introduction

This report documents Cook Shire Council's drinking water service performance with respect to water quality and compliance with the Drinking Water Quality Management Plan (DWQMP) as required under the Water Supply (Safety and Reliability) Act 2008 (the Act).

This report assists the Regulator to determine compliance with the approved DWQMP and any approval conditions; and provides a mechanism for drinking water providers to publicly report on their drinking water quality performance.

2. Overview of 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, Aeration/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 119 Service connections which can be broken down to approximately:

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

3. Actions taken to implement the DWQMP

Actions taken to implement the DWQMP include:

- Improvement plan has been created. All drinking water improvements are documented in this plan.
- A procedure has been implemented for reporting of *E. coli* in drinking water.
- A procedure has been implemented for any Environmental Incidents.
- Chemical contracts have been entered into through FNQROC with Cleveland Bay chemicals and Elite. This contract involves FNQROC overseeing the chemical quality.

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 existing plan.

The revised plan was submitted to the Regulator on 26th April 2016

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

4. Compliance with water quality criteria for drinking water

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 – Treated Water - Physical Chemical – (NATA Lab)

Table 2B: Coen Reticulation – Treated Water - Metals – (NATA Lab)

Table 2C: Coen Reticulation – Treated Water - E.coli & Coliforms monitoring – (NATA Lab)

Table 3A: Coen Treatment Plant Final – Physical Chemical – On-site lab

Table 3B: Coen Treatment Plant Final - Physical/Chemical (NATA Lab)

Table 3C: Coen Treatment Plant Final - Metals (NATA Lab)

Table 4A: Lankelly Creek Raw Water - Physical Chemical (NATA Lab)

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

Table 4E: Coen Dam Raw Water - Metals (NATA Lab)

Table 4F: Coen Bores Raw Water - Metals (NATA Lab)

Table 5: Reticulation E. coli 12 Month Rolling Average

Table 6: Coen Dam Cyanobacteria results (NATA Lab)

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

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 2016-2017 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 in any sample.

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 CM9 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 CM9 database and the CRM (Customer Request Management) in “Authority” for the financial year 2016-2017 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 Coen 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 for the Coen Reticulated Water Supply in this reporting period

Taste and odour

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

7. Findings and recommendations of the DWQMP auditor

Viridis conducted an Audit on the Cook Shire Councils DWQMP’s in April 2017. The audit concluded that Cook Shire had:

- 9 compliances
- 2 minor non-compliances:
 - Cooktown only. No non-compliances in Coen
- 0 major non-compliances

Viridis reported that Cook Shire Council demonstrated a very high overall level of compliance

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 March 2018.

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Appendix A – Summary of compliance with water quality criteria

Table 2A: Coen Reticulation – Treated Water - Physical Chemical – (NATA Lab)

Date Sampled – 01/07/2016 – 30/06/2017								
Parameter	Unit	No of Samples collected	Summary of Results			ADWG Guidelines Value (2011)	No of Samples exceeding ADWG	
			Min. Value	Max. Value	Avg. Value		Health	Aesthetic
Alkalinity	mg/L as CaCO ₃	2	31.0	32.0	31.5	-	-	-
Calcium	mg/L	2	2.8	5.9	4.35	-	-	-
Chloride	mg/L	2	21.0	21.0	21.0	< 250 - mg/L	-	0
Colour	HU	2	5.0	10.0	7.5	< 15 - HU	-	0
Electrical Conductance	µs/cm	2	150.0	150.0	150.0	-	-	-
Fluoride	mg/L	2	0.13	0.14	0.135	< 1.5 - mg/L	0	-
Magnesium	mg/L	2	0.97	1.3	1.14	-	-	-
pH	pH units	2	7.6	7.9	7.75	6.5-8.5	-	0
Potassium	mg/L	2	1.2	2.8	2.0	-	-	-
Salinity	mg/L	2	94	94	94	-	-	-
Silica Soluble	mg/L	2	5.1	21.0	13.05	< 80 - mg/L	-	0
Sodium	mg/L	2	20.0	23.0	21.5	< 180 - mg/L	-	0
Sulphate	mg/L	2	10.0	13.0	11.5	< 250 - mg/L	0	0
Total Dissolved Solids	mg/L	2	87.0	87.0	87.0	< 600 - mg/L	-	0
Total Hardness	mg/L as CaCO ₃	2	11.0	20.0	15.5	< 200 - mg/L	-	0
Turbidity	NTU	2	0.6	2.6	1.6	< 5 - NTU	-	0

Analysed by SGS Cairns

Samples collected from set sample points throughout the Reticulation including high and low flow areas. Each 6 months a sample is collected from 1 location in the Reticulation, systematically rotated to ensure all sample points are captured

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Table 2B: Coen Reticulation – Treated Water - Metals – (NATA Lab)

Date Sampled – 01/07/2016 – 30/06/2017								
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	4	0.003	0.003	0.003	0.01-mg/L	0	-
Barium	mg/L	4	0.028	0.005	0.016	< 2 - mg/L	0	-
Beryllium	mg/L	4	0.0001	0.0001	0.0001	< 0.006 - mg/L	0	-
Cadmium	mg/L	4	0.0001	0.0001	0.0001	< 0.002 - mg/L	0	-
Chromium	mg/L	4	0.001	0.001	0.001	< 0.05 - mg/L	0	-
Cobalt	mg/L	4	0.001	0.001	0.001	-	-	-
Copper	mg/L	4	0.026	0.000	0.008	< 2 - mg/L	0	0
Iron	mg/L	4	0.100	0.005	0.044	< 0.3 - mg/L	-	0
Lead	mg/L	4	0.001	0.001	0.001	< 0.01 - mg/L	0	-
Manganese	mg/L	4	0.005	0.005	0.005	< 0.1 - mg/L	0	0
Nickel	mg/L	4	0.001	0.001	0.001	< 0.02 - mg/L	0	-
Selenium	mg/L	4	0.003	0.003	0.003	< 0.01 - mg/L	0	-
Vanadium	mg/L	4	0.001	0.001	0.001	-	-	-
Zinc	mg/L	4	0.019	0.005	0.009	< 3.0 - mg/L	-	0

Analysed by SGS Cairns

Samples collected from set sample points throughout the Reticulation including high and low flow areas.
Each quarter a sample is collected from 1 location in the Reticulation, systematically rotated to ensure all sample points are captured

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Table 2C: Coen Reticulation – Treated Water - *E.coli* & Coliforms monitoring – (NATA Lab)

Date Sampled – 01/07/2016 – 30/06/2017								
	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
					No of Samples where <i>E.coli</i> detected	No of Samples where Coliforms detected		
E.coli and Coliforms	E.coli – MPN/100ml	Various set Locations within the Coen Reticulation	July 2016 – June 2017	153	0	-	0	0
	Coliforms – MPN/100ml			153	-	4	-	0

None of the samples collected had *E.coli* detected.

Four samples collected had coliforms detected. The Coliforms detected were as follows:

- 05/09/16 – 4 coliforms
- 04/01/2017 – 10 coliforms
- 30/01/2017 – 1 coliform
- 01/06/2017 – 1 coliform

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Table 3A: Coen Treatment Plant Final – Physical Chemical – On-site lab

Date Sampled – 01/07/2016 – 30/06/2017					
Parameter	Unit	No of Samples collected	Summary of Results		
			Min. Value	Max. Value	Avg. Value
Free chlorine residual	<i>mg/L</i>	363	0.39	2.92	1.01
Alkalinity	<i>mg/L</i>	40	3.0	32.0	12.3
Colour	<i>mg/L</i>	362	0.000	11	1.34
pH	<i>mg/L</i>	364	6.50	7.92	6.99
Turbidity	<i>mg/L</i>	361	0.00	0.98	0.39
Aluminium	<i>mg/L</i>	32	0.000	0.240	0.075

Samples collected from treatment plant final tap.

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Table 3B: Coen Treatment Plant Final - Physical/Chemical (NATA Lab)

Date Sampled – 01/07/2016 – 30/06/2017							
Scheme component	Parameter Physical / Chemical	Units	Total No. samples collected	Min	Max	Average (Mean)	Limit of reporting
Treatment Plant Final Water	Alkalinity as CaCO ₃	mg/L as CaCO ₃	6	15.0	56.0	32.5	5
	Calcium, Ca	mg/L	6	0.70	4.5	2.5	0.05
	Chloride, Cl	mg/L	6	16.0	23	19.2	1
	Colour Apparent	PCU	6	5.0	8.0	5.5	5
	Conductivity @ 25°C	uS/cm	6	83	160	118	5
	Fluoride, by ISE	mg/L	6	0.05	0.15	0.10	0.05
	L.I.		6	-2.20	6.8	-0.35	-10
	Magnesium, Mg	mg/L	6	0.7	1.7	1.2	0.05
	pH	pH units	6	7.30	8.10	7.53	0.1
	Potassium, K	mg/L	6	1.1	2.2	1.7	0.05
	Salinity	mg/L	6	54	100	76.8	10
	SAR		6	1.7	3.10	2.50	
	Silica	mg/L	6	3.1	15.0	10.9	0.05
	Sodium, Na	mg/L	6	14.0	23.0	18.0	05
	Sulphate, SO ₄	mg/L	6	1.0	14.0	8.7	0.5
	TDS	mg/L	6	50.0	95.0	71.3	10
Total Hardness	mg/L as CaCO ₃	6	5.0	19.0	11.5	1	
Turbidity	NTU	6	0.5	0.5	0.5	0.5	

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Table 3C: Coen Treatment Plant Final - Metals (NATA Lab)

Date Sampled – 01/07/2016 – 30/06/2017							
Scheme component	Parameter Metals	Units	Total No. samples collected	Min	Max	Average (Mean)	Limit of reporting
Treatment Plant Final Water	Arsenic	mg/L	12	<0.003	0.011	0.004	0.003
	Barium	mg/L	5	0.012	0.020	0.016	0.005
	Beryllium	mg/L	6	<0.0001	0.0020	0.0014	0.0001
	Cadmium	mg/L	12	<0.0001	0.0001	<0.0001	0.0001
	Chromium	mg/L	12	<0.001	<0.001	<0.001	0.001
	Cobalt	mg/L	5	<0.001	<0.001	<0.001	0.001
	Copper	mg/L	12	<0.001	0.023	0.004	0.001
	Iron	mg/L	8	<0.005	0.190	0.032	0.005
	Lead	mg/L	12	<0.001	<0.001	<0.001	0.001
	Manganese	mg/L	8	<0.005	<0.005	<0.005	0.005
	Nickel	mg/L	12	<0.001	<0.001	<0.001	0.001
	Selenium	mg/L	12	<0.003	<0.003	<0.003	0.003
	Tin	mg/L	6	<0.002	<0.002	<0.002	0.002
	Vanadium	mg/L	6	<0.001	0.010	0.007	0.001
	Zinc	mg/L	8	<0.005	0.005	0.005	0.005

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Table 4A: Lankelly Creek Raw Water - Physical Chemical (NATA Lab)

Date Sampled – 01/07/2016 – 30/06/2017							
Scheme component	Parameter Physical / Chemical	Units	Total No. samples collected	Min	Max	Average (Mean)	Limit of reporting
Raw Water	Alkalinity as CaCO ₃	mg/L as CaCO ₃	3	9.0	110.0	43.0	5
	Calcium, Ca	mg/L	3	0.7	1.3	0.9	0.05
	Chloride, Cl	mg/L	3	12.0	14.0	13.3	1
	Colour Apparent	PCU	3	15.0	60.0	33.3	5
	Conductivity @ 25°C	uS/cm	3	56.0	59.0	57.3	5
	Fluoride, by ISE	mg/L	3	0.05	0.08	0.07	0.05
	L.I.		3	-4.1	-2.6	-3.3	-10
	Magnesium, Mg	mg/L	3	0.7	0.8	0.8	0.05
	pH	pH units	3	6.5	8.3	7.3	0.1
	Potassium, K	mg/L	3	1.0	1.6	1.2	0.05
	Salinity	mg/L	3	36.0	38.0	37.0	10
	SAR		3	1.5	1.8	1.6	
	Silica	mg/L	3	16.0	21.0	18.3	0.05
	Sodium, Na	mg/L	3	8.7	8.9	8.8	0.5
	Sulphate, SO ₄	mg/L	3	0.9	1.2	1.1	0.5
	TDS	mg/L	3	33	35	34	10
	Total Hardness	mg/L as CaCO ₃	3	5.0	6.0	5.3	1
Turbidity	NTU	3	1.0	6.5	2.9	0.5	

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Table 4B: Coen Dam Raw Water - Physical Chemical (NATA Lab)

Date Sampled – 01/07/2016 – 30/06/2017							
Scheme component	Parameter Physical / Chemical	Units	Total No. samples collected	Min	Max	Average (Mean)	Limit of reporting
Raw Water	Alkalinity as CaCO ₃	mg/L as CaCO ₃	2	19	42	30.5	5
	Calcium, Ca	mg/L	2	3.3	4.2	3.8	0.05
	Chloride, Cl	mg/L	2	10	13	11.5	1
	Colour Apparent	PCU	2	35	100	67.5	5
	Conductivity @ 25°C	uS/cm	2	75	92	83.5	5
	Fluoride, by ISE	mg/L	2	0.19	0.23	0.21	0.05
	L.I.		2	-2.20	-1.60	-1.90	-10
	Magnesium, Mg	mg/L	2	1.3	1.6	1.5	0.05
	pH	pH units	2	7.2	7.4	7.3	0.1
	Potassium, K	mg/L	2	1.7	1.9	1.8	0.05
	Salinity	mg/L	2	49	59	54	10
	SAR		2	1.2	1.2	1.2	
	Silica	mg/L	2	1.9	3.5	2.7	0.05
	Sodium, Na	mg/L	2	9.7	12.0	10.9	0.5
	Sulphate, SO ₄	mg/L	2	0.8	0.8	0.8	0.5
	TDS	mg/L	2	45	55	50	10
	Total Hardness	mg/L as CaCO ₃	2	0.1	17	8.6	1
Turbidity	NTU	2	3.7	6.4	5.1	0.5	

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Table 4C: Coen Bores Raw Water - Physical Chemical (NATA Lab)

Date Sampled – 01/07/2016 – 30/06/2017							
Scheme component	Parameter Physical / Chemical	Units	Total No. samples collected	Min	Max	Average (Mean)	Limit of reporting
Raw Water	Alkalinity as CaCO ₃	mg/L as CaCO ₃	3	200	270	243	5
	Calcium, Ca	mg/L	3	56	71	65.7	0.05
	Chloride, Cl	mg/L	3	190	250	223	1
	Colour Apparent	PCU	3	5	20	10	5
	Conductivity @ 25°C	uS/cm	3	980	1400	1226	5
	Fluoride, by ISE	mg/L	3	0.65	0.95	0.82	0.05
	L.I.		3	0.2	0.3	0.23	-10
	Magnesium, Mg	mg/L	3	24	32	28.7	0.05
	pH	pH units	3	7.4	7.5	7.5	0.1
	Potassium, K	mg/L	3	1.4	2.1	1.8	0.05
	Salinity	mg/L	3	630	880	773	10
	SAR		3	3.00	3.70	3.30	
	Silica	mg/L	3	48	54	51	0.05
	Sodium, Na	mg/L	3	110	150	130	0.5
	Sulphate, SO ₄	mg/L	3	15	20	18	0.5
	TDS	mg/L	3	590	820	713	10
	Total Hardness	mg/L as CaCO ₃	3	240	310	283	1
Turbidity	NTU	3	0.7	9.3	3.9	0.5	

Analysed by SGS Cairns

Borefields used during heavy rain when Lankelly Creek is in flood and the Coen Dam is dirty due to inflow.

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

Date Sampled – 01/07/2016 – 30/06/2017							
Scheme component	Parameter Metals	Units	Total No. samples collected	Min	Max	Average (Mean)	Limit of reporting
Raw Water	Arsenic	mg/L	2	<0.003	<0.003	<0.003	0.003
	Barium	mg/L	2	0.009	0.011	0.01	0.005
	Beryllium	mg/L	2	0.0001	0.0002	0.0002	0.0001
	Cadmium	mg/L	2	<0.0001	<0.0001	<0.0001	0.0001
	Chromium	mg/L	2	<0.001	<0.001	<0.001	0.001
	Cobalt	mg/L	2	<0.001	<0.001	<0.001	0.001
	Copper	mg/L	2	<0.001	<0.002	<0.002	0.001
	Iron	mg/L	2	0.058	0.220	0.139	0.005
	Lead	mg/L	2	<0.001	<0.001	<0.001	0.001
	Manganese	mg/L	2	<0.005	<0.005	<0.005	0.005
	Mercury	mg/L	2	<0.00005	<0.00005	<0.00005	0.00005
	Nickel	mg/L	2	<0.001	<0.001	<0.001	0.001
	Selenium	mg/L	2	<0.003	<0.003	<0.003	0.003
	Vanadium	mg/L	2	<0.001	<0.001	<0.001	0.001
Zinc	mg/L	2	<0.005	<0.005	<0.005	0.005	

Analysed by SGS Cairns

Samples collected in the first half of the year when the creek is flowing

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Table 4E: Coen Dam Raw Water - Metals (NATA Lab)

Date Sampled – 01/07/2016 – 30/06/2017							
Scheme component	Parameter Metals	Units	Total No. samples collected	Min	Max	Average (Mean)	Limit of reporting
Raw Water	Arsenic	mg/L	9	0.001	0.018	0.009	0.003
	Barium	mg/L	7	0.011	0.027	0.017	0.005
	Beryllium	mg/L	7	<0.0001	0.0020	0.0004	0.0001
	Cadmium	mg/L	9	0.0001	0.0013	0.0004	0.0001
	Chromium	mg/L	9	<0.0010	<0.0010	<0.0010	0.001
	Cobalt	mg/L	7	<0.001	<0.001	<0.001	0.001
	Copper	mg/L	9	0.001	0.011	0.006	0.001
	Iron	mg/L	9	0.005	0.420	0.167	0.005
	Lead	mg/L	9	<0.001	0.002	0.001	0.001
	Manganese	mg/L	9	<0.005	0.017	0.006	0.005
	Nickel	mg/L	9	<0.001	0.003	0.001	0.001
	Selenium	mg/L	9	<0.003	<0.003	<0.003	0.003
	Vanadium	mg/L	7	0.001	0.010	0.002	0.001
	Zinc	mg/L	9	0.005	0.170	0.039	0.005
Tin	mg/L						

Analysed by SGS Cairns

Samples are collected throughout the year, but the water is usually only sourced from the Coen Dam after the Lankelly Creek dries up, however this year Coen Dam was used for the whole year.

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Table 4F: Coen Bores Raw Water - Metals (NATA Lab)

Date Sampled – 01/07/2016 – 30/06/2017							
Scheme component	Parameter Metals	Units	Total No. samples collected	Min	Max	Average (Mean)	Limit of reporting
Raw Water	Arsenic	mg/L	3	0.004	0.006	0.005	0.003
	Barium	mg/L	3	0.013	0.015	0.014	0.005
	Beryllium	mg/L	3	<0.0001	<0.0001	<0.0001	0.0001
	Cadmium	mg/L	3	<0.0001	<0.0001	<0.0001	0.0001
	Chromium	mg/L	3	<0.001	0.001	<0.001	0.001
	Cobalt	mg/L	3	<0.001	<0.001	<0.001	0.001
	Copper	mg/L	3	0.001	0.001	0.001	0.001
	Iron	mg/L	3	0.005	0.059	0.025	0.005
	Lead	mg/L	3	0.001	0.001	0.001	0.001
	Manganese	mg/L	3	0.077	0.210	0.139	0.005
	Nickel	mg/L	3	0.002	0.004	0.003	0.001
	Selenium	mg/L	3	<0.003	<0.003	<0.003	0.003
	Vanadium	mg/L	3	0.001	0.001	0.001	0.001
	Zinc	mg/L	3	0.009	0.024	0.017	0.005

Analysed by SGS Cairns

Samples are collected throughout the year. The Coen Bores are usually only used as a backup supply

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

Year	2016/2017											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	12	14	13	15	12	9	15	9	15	12	12	15
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	153	155	152	153	155	154	151	156	150	153	153	150
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

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.

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Appendix B – Implementation of the DWQMP Risk Management Improvement Program

Risk management improvement program

Issue	Priority			Target date/s	Progress to Completion
		short-term	long-term		
Loss of Mains Power due to network damage or natural disaster	High	Rely on the Ergon Energy Generators located in Coen	Purchase of suitable sized generator / investigate alternative power sources	June 2018	Currently being investigated
Operational & Maintenance Procedures	Medium	Identify outdated procedures, update and obtain approval and implement	Identify new procedures needed, develop and obtain approval and implement	Dec 2018	Some procedures have been developed, but more are required CSC Recently rolled out the new SafePlan throughout the Shire
Coen Dam Catchment Area – old car bodies	Low	Remove car bodies to the rubbish tip for disposal		Dec 2017	Work has been organized to remove car bodies. Leaking pump and fuel and oil drums have already been removed. Old shed to be demolished by December 2017 to stop equipment being stored there.
Ingress into Bore	High	Bores have been sealed	Develop inspection program	Dec 2018	Bores have been sealed but program not implemented
Old shed, cars and drums in catchment	Medium	Remove leaking pump from dam area	Remove cars and old shed to stop items being stored there	June 2018	Work has been organized. Shed will be demolished by December 2017.
Bore recharge on Lankelly Creek water only	Low	Operator awareness (current operator has been in position for 17 years)	Procedure required to ensure all staff are aware of recharge procedure	June 2018	Not Started

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Issue	Priority			Target date/s	Progress to Completion
		short-term	long-term		
Bore 10 reservoir needs replacing	Medium	Tank is failing and needs to be replaced. Only used during very wet periods.		June 2018	New tank has arrived in Coen and needs to be installed. Part of Capital Budget for 17/18
SCADA and auto dialler required	Medium	Install SCADA system and auto dialler for alarms		June 2018	Part of Capital Budget for 17/18.

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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
Full Refurbishment of the Micro-Filtration Plant	High	Completion - June 2017	Completed
Replacement of the Bore 10 Tank and associated Pipework	Med.	Completion – June 2018	Tank is onsite. Pipework started not finished.
Stage 1 SCADA System with associated Alarming	High	Completion – June 2018	Started, not yet Completed
Valve and Fire Hydrant replacement of aging infrastructure	Med.	Completion - June 2018	Ongoing
Replace electrical switchboard – Lankelly Creek	Med	Completion – June 2018	Started, not yet Completed
Replace/service Lankelly Creek pumps	Low	Completion – June 2018	Not yet started
New Sodium hypochlorite shed at Bore 10	Med	Completion – June 2018	Started, not yet Completed