Drinking Water Quality Management Plan (DWQMP) report

2018 - 2019

Etheridge Shire Council

SPID: SP49

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Glossary of terms

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

1. Introduction

This report documents the performance of Etheridge Shire Council's drinking water service with respect to water quality and performance in implementing the actions detailed in the drinking water quality management plan (DWQMP) as required under the *Water Supply (Safety and Reliability) Act 2008* (the Act).

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

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

2. Overview of Operations

Georgetown's water supply is drawn from the aquifer in the alluvial bed sands of the Etheridge River. Surface water filters through the alluvial sands of the river bed to the aquifer where it is drawn from a series of wells. Due to high levels of manganese and iron in Georgetown's water source, a treatment plant was installed in March-May 2015. The treatment comprises of a flocculation tank, 3 sand\carbon media filters and 3 DMI filters. Water is disinfected at the treatment plant and stored in two service reservoirs (1 x 600KL and 1 x 1800KL added in 2017). Water in the reservoirs is monitored and further disinfected (if required) before reticulation.

Forsayth's water is sourced from the Big Reef Dam located 6 kilometres from the township. The water supply is treated by a DAF water treatment plant commissioned in 2006. Treated water is fed to a 90 kL service reservoir which in turn gravity feeds the township.

The treatment was upgraded in 2018 and comprises of a Pot perm dosing system, a pre aeration system, carbon dosing and a carbon retention tank, flocculation tank, clarifier, dissolved air floatation system and 4 sand media filters. Water is disinfected before reticulation.

3. Actions taken to implement the DWQMP

Georgetown

Management conducts regular tool box meetings to make operational staff aware and familiar with the DWQMP and its implementation. Risk management measures are performed as written in our DWQMP. This includes operational procedures/practices and operational and verification monitoring. We have continued to work through improvements in our Risk management improvement plan.

Operational parameters have been checked and maintained at locations regularly as per our DWQMP. Verification testing has confirmed the operational monitoring programme to be effective.

Forsayth

Management conducts regular tool box meetings to make operational staff aware and familiar with the DWQMP and its implementation. Risk management measures are performed as written in our DWQMP. This includes operational procedures/practices and operational and verification monitoring. We have continued to work through improvements in our Risk management improvement plan.

Operational parameters have been checked and maintained at locations regularly as per our DWQMP. Verification testing has confirmed the operational monitoring programme to be effective.

Progress in implementing the risk management improvement program

We have made progress in implementing the risk management improvement program. We have worked towards all actions and completed some of them. For all progress information see Appendix B – Implementation of the Risk Management Improvement Program, Table 5 – Progress against the risk management improvement program in the approved DWQMP

Amendments made to the DWQMP

Our last DWQMP review was due and by 31 March 2018. We reviewed our DWQMP early in 2018. Our next review is Due to be completed by 31 March 2020.

4. Compliance with water quality criteria for drinking water

See appendix A – Summary of compliance with water quality criteria

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

Forsayth

This financial year there were one new instance at Forsayth where the Regulator was notified under sections 102 or 102A of the Act. The incident was opened for the detection of Bromate with a detection over the health limit.

There was two ongoing incidents at Forsayth for the detection of chlorate and bromide, which are parameters with no water quality criteria.

Georgetown

This financial year there was one new instances at Georgetown where the Regulator was notified under sections 102 or 102A of the Act. The incident was opened for the detection of Bromate over the health limit.

There was two ongoing incidents at Georgetown for the detection of a parameter with no water quality criteria, which was chlorate and Bromide.

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

Incident Description: **Bromate – Forsayth** - 0.040mg/L of Bromate was detected at the Forsayth library, which is over the health limit of .020mg/L, and incident DWI-7-49-00026 was opened. We have had no further detections over the health limit since then and only one detection of 0.016 mg/L, which was under the limit. We send updates along with detection levels to The Drinking Water regulators and Health Department monthly.

Corrective and Preventative Actions We turn over our chlorine as frequently as possible and keep it out of the sun. We have changed to purchasing hypo in 200L drums and aim to turn it over within 2 to 4 weeks when possible. This incident is ongoing at this stage while we continue to monitor. Detections seem to be rare.

Incident Description: Chlorate – Forsayth. DWI-7-49-00015. We have an ongoing incident for the detection of Chlorate, which is a parameter with no water quality criteria. We regularly detect chlorate in the treated water. We send updates along with detection levels to The Drinking Water regulators and Health Department monthly.

Corrective and Preventative Actions We turn over our chlorine as frequently as possible and keep it out of the sun. We have changed to purchasing hypo in 200L drums and aim to turn it over within 2 to 4 weeks or less. We regularly clean our chlorine storage containers. We have talked with our chemical supplier about the importance of supplying fresh product and test the strength on arrival. We have talked to our freight company about issues while transporting and storing the hypo. We have upgraded our treatment plant and now dose pot perm instead of hypo before aeration. We dilute the hypo with demineralised water asap after it arrives. We have been working with the health department who has agreed that we can set a chlorate guideline in our DWQMP of .8mg/L. We have not had a detection over .8 mg/L in the last six months. We have made improvements and are monitoring.

Incident Description: Bromide – Forsayth DWI-7-49-00022. We have an ongoing incident for the detection of bromide, which is a parameter with no water quality criteria. Testing of the raw water shows continues detections. We send updates along with detection levels to The Drinking Water regulators and Health Department monthly.

Corrective and Preventative Actions Our Treatment Plant often removes bromide and usually only very low detections are found in the treated water. We continue to sample monthly and monitor the results.

Incident Description: Bromate – Georgetown .072mg/L of Bromate which has an ADWG Health limit of 0.02mg/L was detected on the 11-7-2018 at the Georgetown Rec Grounds and incident DWI-7-49-00024 was opened. Since then we have had 0 detections over the health limit within 15 tests done monthly. Detections seem to be rare.

Corrective and Preventative Actions We turn over chlorine as frequently as possible and store it out of the sun. We purchase hypo in 200L drums and aim to turn it over within 2 to 4 weeks or less. We have talked with our chemical supplier about the importance of supplying fresh product. We have talked to our freight company about issues while transporting and storing the hypo. We continue to sample monthly and monitor the results. Detections seem to be rare.

Incident Description: Chlorate – Georgetown DWI-7-49-00014. We have an ongoing incident for detection of Chlorate - a parameter with no water quality criteria. We regularly detect chlorates in our treated water. We send updates along with detection levels to The Drinking Water regulators and Health Department monthly.

Corrective and Preventative Actions We turn over chlorine as frequently as possible and store it out of the sun. We regular clean our chlorine storage containers. We purchase hypo in 200L drums and aim to turn it over within 2 to 4 weeks or less. We have talked with our chemical supplier about the importance of supplying fresh product and test the strength on arrival. We have talked to our freight company about issues while transporting and storing the hypo. We have been working with the health department who has agreed that we can set a chlorate guideline in our DWQMP of .8mg/L. We have not had a detection over .8 mg/L in the last 18 months. We have made improvements and are monitoring.

Incident Description: Bromide – Georgetown DWI-7-49-00023. We have an ongoing incident for the detection of bromide, which is a parameter with no water quality criteria. Testing of the raw water shows continues detections. We send updates along with detection levels to The Drinking Water regulators and Health Department monthly.

Corrective and Preventative Actions Our Treatment Plant often removes bromide and usually only very low detections are found in the treated water. We continue to sample monthly and monitor the results. We have been working with consultants to design an upgrade for our water treatment plant.

6. Customer complaints related to water quality

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

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

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

	Suspected Illness	Discoloured water	Taste and odour	Total
Georgetown	0	0	0	0
Forsayth	0	1	0	1
Total	0	1	0	1

Suspected Illness

Complaints are sometimes received from customers who suspect their water may be associated with an illness they are experiencing. Etheridge Shire Council investigates each complaint relating to alleged illness from our water quality, typically by testing the customers tap and closest reticulation sampling point for the presence of *E. coli*.

During 2018/2019, there were zero confirmed cases of illness arising from the water supply system.

7. Findings and recommendations of the DWQMP auditor

An Audit was performed in 2017. An audit has not occurred in this period. Our next audit is required by 2021.

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

An audit has not occurred in this period. Our next audit is required by 2021.

Appendix A – Summary of compliance with water quality criteria

The results from the verification monitoring program have been compared against the levels of the water quality criteria specified by the Regulator in the *Water Quality and Reporting Guideline for a Drinking Water Service*.

The reported statistics do not include results derived from repeat samples, or from emergency or investigative samples undertaken in response to an elevated result.

Other verification monitoring was carried out as per our DWQMP.

The presence of potentially toxic Blue/green algae in the raw water at Forsayth is detected on occasions and is treated and removed from the retic water. Our verification monitoring covers all aspects. It shows any operational faults which can be rectified fast and confirms our operational monitoring is working and remains appropriate.

Verification testing continues to show the detection of Chlorate in Georgetown and Forsayth. Results have shown that detections are higher in the summer and when the raw water is at its worst. The results from Forsayth have been particularly high at this time of year and we are monitoring after upgrading the Water Treatment Plant. We are now dosing permanganate to oxidise the iron and manganese instead of Chlorine. We have also added a clarifier, which helps take pressure off the DAF system and give us an extra barrier. We have upgraded the DAF system.

Our verification monitoring results in the following table shows verification results for treated retic water. They also show operational results from the raw water to help compare and show the achievement of the treatment plants.

Table 1 - Verification monitoring results 2018/2019

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples in which parameter was detected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Limit of reporting	Laboratory name
Georgetown	Reticulation	Turbidity	Ntu	Daily	361	361	NA	0.00	0.79	.16		In House
Georgetown	Reticulation	True colour	Pt/Co	Twice a week	111	111	NA	0.00	2.00	0.03		In House
Georgetown	Reticulation	PH		Daily	363	363	NA	6.1	7.3	6.8		In House
Georgetown	Reticulation	Temperature	C	Daily	363	363	NA	22.6	38.1	29.8		In House
Georgetown	Reticulation	Chlorine Free	Ppm	Daily	430	430	NA	0.13	1.51	.46		In House
Georgetown	Reticulation	Chlorine Total	Ppm	Daily	361	361	NA	.21	1.39	.62		In House
Georgetown	Reticulation	Aluminium	Mg/L	Monthly	24	24	NA	0.016	0.122	0.044	<0.005	Cairns Regional Council
Georgetown	Reticulation	Silicon	Mg/L	Quarterly	4	4	NA	19	23	21	<0.10	Cairns Regional Council
Georgetown	Reticulation	Mercury	ug/L	Quarterly	4	0	0	<0.06	<0.06	<0.06	<0.06	Cairns Regional Council
Georgetown	Reticulation	Arsenic	Mg/L	Quarterly	4	1	0	<0.0002	0.0002	0	<0.0002	Cairns Regional Council
Georgetown	Reticulation	Cadmium	Mg/L	Quarterly	4	0	0	<0.0001	<0.0001	0	<0.0001	Cairns Regional Council
Georgetown	Reticulation	Chromium	Mg/L	Quarterly	4	0	0	<0.002	<0.002	0.000	<0.002	Cairns Regional Council
Georgetown	Reticulation	Copper	Mg/L	Quarterly	4	4	0	0.019	0.034	0.026	<0.001	Cairns Regional Council
Georgetown	Reticulation	Iron	Mg/L	Monthly	24	10	NA	<0.01	0.026	0.006	<0.01	Cairns Regional Council
Georgetown	Reticulation	Lead	Mg/L	Quarterly	4	3	0	<0.0005	0.0007	0.0004	<0.0005	Cairns Regional Council
Georgetown	Reticulation	Manganese	Mg/L	Monthly	24	21	0	<0.0002	0.0028	0.0007	<0.0002	Cairns Regional Council
Georgetown	Reticulation	Nickel	Mg/L	Quarterly	4	0	0	<0.0005	<0.0005	0.0005	<0.0005	Cairns Regional Council
Georgetown	Reticulation	Zinc	Mg/L	Quarterly	4	4	NA	0.009	0.013	0.011	<0.005	Cairns Regional Council
Georgetown	Reticulation	Calcium	Mg/L	Quarterly	4	4	NA	4	14	8.7	<0.20	Cairns Regional Council
Georgetown	Reticulation	Magnesium	Mg/L	Quarterly	4	4	NA	0.96	4.6	2.6	<0.10	Cairns Regional Council
Georgetown	Reticulation	Potassium	Mg/L	Quarterly	4	4	NA	1.8	3.0	2.3	<0.10	Cairns Regional Council
Georgetown	Reticulation	Sodium	Mg/L	Quarterly	4	4	NA	12	24	17.0	<1	Cairns Regional Council
Georgetown	Reticulation	Total Hardness	MgCaC03/L	Quarterly	4	4	NA	14	54	32.5	<1	Cairns Regional Council
Georgetown	Reticulation	Salinity	Psu	Quarterly	4	4	NA	.0516	.111	.0784		Cairns Regional Council
Georgetown	Reticulation	Total Dissolved Solids	Mg/L	Quarterly	4	4	NA	75	140	105.5	<1	Cairns Regional Council
Georgetown	Reticulation	Electrical Conductance	Us/cm	Quarterly	4	4	NA	100	230	160	<1	Cairns Regional Council
Georgetown	Reticulation	Total alkalinity	MgCaCO3/L	Quarterly	4	4	NA	13	72	41	<0.1	Cairns Regional Council
Georgetown	Reticulation	Fluoride	Mg/L	Quarterly	4	4	0	.07	.15	.11	<0.02	Cairns Regional Council
Georgetown	Reticulation	Sulphate	Mg/L	Quarterly	4	4	0	14	20	17	<0.01	Cairns Regional Council
Georgetown	Reticulation	Chloride	Mg/L	Quarterly	4	4	NA	9.2	14.0	11.6	<0.1	Cairns Regional Council
Georgetown	Reticulation	Chlorate	Mg/L	Monthly	12	11	NA	<0.005	0.767	0.438	<0.005	Cairns Regional Council

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples in which parameter was detected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Limit of reporting	Laboratory name
Georgetown	Reticulation	Chlorite	Mg/L	Monthly	12	0	0	<0.005	<0.005	<0.0005	<0.005	Cairns Regional Council
Georgetown	Reticulation	Bromate	Mg/L	Monthly	12	2	1	<0.005	0.072	0.006	<0.005	Cairns Regional Council
Georgetown	Reticulation	Bromide	Mg/L	Monthly	12	8	NA	<0.005	0.019	0.005	<0.005	Cairns Regional Council
Georgetown	Reticulation	Giardia, protozoa	Mg/L	Annually	1	0	0	0	0	0		Cairns Regional Council
Georgetown	Reticulation	Organochlorine Pesticides	Ug/L	Annually	1	0	0	0	0	0		Cairns Regional Council
Georgetown	Reticulation	Chloroform	Ug/L	Annually	2	2	0	8	20	14		Cairns Regional Council
Georgetown	Reticulation	Bromodichloromethane	Ug/L	Annually	2	1	0	<5	6	3		Cairns Regional Council
Georgetown	Reticulation	Dibomochloromethane	Ug/L	Annually	2	0	0	<5	<5	<5		Cairns Regional Council
Georgetown	Reticulation	Bromoform	Ug/L	Annually	2	0	0	<5	<5	<5		Cairns Regional Council
Georgetown	Reticulation	Total Trihalomethanes	Ug/L	Annually	2	2	0	14	20	17		Cairns Regional Council
Georgetown	Reticulation	E.coli	Cells/ML	Monthly	65	0	0	<1	<1	<1		Cairns Regional Council
Georgetown	Reticulation	Total Coliforms	Cells/ML	Monthly	60	0	NA	<1	<1	<1		Cairns Regional Council
Georgetown	Reticulation	HPC	Cells/ML	Monthly	55	8	NA	<10	50	3.8		Cairns Regional Council
Georgetown	Raw	Turbidity	Ntu	Daily	507	507	NA	0.00	35.50	3.73		In House
Georgetown	Raw	True colour	Pt/Co	Twice a week	87	87	NA	0.00	187.00	21.36		In House
Georgetown	Raw	PH		Daily	360	360	NA	5.4	6.9	6.3		In House
Georgetown	Raw	Temperature	C	Daily	364	364	NA	16.4	35.6	27.5		In House
Georgetown	Raw	Aluminium	Mg/L	Monthly	8	7	NA	<0.015	0.373	0.202	<0.015	Cairns Regional Council
Georgetown	Raw	Silicon	Mg/L	Quarterly	4	4	NA	19	23	21.3	<0.10	Cairns Regional Council
Georgetown	Raw	Mercury	Ug/L	Quarterly	4	0	NA	<0.06	<0.75	<0.06	<0.06	Cairns Regional Council
Georgetown	Raw	Arsenic	Mg/L	Quarterly	5	5	NA	0.0004	0.0006	0.0005	<0.0001	Cairns Regional Council
Georgetown	Raw	Cadmium	Mg/L	Quarterly	5	4	NA	<0.0001	0.0001	0.0001	<0.0001	Cairns Regional Council
Georgetown	Raw	Chromium	Mg/L	Quarterly	5	3	NA	<0.0002	0.0006	0.0004	<0.0002	Cairns Regional Council
Georgetown	Raw	Copper	Mg/L	Quarterly	5	5	NA	0.003	0.007	0.005	<0.001	Cairns Regional Council
Georgetown	Raw	Iron	Mg/L	Monthly	9	9	NA	0.093	0.615	0.281	<0.01	Cairns Regional Council
Georgetown	Raw	Lead	Mg/L	Quarterly	5	5	NA	0.0005	0.0013	0.0008	<0.001	Cairns Regional Council
Georgetown	Raw	Manganese	Mg/L	Monthly	9	9	NA	0.0378	0.0760	0.0616	<0.001	Cairns Regional Council
Georgetown	Raw	Nickel	Mg/L	Quarterly	5	1	NA	<0.0005	0.0005	0.0002	<0.0001	Cairns Regional Council
Georgetown	Raw	Zinc	Mg/L	Quarterly	5	4	NA	<0.008	0.10	0.007	<0.008	Cairns Regional Council
Georgetown	Raw	Calcium	Mg/L	Quarterly	4	4	NA	4.2	12	7.5	<0.20	Cairns Regional Council
Georgetown	Raw	Magnesium	Mg/L	Quarterly	4	4	NA	1.5	4.6	2.8	<0.10	Cairns Regional Council
Georgetown	Raw	Potassium	Mg/L	Quarterly	4	4	NA	1.9	3.2	2.5	<0.10	Cairns Regional Council

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples in which parameter was detected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Limit of reporting	Laboratory name
Georgetown	Raw	Sodium	Mg/L	Quarterly	4	4	NA	8.8	20	13.5	<1	Cairns Regional Council
Georgetown	Raw	Total Hardness	MgCaC03/L	Quarterly	4	4	NA	17	49	30	<1	Cairns Regional Council
Georgetown	Raw	Salinity	Psu	Quarterly	4	4	NA	0.0432	0.0921	0.0648		Cairns Regional Council
Georgetown	Raw	Total Dissolved solids	Mg/L	Quarterly	4	4	NA	64	120	88.8	<1	Cairns Regional Council
Georgetown	Raw	Electrical conductance	Us/cm	Quarterly	4	4	NA	81	190	128		Cairns Regional Council
Georgetown	Raw	Total Alkalinity	MgCaCO3/L	Quarterly	4	4	NA	28	71	46	<0.1	Cairns Regional Council
Georgetown	Raw	Fluoride	Mg/L	Quarterly	4	4	NA	.10	.16	.13	<0.02	Cairns Regional Council
Georgetown	Raw	Sulphate	Mg/L	Quarterly	4	4	NA	2.1	9.8	5.7	<0.1	Cairns Regional Council
Georgetown	Raw	Chloride	Mg/L	Quarterly	4	4	NA	5.9	8.8	7.2	<0.1	Cairns Regional Council
Georgetown	Raw	Chlorate	Mg/L	Monthly	10	1	NA	<0.005	0.025	0.000	<0.005	Cairns Regional Council
Georgetown	Raw	Chlorite	Mg/L	Monthly	10	0	NA	<0.005	<0.010	<0.005	<0.005	Cairns Regional Council
Georgetown	Raw	Bromate	Mg/L	Monthly	10	1	NA	<0.005	0.008	0.000	<0.005	Cairns Regional Council
Georgetown	Raw	Bromide	Mg/L	Monthly	10	9	NA	<0.005	0.037	0.020	<0.005	Cairns Regional Council
Georgetown	Raw	E.coli	Cells/ML	Monthly	13	4	NA	<0.1	320	25	<0.1	Cairns Regional Council
Georgetown	Raw	Total Coliforms	Cells/ML	Monthly	12	12	NA	13	>1000		<10	Cairns Regional Council
Georgetown	Raw	HPC	Cells/ML	Monthly	11	10	NA	<10	2000		<10	Cairns Regional Council
Forsayth	Reticulation	Turbidity	Ntu	Daily	364	364	NA	0.04	1.10	0.38		In House
Forsayth	Reticulation	True colour	Pt/Co	Twice a week	91	91	NA	0.00	22.00	2.39		In House
Forsayth	Reticulation	PH	PH units	Daily	363	363	NA	6.2	7.8	7.0		In House
Forsayth	Reticulation	Temperature	C	Daily	365	365	NA	18.0	35.2	28.3		In House
Forsayth	Reticulation	Chlorine Free	Ppm	Daily	474	474	NA	0.07	2.09	.41		In House
Forsayth	Reticulation	Chlorine Total	Ppm	Daily	365	365	NA	0.11	3.90	.61		In House
Forsayth	Reticulation	Aluminium	Mg/L	Monthly	24	23	NA	<0.015	2.720	0.138	<0.005	Cairns Regional Council
Forsayth	Reticulation	Silicon	Mg/L	Quarterly	4	4	NA	0.5	8.1	4.3	<0.10	Cairns Regional Council
Forsayth	Reticulation	Mercury	Ug/L	Quarterly	5	0	0	<0.06	<0.06	<0.06	<0.06	Cairns Regional Council
Forsayth	Reticulation	Arsenic	Mg/L	Quarterly	5	5	0	0.0002	0.0004	0.0003	<0.0001	Cairns Regional Council
Forsayth	Reticulation	Cadmium	Mg/L	Quarterly	5	0	0	<0.0001	<0.0001	<0.0001	<0.0001	Cairns Regional Council
Forsayth	Reticulation	Chromium	Mg/L	Quarterly	5	0	0	<0.0002	<0.0002	<0.0002	<0.0002	Cairns Regional Council
Forsayth	Reticulation	Copper	Mg/L	Quarterly	5	5	0	0.005	0.009	0.007	<0.001	Cairns Regional Council
Forsayth	Reticulation	Iron	Mg/l	Monthly	24	11	NA	<0.008	0.562	0.029	<0.01	Cairns Regional Council
Forsayth	Reticulation	Lead	Mg/L	Quarterly	5	0	0	<0.0005	<0.0005	<0.0005	<0.0005	Cairns Regional Council
Forsayth	Reticulation	Manganese	Mg/L	Monthly	24	24	0	0.002	0.541	0.071	<0.0002	Cairns Regional Council
Forsayth	Reticulation	Nickel	Mg/L	Quarterly	5	0	0	<0.0005	<0.0005	<0.0005	<0.0005	Cairns Regional

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples in which parameter was detected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Limit of reporting	Laboratory name
												Council
Forsayth	Reticulation	Zinc	Mg/L	Quarterly	5	0	NA	<0.008	<0.0008	<0.008	<0.008	Cairns Regional Council
Forsayth	Reticulation	Calcium	MG/L	Quarterly	5	5	NA	4.1	5.4	4.7	<0.20	Cairns Regional Council
Forsayth	Reticulation	Magnesium	Mg/L	Quarterly	5	5	NA	1.4	1.8	1.6	<0.10	Cairns Regional Council
Forsayth	Reticulation	Potassium	Mg/L	Quarterly	5	5	NA	1.9	9.0	4.6	<0.10	Cairns Regional Council
Forsayth	Reticulation	Sodium	Mg/L	Quarterly	5	5	NA	36	78	49.6	<1	Cairns Regional Council
Forsayth	Reticulation	Total Hardness	MgCaC03/L	Quarterly	5	5	NA	16	21	18.2	<1	Cairns regional Council
Forsayth	Reticulation	Salinity	Psu	Quarterly	5	5	NA	0.111	0.240	0.159		Cairns Regional Council
Forsayth	Reticulation	Total Dissolved Solids	Mg/L	Quarterly	5	5	NA	130	300	180	<1	Cairns Regional Council
Forsayth	Reticulation	Electrical Conductance	Us/cm	Quarterly	5	5	NA	220	500	308	<1	Cairns Regional Council
Forsayth	Reticulation	Total Alkalinity	MgCaCO3/L	Quarterly	5	5	NA	43	86	58	<1	Cairns Regional Council
Forsayth	Reticulation	Fluoride	Mg/L	Quarterly	5	5	0	0.04	0.08	0.06	<0.02	Cairns Regional Council
Forsayth	Reticulation	Sulphate	Mg/L	Quarterly	5	5	0	32	94	54.4	<0.1	Cairns Regional Council
Forsayth	Reticulation	Chloride	Mg/L	Quarterly	5	5	NA	11	36	21	<0.01	Cairns Regional Council
Forsayth	Reticulation	Chlorate	Mg/L	Monthly	14	14	NA	0.272	4.610	1.61	<0.005	Cairns Regional Council
Forsayth	Reticulation	Chlorite	Mg/L	Monthly	14	2	0	<0.005	0.008	0.001	<0.005	Cairns Regional Council
Forsayth	Reticulation	Bromate	Mg/L	Monthly	14	4	1	<0.005	0.040	0.006	<0.005	Cairns Regional Council
Forsayth	Reticulation	Bromide	Mg/L	Monthly	14	1	NA	<0.005	0.006	0.000	<0.005	Cairns Regional Council
Forsayth	Reticulation	Giardia, protozoa	Mg/L	Annually	1	0	0	0	0	0		Cairns Regional Council
Forsayth	Reticulation	Organochlorine Pesticides	Ug/L	Annually	1	0	0	0	0	0		Cairns Regional Council
Forsayth	Reticulation	Microcystis aeruginosa	Cells/ML	Monthly	12	0	0	0	0	0		Cairns Regional Council
Forsayth	Reticulation	Cylindrospermopsis raciborskii	Cells/ML	Monthly	12	0	0	0	0	0		Cairns Regional Council
Forsayth	Reticulation	Dolichospermum circinale	Cells/ML	Monthly	12	0	0	0	0	0		Cairns Regional Council
Forsayth	Reticulation	Chrysosporum ovalisporum	Cells/ML	Monthly	12	0	0	0	0	0		Cairns Regional Council
Forsayth	Reticulation	Chloroform	Ug/L	Annually	2	2	0	54	84	69		Cairns Regional Council
Forsayth	Reticulation	Bromodichloromethane	Ug/L	Annually	2	2	0	5	9	7		Cairns Regional Council
Forsayth	Reticulation	Dibomochloromethane	Ug/L	Annually	2	0	0	<5	<5	<5		Cairns Regional Council
Forsayth	Reticulation	Bromoform	Ug/L	Annually	2	0	0	<5	<5	<5		Cairns Regional Council
Forsayth	Reticulation	Total Trihalomethanes	Ug/L	Annually	2	2	0	59	93	76		Cairns Regional Council

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples in which parameter was detected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Limit of reporting	Laboratory name
Forsayth	Reticulation	E.coli	Cells/ML	Monthly	39	0	0	<1	<1	<1	<1	Cairns Regional Council
Forsayth	Reticulation	Total Coliforms	Cells/ML	Monthly	36	0	NA	<1	<1	<1	<1	Cairns Regional Council
Forsayth	Reticulation	HPC	Cells/ML	Monthly	33	8	NA	<10	60	6.6	<10	Cairns Regional Council
Forsayth	Raw	Turbidity	Ntu	Daily	585	585	NA	0.78	540.67	6.11		In House
Forsayth	Raw	True colour	Pt/Co	Twice a week	91	91	NA	28.00	630.00	155.25		In House
Forsayth	Raw	PH	PH units	Daily	365	365	NA	6.0	7.3	6.7		In House
Forsayth	Raw	Temperature	C	Daily	365	365	NA	14.6	36.2	27.0		In House
Forsayth	Raw	Aluminium	Mg/L	Monthly	10	9	NA	<0.015	0.187	.045	<0.005	Cairns Regional Council
Forsayth	Raw	Silicon	Mg/L	Quarterly	4	4	NA	1.0	12.0	5.8	<0.10	Cairns Regional Council
Forsayth	Raw	Mercury	Ug/L	Quarterly	5	0	NA	<0.06	<0.06	<0.06	<0.06	Cairns Regional Council
Forsayth	Raw	Arsenic	Mg/L	Quarterly	6	6	NA	0.0003	0.0013	0.0007	<0.0001	Cairns Regional Council
Forsayth	Raw	Cadmium	Mg/L	Quarterly	6	0	NA	<0.0001	<0.0001	<0.0001	<0.0001	Cairns Regional Council
Forsayth	Raw	Chromium	Mg/L	Quarterly	6	1	NA	<0.0002	0.0003	0.0000	<0.0002	Cairns Regional Council
Forsayth	Raw	Copper	Mg/L	Quarterly	6	5	NA	<0.001	0.015	0.005	<0.001	Cairns Regional Council
Forsayth	Raw	Iron	Mg/l	Monthly	10	10	NA	0.640	14.100	4.556	<0.01	Cairns Regional Council
Forsayth	Raw	Lead	Mg/L	Quarterly	6	4	NA	<0.0005	0.0010	0.0004	<0.0005	Cairns Regional Council
Forsayth	Raw	Manganese	Mg/L	Monthly	10	10	NA	0.0139	1.68	0.0539	<0.0005	Cairns Regional Council
Forsayth	Raw	Nickel	Mg/L	Quarterly	6	6	NA	0.0005	0.0144	0.0029	<0.0005	Cairns Regional Council
Forsayth	Raw	Zinc	Mg/L	Quarterly	6	3	NA	<0.008	0.011	0.005	<0.008	Cairns Regional Council
Forsayth	Raw	Calcium	MG/L	Quarterly	4	4	NA	4.1	5.9	5.0	<0.20	Cairns Regional Council
Forsayth	Raw	Magnesium	Mg/L	Quarterly	4	4	NA	1.5	2.0	1.8	<0.10	Cairns Regional Council
Forsayth	Raw	Potassium	Mg/L	Quarterly	4	4	NA	2.4	3.3	2.7	<0.10	Cairns Regional Council
Forsayth	Raw	Sodium	Mg/L	Quarterly	4	4	NA	9.6	12	10.6	<1	Cairns Regional Council
Forsayth	Raw	Total Hardness	MgCaC03/L	Quarterly	4	4	NA	16	23	20	<1	Cairns Regional Council
Forsayth	Raw	Salinity	Psu	Quarterly	4	4	NA	0.0431	0.0595	0.0511		Cairns Regional Council
Forsayth	Raw	Total Dissolved Solids	Mg/L	Quarterly	4	4	NA	54	110	78	<1	Cairns Regional Council
Forsayth	Raw	Electrical Conductance	Us/cm	Quarterly	3	3	NA	81	120	98	<1	Cairns Regional Council
Forsayth	Raw	Total Alkalinity	MgCaCO3/L	Quarterly	3	3	NA	33	46	37.7	<0.1	Cairns Regional Council
Forsayth	Raw	Fluoride	Mg/L	Quarterly	3	3	NA	0.15	0.17	0.16	<0.02	Cairns Regional Council
Forsayth	Raw	Sulphate	Mg/L	Quarterly	3	0	NA	<1	<1	<1	<1	Cairns Regional Council
Forsayth	Raw	Chloride	Mg/L	Quarterly	3	3	NA	4.1	6.7	5.6	<0.01	Cairns Regional Council

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples in which parameter was detected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Limit of reporting	Laboratory name
Forsayth	Raw	Chlorate	Mg/L	Monthly	11	1	NA	<0.005	0.327	0.029	<0.005	Cairns Regional Council
Forsayth	Raw	Chlorite	Mg/L	Monthly	11	0	NA	<0.005	<0.005	<0.005	<0.005	Cairns Regional Council
Forsayth	Raw	Bromate	Mg/L	Monthly	11	0	NA	<0.005	<0.025	<0.005	<0.005	Cairns Regional Council
Forsayth	Raw	Bromide	Mg/L	Monthly	11	10	NA	<0.025	0.023	0.015	<0.025	Cairns Regional Council
Forsayth	Raw	Microcystis aeruginosa	Cells/ML	Monthly	12	1	NA	0	50	4.1		Cairns Regional Council
Forsayth	Raw	Cylindrospermopsis raciborskii	Cells/ML	Monthly	12	0	NA	0	0	0		Cairns Regional Council
Forsayth	Raw	Dolichospermum circinale	Cells/ML	Monthly	12	0	NA	0	0	0		Cairns Regional Council
Forsayth	Raw	Chrysosporum ovalisporum	Cells/ML	Monthly	12	0	NA	0	0	0		Cairns Regional Council
Forsayth	Raw	E.coli	Cells/ML	Monthly	13	11	NA	<1	32	6.2		Cairns Regional Council
Forsayth	Raw	Total Coliforms	Cells/ML	Monthly	12	12	NA	>1000	>10000			Cairns Regional Council
Forsayth	Raw	HPC	Cells/ML	Monthly	11	11	NA	140	>25000			Cairns Regional Council

Table - Reticulation *E. coli* verification monitoring

Drinking water scheme: Georgetown

Year	***2014***											
Month	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***June***	***July***	***Aug***	***Sept***	***Oct***	***Nov***	***Dec***
No. of samples collected	5	5	5	5	5	5	5	5	5	5	5	5
No. of samples collected in which *E. coli* 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	60	60	60	60	60	60	60	60	60	60	60	60
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

Drinking water scheme: Georgetown

Year	*2015*											
Month	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*
No. of samples collected	5	5	5	5	5	5	5	5	5	5	5	5
No. of samples collected in which *E. coli* 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	60	60	60	60	60	60	60	60	60	60	60	60
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

Drinking water scheme: Georgetown

Year	*2016*											
Month	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*
No. of samples collected	5	5	5	5	5	5	5	5	5	5	5	5
No. of samples collected in which *E. coli* 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	60	60	60	60	60	60	60	60	60	60	60	60
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

Drinking water scheme: Georgetown

Year	***2017***											
Month	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***June***	***July***	***Aug***	***Sept***	***Oct***	***Nov***	***Dec***
No. of samples collected	5	5	5	5	5	5	5	5	5	5	5	5
No. of samples collected in which *E. coli* 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	60	60	60	60	60	60	60	60	60	60	60	60
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

Drinking water scheme: Georgetown

Year	*2018*											
Month	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*
No. of samples collected	5	5	5	5	5	5	5	5	5	5	5	5
No. of samples collected in which *E. coli* 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	60	60	60	60	60	60	60	60	60	60	60	60
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

Drinking water scheme: Georgetown

Year	*2019*											
Month	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*
No. of samples collected	5	5	5	5	5	5	5	5	5	5		
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0		
No. of samples collected in previous 12 month period	60	60	60	60	60	60	60	60	60	60		
No. of failures for previous 12 month period	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%		
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES		

Drinking water scheme: Forsayth

Year	*2015*											
Month	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*
No. of samples collected	3	3	3	3	3	3	3	3	3	3	3	3
No. of samples collected in which *E. coli* 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	36	36	36	36	36	36	36	36	36	36	36	36
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

Drinking water scheme: Forsayth

Year	***2016***											
Month	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***June***	***July***	***Aug***	***Sept***	***Oct***	***Nov***	***Dec***
No. of samples collected	3	3	3	3	3	3	3	3	3	3	3	3
No. of samples collected in which *E. coli* 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	36	36	36	36	36	36	36	36	36	36	36	36
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

Drinking water scheme: Forsayth

Year	*2017*											
Month	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***June***	***July***	***Aug***	***Sept***	***Oct***	***Nov***	***Dec***
No. of samples collected	3	3	3	3	3	3	3	3	3	3	3	3
No. of samples collected in which *E. coli* 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	36	36	36	36	36	36	36	36	36	36	36	36
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

Drinking water scheme: Forsayth

Year	*2018*

Month	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*
No. of samples collected	3	3	3	3	3	3	3	3	3	3	3	
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	
No. of samples collected in previous 12 month period	36	36	36	36	36	36	36	36	36	36	36	
No. of failures for previous 12 month period	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 %	
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	

Drinking water scheme: Forsayth

Year	*2019*											
Month	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*
No. of samples collected	3	3	3	3	3	3	3	3	3			
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0			
No. of samples collected in previous 12 month period	36	36	36	36	36	36	36	36	36			
No. of failures for previous 12 month period	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 %			
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES			

Appendix B – Implementation of the DWQMP Risk Management Improvement Program

Table 2 – Progress against the risk management improvement program in the approved DWQMP

IP item	Action	Priority	Description Describe the deliverable and the scope	Original Target date/s	Progress	Target date/s	Responsibility
Review and document procedures for drinking water management	*1*	High	*Stage1: identify required procedures and prioritise their creation* *Stage 2; create priority procedures including mains break repair procedures*	*End 2013* *End 2014*	*Stage1: Procedures have been identified and created.* *Stage 2; We are utilising our WH&S procedure Development doc and Job Analysis worksheet and have created procedures. This is ongoing as we are always creating new procedures and reviewing existing ones.*	*Complete /ongoing*	*Towns Supervisor, Plumber/Water Treatment Supervisor*
Review water quality monitoring program	*2*	*High*	*Review the frequency of parameter sampling to consider reduced frequency for stable parameters* *Create revised verification monitoring program and submit to the regulator*	*End 2013*	*The review has been done and the frequency of sampling for stable parameters has been reduced. This is ongoing.*	*Complete*	*Towns Supervisor*
Manage high turbidity at Georgetown.	*3*	*Med*	*Long term plan to install filtration. Apply for grants to fund.*	*2023*	*We have installed a water treatment plant which has been successful in managing turbidity, iron & manganese.*	*Complete*	*Council*
Determine risk of protozoa at Georgetown & Forsayth & manage	*4*	*High*	*Investigative sampling to be done during the wet season*	*End 2015*	*We have added annual testing for protozoa to our schedule. Tests results have shown no protozoa.*	*Complete*	*Towns Supervisor*
Determine & manage Chlorate levels in Georgetown & Forsayth &	*5*	*Med*	*Sample for chlorate more often (at least twice yearly). Monitor and develop options to manage chlorate production.*	*End 2015*	*We have added testing for chlorate to our schedule on a monthly basis. . We purchase hypo in 200L drums and aim to turn it over within 2 to 4 weeks or less. We turn over chlorine as frequently as*	*Complete /ongoing*	*Towns Supervisor, Plumber/Water Treatment Supervisor, Council*

IP item	Action	Priority	Description Describe the deliverable and the scope	Original Target date/s	Progress	Target date/s	Responsibility
manage.					*possible and store it out of the sun. We have upgraded the Forsayth Water Treatment Plant.* *We have engaged consultants to design an upgrade for the Georgetown Water Treatment plant. We regularly clean our chlorine storage containers. We have talked with our chemical supplier about the importance of supplying fresh product and test the strength on arrival. We have talked to our freight company about issues while transporting and storing the hypo. We have been working with the health department who has agreed that we can set a chlorate guideline in our DWQMP of .8mg/L. We have made improvements and are monitoring*.		
Turbidity rises at Forsayth WTP which may effect disinfection.	*6*	*High*	*Development of options for reduction of turbidity and maintaining minimum chlorine levels.*	*End 2014*	*Water Treatment Plant upgrade 2018 has rectified turbidity issues*	*Complete*	*Towns Supervisor, Plumber/Water Treatment Supervisor, Council*
Loss of Forsayth water supply from structural failure at Big Reef Dam.	*7*	*Med*	*Investigate water sourcing options or dam repairs/improvements.*	*End 2024*	*We have obtained a grant to build a new dam. Work has started on new Dam.*	*End 2021*	*Council*
Ongoing siltation & weed management at Big Reef Dam	*8*	*High*	*Investigate resolving ongoing siltation and weed management problems at Big Reef Dam.*	*2020*	*We are in the process of building a new Dam.*	*2021*	*Council*
Loss of water supply through inadequate wet season	*9*	*High*	*Investigate water sourcing options for supply security for Georgetown & Forsayth*	*2020*	*We are in the process of building a new Dam. Pipelines have been installed to Georgetown & Forsayth.*	*2021*	*Council*
Computer failure at Forsayth WTP.	*10*	*High*	*Investigate computer upgrades & scada set up to deal with computer failure.*	*2015*	*We upgraded the computer system within the 2018 upgrade which runs the*	*Complete /ongoing*	*Towns supervisor & Council*

IP item	Action	Priority	Description Describe the deliverable and the scope	Original Target date/s	Progress	Target date/s	Responsibility
					Plant. The computer shuts down the plant if water quality varies from a set range. This is set up to be compatible with scada to be installed in the future when funds are obtained. We have limited existing scada which phones us when the treatment shuts down with a critical alarm.		
Colilert water testing	*11*	*Med*	*Investigate purchasing & using colilert water testing for E.coli.*	*End 2014*	*We have purchased this equipment and have built a laboratory type room to perform testing.*	*2019*	*Towns Supervisor, Plumber/Water Treatment Supervisor*
Scada	*12*	*Med*	*Investigate scada computer system specifically chlorine alarms*	*End 2014*	*We now have a system in the Georgetown Reservoirs which circulates the water, senses the chlorine levels and adds chlorine if needed. We have started a scada system at Georgetown, which allows us to monitor reservoir levels and activate pumps.* *We have upgraded the computer system within our upgrade at the Forsayth Treatment plant, which has been set up to take scada.* *We plan to budget to keep updating our scada*	*2021*	*Towns Supervisor Plumber/Water Treatment Supervisor, Council*
Water mains	*13*	*Low*	*Investigate capital works projects to replace 80mm AC with PVC & extend mains with PVC to complete circuits.*	*2023*	*We have performed capital works jobs each year and eliminated some dead ends. This is ongoing at this stage.*	*2025*	*Towns Supervisor Plumber/Water Treatment Supervisor, Council*