



Drinking Water Quality Management DWQMP – Annual Report 2016-2017

Whitsunday Regional Council

Service Provider No.: 501

Whitsunday Water

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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
<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
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 Whitsunday Regional Council's drinking water service with respect to water quality and performance in implementing the actions detailed in the 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.

It 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

Water and wastewater is managed within Whitsunday Regional Council by a separate business unit “Whitsunday Water” since July 2015.

Whitsunday Water maintains and operates 4 water treatment plants, supplying water to a seasonally fluctuating population of over 35 000 people, including residential, commercial, tourism and industrial customers.

Table 1 – Drinking Water Supplies

Scheme	Communities Served	Source	Treatment	Population served	Demand, ML/day
Bowen	Bowen, Brisk Bay, Merinda	Sub-surface intake in the Proserpine River	Conventional Flocculation with Dual media filtration. Disinfected with Sodium Hypochlorite.	10400	9.3
Collinsville	Collinsville, Scottsville	Bowen River Weir, from Eungella Dam (Sunwater)	Conventional Flocculation and filtration. Disinfected with Sodium Hypochlorite.	1800	2.9
Proserpine	Proserpine, Mt Julian (Coastal Water Scheme)	Aquifer bores, supplemented from Peter Faust Dam	Conventional Flocculation with Dual media filtration. Disinfected with Sodium Hypochlorite.	5700	4.8
Coastal	Cannonvale, Airlie Beach, Mt Julian, Jubilee Pocket	Aquifer bores	Conventional Flocculation with Dual media filtration. Disinfected with Sodium Hypochlorite.	13400	4.5

The entire Whitsunday region suffered damage from Tropical Cyclone Debbie which made landfall in the region on Tuesday 28 March 2017. This will be discussed further in later sections of this report.

3. Actions taken to implement the DWQMP

Water quality has been ensured by the implementation of safeguards and barriers identified in the DWQMP. Water quality in all areas has been kept to high standards with the implementation of sampling regimes, maintenance schedules and hazard identifications highlighted in the DWQMP.

Progress in implementing the risk management improvement program.

Refer to Appendix B for a summary of progress in implementing each of the Improvement Program actions.

All risk management improvement programs outlined in the DWQMP have been implemented or are part of an ongoing maintenance strategy.

Revisions made to the operational monitoring program to assist in maintaining the compliance with water quality criteria¹ in verification monitoring.

Operational monitoring was assessed during the year as part of the full review.

Verification monitoring was assessed during the year as part of the full review.

Amendments made to the DWQMP

Approval of the amendment conditions from version 1.4 was granted 20 December 2016, resulting in version 1.5.

An external audit of our DWQMP version 1.5 was carried out from 3 March 2017 by Dr Michael Lawrence from Bligh Tanner. Findings from the audit were included in the review partially carried out by 28 June 2017, due to the interruptions caused by TC Debbie. The review was completed and returned on 31 July 2017. The review findings will be discussed further in later sections of this report.

The Approved DWQMP as at 30 June 2017 is Version 1.5, with Version 2.1 pending.

4. Compliance with water quality criteria for drinking water

The water quality criteria mean health guideline values in the most current Australian Drinking Water Guidelines, as well as the standards in the Public Health Regulation 2005.

All samples taken during this financial year met the recommended values in the Australian Drinking Water Guidelines.

E. coli

There were no E.coli detected in any sample taken during this financial year.

Fluoride

Fluoride is not added to water within the Whitsunday Regional Council area, so levels detected are natural background levels.

¹ Refer to *Water Quality and Reporting Guideline for a Drinking Water Service* for the water quality criteria for drinking water.

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

The Regulator was notified under sections 102 or 102A of the Act after TC Debbie in March / April 2017.

Boil Water Notices were issued on 30 March 2017 for the communities of Bowen and surrounds, and Airlie Beach, Cannonvale and surrounds (Coastal scheme). The notices were issued as a precaution after those communities lost supply of water after the cyclone. Once supply was returned, intensive monitoring began and the notices were lifted on 3 April 2017, after three (3) days of Nil bacteriological counts.

There were no notifications involving the detection of *E. coli* – an organism that may not directly represent a hazard to human health, but indicates the presence of recent faecal contamination.

There were no non-compliances with water quality criteria.

6. Customer complaints related to water quality

Whitsunday Regional 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 2 - complaints about water quality

	Suspected Illness	Discoloured water	Taste and odour	Total
Bowen	0	15	1	16
Coastal	0	7	1	8
Collinsville	0	2	2	4
Proserpine	0	3	1	4
Total	0	27	5	32

Suspected Illness

There were no suspected illness complaints received during this financial year.

Discoloured water

27 dirty water customer complaints were received from throughout the Whitsunday Regional Council area during the 2016-17 year. In each case the localised area was flushed to achieve clear water. No further action was required.

Taste and odour

Complaints received from the Bowen, Coastal and Proserpine areas were all odour related and were after repairs in the area. Taste complaints were both from the Collinsville area, most likely due to changes in weir level by Sunwater after rain events. No risk to human health was determined.

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

The review of the DWQMP carried out in June / July 2017 identified several issues with the current version (v1.5) of the DWQMP, it also addressed non-conformances that were identified during the external audit. A summary is presented below.

- Infrastructure – schematics and scheme infrastructure descriptions required amending to correctly reflect the treatment process through to the reticulation system for each of the four schemes. Workshops were held to ensure accurate and current information was used in the update.
- Water Quality – Summaries of historic water quality data were added in the amendment for source and treated water instead of specific data.
- Hazard Identification & Assessment of Risks – Risk assessments were revisited to accurately reflect all risks and cover all operations. HACCP plans were determined and recorded as traffic light style procedures.
- Risk Management – Preventative measures were updated.
- Procedures – Operational limits used at each plant were incorporated into the HACCP procedures.
- Management of Incidents and Emergencies – Incident levels and response actions have been better defined. Learnings from TC Debbie have also been added.
- Risk Management Improvement Program – Links have been created to Councils capital works program.
- Information Management – Document control and information availability have been clarified.
- Monitoring – There were only minor adjustments to operational and verification monitoring programs.

Version 2 of the Whitsunday Regional Council's DWQMP is a rewrite of the previous plan with changes to format, layout and clarifying content. The document is under review by the regulator.

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, therefore results obtained after TC Debbie have not been included.

Verification monitoring was carried out as per the program stated in the DWQMP

Table 3a - Verification monitoring results - Bowen Scheme

	Parameter	Unit of Measure	LOR	Total Samples Collected	No. Samples in which parameter was detected	No. of samples exceeding water quality criteria	Minimum Result	Maximum Result	Average of Results
In-House Test Results	pH	mg/L	0.1	361	361	0	7.05	7.38	7.19
	Turbidity	NTU	0.01	361	361	0	0.05	0.25	0.08
	Conductivity	µS/cm	1	69	69	0	351	657	492
	Colour	Pt/Co	1	361	361	0	1.00	1.00	1.00
	Free chlorine residual	mg/L	0.1	361	361	0	1.52	3.53	2.73
	Total chlorine residual	mg/L	0.1	21	21	0	2.66	3.53	3.15
	Alkalinity	mg/L	0.1	100	100	0	29.6	112.4	80.0
	Total hardness	mg/L	0.1	100	100	0	2.9	147.6	99.0
	Iron	mg/L	0.01	360	324	0	0.000	0.040	0.011
	Manganese	mg/L	0.001	360	360	0	0.001	0.010	0.001
Aluminium	mg/L	0.001	360	360	0	0.003	0.053	0.031	
NATA Lab Results	pH	mg/L	0.1	24	24	0	7.31	8.06	7.58
	Turbidity	NTU	1	24	0	0	0	0	<1
	Colour	Pt/Co	0	24	6	0	1	2	1.33
	Conductivity	µS/cm	5	24	24	0	356	659	492.3
	Alkalinity	mg/L	5	24	24	0	86	112	95.9
	Total hardness	mg/L	5	24	24	0	70	148	102.7
	Total dissolved solids	mg/L	10	24	24	0	204	352	267.3
	Chloride	mg/L	2	24	24	0	50	120	82.5
	Sulphate	mg/L	2	24	24	0	14	19	16.3
	Fluoride	mg/L	0.05	24	24	0	0.06	0.14	0.09
	Nitrate	mg/L	0.05	24	2	0	2.7	3.6	3.15
	Silica	mg/L	5	24	24	0	15	18	16.63
	Sodium	mg/L	0.05	24	24	0	44	73	56.83
	Potassium	mg/L	0.05	24	24	0	2.5	3.5	2.8
	Calcium	mg/L	0.05	24	24	0	16	34	23.38
	Magnesium	mg/L	0.05	24	24	0	7.3	15	10.7
	Chlorate	mg/L	0.01	24	24	0	0.04	0.95	0.49
	Aluminium	mg/L	0.01	24	24	0	0.009	0.04	0.0224
	Antimony	mg/L	0.0001	24	0	0	0	0	<0.0001
	Arsenic	mg/L	0.0001	24	24	0	0.0002	0.0003	0.0002
	Barium	mg/L	0.001	24	24	0	0.027	0.079	0.0414
	Beryllium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Boron	mg/L	0.001	24	24	0	0.022	0.033	0.0282
	Cadmium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Chromium	mg/L	0.0001	24	9	0	0.0001	0.0002	0.0002
	Cobalt	mg/L	0.0001	24	0	0	0	0	<0.0001
	Copper	mg/L	0.001	24	24	0	0.005	0.18	0.0675
	Iron	mg/L	0.005	24	12	0	0.008	0.037	0.0215
	Lead	mg/L	0.0001	24	14	0	0.0001	0.0016	0.0008
	Mercury	mg/L	0.0001	24	0	0	0	0	<0.0001
	Manganese	mg/L	0.001	24	24	0	0.0002	0.0085	0.003
	Molybdenum	mg/L	0.0001	24	24	0	0.0003	0.0006	0.0004
	Nickel	mg/L	0.0001	24	24	0	0.0002	0.0008	0.0003
	Selenium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Silver	mg/L	0.001	24	0	0	0	0	<0.001
	Strontium	mg/L	0.01	24	24	0	0.17	0.36	0.2525
	Thallium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Tin	mg/L	0.0001	24	12	0	0.0002	0.0005	0.0004
	Titanium	mg/L	0.001	24	0	0	0	0	<0.001
	Uranium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Vanadium	mg/L	0.0001	24	16	0	0.0001	0.0005	0.0003
	Zinc	mg/L	0.001	24	24	0	0.003	0.024	0.0094
	Chloroform	µg/L	1	22	22	0	2	47	17
Bromodichloro methane	µg/L	1	22	22	0	6	48	20.7	
Dibromochloro methane	µg/L	1	22	22	0	9	40	20	
Bromoform	µg/L	1	22	22	0	2	11	5.2	

Table 3b - Verification monitoring results - Coastal Scheme

	Parameter	Unit of Measure	LOR	Total Samples Collected	No. Samples in which parameter was detected	No. of samples exceeding water quality criteria	Minimum Result	Maximum Result	Average of Results
In-House Test Results	pH	mg/L	0.1	359	359	0	7.14	7.44	7.28
	Turbidity	NTU	0.01	359	359	0	0.06	1.08	0.11
	Conductivity	µS/cm	1	94	94	0	158	630	457.86
	Colour	Pt/Co	1	359	359	0	1	1	1
	Free chlorine residual	mg/L	0.1	359	359	0	0.15	1.92	1.57
	Total chlorine residual	mg/L	0.1	39	39	0	1.61	2.01	1.83
	Alkalinity	mg/L	0.1	93	93	0	76.2	104	91.6
	Total hardness	mg/L	0.1	93	93	0	80.8	116.4	98.96
	Iron	mg/L	0.01	359	320	0	0	0.03	0.01
	Manganese	mg/L	0.001	359	345	0	0	0.05	0.003
Aluminium	mg/L	0.001	359	359	0	0.011	0.097	0.033	
NATA Lab Results	pH	mg/L	0.1	24	24	0	7.3	7.83	7.53
	Turbidity	NTU	1	24	1	0	3	3	3
	Colour	Pt/Co	1	24	14	0	1	6	2.07
	Conductivity	µS/cm	5	24	24	0	395	534	458.5
	Alkalinity	mg/L	5	24	24	0	78	103	90.8
	Total hardness	mg/L	5	24	24	0	87	122	103.5
	Total dissolved solids	mg/L	10	24	24	0	231	318	265.4
	Chloride	mg/L	2	24	24	0	58	89	74
	Sulphate	mg/L	2	24	24	0	12	16	13.7
	Fluoride	mg/L	0.05	24	23	0	0.05	0.13	0.08
	Nitrate	mg/L	0.05	24	24	0	3	7	4.07
	Silica	mg/L	5	24	24	0	27	46	34.08
	Sodium	mg/L	0.05	24	24	0	43	60	49.33
	Potassium	mg/L	0.05	24	24	0	1.1	1.8	1.64
	Calcium	mg/L	0.05	24	24	0	19	26	22.29
	Magnesium	mg/L	0.05	24	24	0	9.5	14	11.72
	Chlorate	mg/L	0.01	24	24	0	0.19	0.64	0.4
	Aluminium	mg/L	0.01	24	24	0	0.027	0.12	0.049
	Antimony	mg/L	0.0001	24	0	0	0	0	<0.0001
	Arsenic	mg/L	0.0001	24	24	0	0.0001	0.0003	0.0002
	Barium	mg/L	0.001	24	24	0	0.0033	0.039	0.0331
	Beryllium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Boron	mg/L	0.001	24	24	0	0.02	0.073	0.0275
	Cadmium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Chromium	mg/L	0.0001	24	4	0	0.0001	0.0008	0.0003
	Cobalt	mg/L	0.0001	24	0	0	0	0	<0.0001
	Copper	mg/L	0.001	24	24	0	0.003	0.33	0.0255
	Iron	mg/L	0.005	24	19	0	0.005	0.033	0.0129
	Lead	mg/L	0.0001	24	23	0	0.0002	0.0009	0.0004
	Mercury	mg/L	0.0001	24	0	0	0	0	<0.0001
	Manganese	mg/L	0.001	24	24	0	0.0007	0.014	0.0038
	Molybdenum	mg/L	0.0001	24	24	0	0.0003	0.0004	0.0003
	Nickel	mg/L	0.0001	24	24	0	0.0002	0.0004	0.0002
	Selenium	mg/L	0.0001	24	5	0	0.0001	0.0002	0.0002
	Silver	mg/L	0.001	24	0	0	0	0	<0.001
	Strontium	mg/L	0.01	24	24	0	0.23	0.32	0.2729
	Thallium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Tin	mg/L	0.0001	24	5	0	0.0003	0.0004	0.0003
	Titanium	mg/L	0.001	24	0	0	0	0	<0.001
	Uranium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Vanadium	mg/L	0.0001	24	24	0	0.0008	0.0016	0.0011
	Zinc	mg/L	0.001	24	24	0	0.003	0.043	0.0108
Chloroform	µg/L	1	22	22	0	7	23	15.3	
Bromodichloro methane	µg/L	1	22	22	0	12	83	23	
Dibromochloro methane	µg/L	1	22	22	0	15	24	20.4	
Bromoform	µg/L	1	22	22	0	4	10	6.3	

Table 3c - Verification monitoring results - Collinsville Scheme

	Parameter	Unit of Measure	LOR	Total Samples Collected	No. Samples in which parameter was detected	No. of samples exceeding water quality criteria	Minimum Result	Maximum Result	Average of Results
In House Data	pH	Units	0.1	362	362	0	6.80	7.71	7.17
	Turbidity	NTU	0.01	361	361	0	0.01	1.00	0.15
	Conductivity	µS/cm	1.0	102	102	0	131.00	324.00	203.32
	True Colour	HU	1	361	241	0	0.00	10.00	1.55
	Free chlorine residual	mg/L	0.1	362	362	0	0.00	2.85	1.73
	Total chlorine residual	mg/L	0.1	54	54	0	1.34	3.00	2.13
	Alkalinity	mg/L	0.1	96	96	0	40.00	92.00	57.31
	Total hardness	mg/L	0.1	0	0				
	Iron	mg/L	0.01	350	333	0	0.000	0.020	0.011
	Manganese	mg/L	0.001	356	338	0	0.000	0.032	0.006
Aluminium	mg/L	0.001	356	356	0	0.009	0.081	0.029	
NATA Lab Results	pH	mg/L	0.1	24	24	0	6.88	7.74	7.36
	Turbidity	NTU	1	24	24	0	1	2	1.5
	Colour	Pt/Co	0	24	3	0	2	2	2
	Conductivity	µS/cm	5	24	24	0	170	370	231.9
	Alkalinity	mg/L	5	24	24	0	29	114	59.2
	Total hardness	mg/L	5	24	24	0	46	115	64.7
	Total dissolved solids	mg/L	10	24	24	0	102	218	137.5
	Chloride	mg/L	2	24	24	0	15	27	20.4
	Sulphate	mg/L	2	24	24	0	12.1	40	22.9
	Fluoride	mg/L	0.05	24	13	0	0.05	0.1	0.07
	Nitrate	mg/L	0.05	24	0	0	0	0	<0.5
	Silica	mg/L	5	24	24	0	11	19	15.17
	Sodium	mg/L	0.05	24	24	0	13	30	19.58
	Potassium	mg/L	0.05	24	24	0	1	2.3	1.56
	Calcium	mg/L	0.05	24	24	0	11	29	16
	Magnesium	mg/L	0.05	24	24	0	3.9	11	6.04
	Chlorate	mg/L	0.01	24	24	0	0.16	0.5	0.33
	Aluminium	mg/L	0.01	24	24	0	0.015	0.053	0.027
	Antimony	mg/L	0.0001	24	0	0	0	0	<0.0001
	Arsenic	mg/L	0.0001	24	12	0	0.0002	0.0004	0.0003
	Barium	mg/L	0.001	24	24	0	0.015	0.051	0.024
	Beryllium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Boron	mg/L	0.001	24	24	0	0.01	0.029	0.0178
	Cadmium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Chromium	mg/L	0.0001	24	3	0	0.0001	0.0002	0.0002
	Cobalt	mg/L	0.0001	24	0	0	0	0	<0.0001
	Copper	mg/L	0.001	24	24	0	0.001	0.053	0.0094
	Iron	mg/L	0.005	24	12	0	0.005	0.029	0.0109
	Lead	mg/L	0.0001	24	10	0	0.0001	0.0034	0.0006
	Mercury	mg/L	0.0001	24	0	0	0	0	<0.0001
	Manganese	mg/L	0.001	24	24	0	0.0003	0.098	0.0093
	Molybdenum	mg/L	0.0001	24	24	0	0.0002	0.0008	0.0004
	Nickel	mg/L	0.0001	24	24	0	0.0002	0.0006	0.0003
	Selenium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Silver	mg/L	0.001	24	0	0	0	0	<0.001
	Strontium	mg/L	0.01	24	24	0	0.084	0.25	0.1288
	Thallium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Tin	mg/L	0.0001	24	10	0	0.0002	0.0005	0.0003
	Titanium	mg/L	0.001	24	0	0	0	0	<0.001
	Uranium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Vanadium	mg/L	0.0001	24	24	0	0.0011	0.0028	0.0019
	Zinc	mg/L	0.001	24	24	0	0.002	0.02	0.0065
	Chloroform	µg/L	1	22	22	0	4	79	26.8
Bromodichloro methane	µg/L	1	22	22	0	4	24	13.3	
Dibromochloro methane	µg/L	1	22	22	0	1	10	4.7	
Bromoform	µg/L	1	22	2	0	1	1	1	

Table 3d - Verification monitoring results - Proserpine Scheme

	Parameter	Unit of Measure	LOR	Total Samples Collected	No. Samples in which parameter was detected	No. of samples exceeding water quality criteria	Minimum Result	Maximum Result	Average of Results
In House Results	pH	mg/L	0.1	360	360	0	6.94	7.4	7.21
	Turbidity	NTU	0.01	360	360	0	0.038	0.13	0.07
	Conductivity	µS/cm	1	94	94	0	276	509	338
	Colour	Pt/Co	1	359	358	0	0	3	1.01
	Free chlorine residual	mg/L	0.1	360	360	0	1.23	2.28	1.58
	Total chlorine residual	mg/L	0.1	43	43	0	1.45	2.31	1.78
	Total hardness	mg/L	0.1	93	93	0	54.6	104.8	77
	Alkalinity	mg/L	0.1	93	93	0	38.4	98.8	70
	Iron	mg/L	0.01	359	315	0	0	0.04	0.009
	Manganese	mg/L	0.001	359	359	0	0.001	0.008	0.001
Aluminium	mg/L	0.001	359	359	0	0.008	0.056	0.028	
NATA Lab Results	pH	mg/L	0.1	24	24	0	7.23	7.81	7.5
	Turbidity	NTU	1	24	0	0	0	0	<1
	Colour	Pt/Co	0	24	5	0	1	2	1.4
	Conductivity	µS/cm	5	24	24	0	290	477	373.1
	Alkalinity	mg/L	5	24	24	0	55	83	68.3
	Total hardness	mg/L	5	24	24	0	60	96	76.8
	Total dissolved solids	mg/L	10	24	24	0	169	286	213.7
	Chloride	mg/L	2	24	24	0	42	81	60.5
	Sulphate	mg/L	2	24	24	0	14.3	20	16.2
	Fluoride	mg/L	0.05	24	24	0	0.06	0.13	0.08
	Nitrate	mg/L	0.05	24	12	0	0.5	3.1	2.16
	Silica	mg/L	5	24	24	0	15	43	25.75
	Sodium	mg/L	0.05	24	24	0	31	58	41.67
	Potassium	mg/L	0.05	24	24	0	1.2	2.4	2.04
	Calcium	mg/L	0.05	24	24	0	14	18	16.21
	Magnesium	mg/L	0.05	24	24	0	6.3	12	8.86
	Chlorate	mg/L	0.01	24	24	0	0.24	0.87	0.5
	Aluminium	mg/L	0.01	24	24	0	0.014	0.047	0.0274
	Antimony	mg/L	0.0001	24	0	0	0	0	<0.0001
	Arsenic	mg/L	0.0001	24	21	0	0.0001	0.0003	0.0002
	Barium	mg/L	0.001	24	24	0	0.025	0.043	0.0318
	Beryllium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Boron	mg/L	0.001	24	24	0	0.02	0.031	0.026
	Cadmium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Chromium	mg/L	0.0001	24	4	0	0.0001	0.0013	0.0004
	Cobalt	mg/L	0.0001	24	0	0	0	0	<0.0001
	Copper	mg/L	0.001	24	24	0	0.003	0.032	0.0096
	Iron	mg/L	0.005	24	9	0	0.005	0.019	0.0111
	Lead	mg/L	0.0001	24	11	0	0.0005	0.0015	0.0008
	Mercury	mg/L	0.0001	24	0	0	0	0	<0.0001
	Manganese	mg/L	0.001	24	24	0	0.0003	0.038	0.0033
	Molybdenum	mg/L	0.0001	24	24	0	0.0003	0.0005	0.0003
	Nickel	mg/L	0.0001	24	22	0	0.0001	0.0004	0.0002
	Selenium	mg/L	0.0001	24	4	0	0.0002	0.0003	0.0003
	Silver	mg/L	0.001	24	0	0	0	0	<0.001
	Strontium	mg/L	0.01	24	24	0	0.15	0.24	0.1908
	Thallium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Tin	mg/L	0.0001	24	6	0	0.0003	0.0004	0.0004
	Titanium	mg/L	0.001	24	0	0	0	0	<0.001
	Uranium	mg/L	0.0001	24	0	0	0	0	<0.0001
	Vanadium	mg/L	0.0001	24	24	0	0.0003	0.0014	0.0008
	Zinc	mg/L	0.001	24	24	0	0.001	0.048	0.008
Chloroform	µg/L	1	22	20	0	1	21	8.2	
Bromodichloro methane	µg/L	1	22	22	0	2	22	11.4	
Dibromochloro methane	µg/L	1	22	22	0	7	23	15.2	
Bromoform	µg/L	1	22	22	0	3	14	7	

Table 4 - Reticulation *E.coli* verification monitoring

Drinking water scheme:	Year	Month	No. of samples collected	No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)	No. of samples collected in previous 12 month period	No. of failures for previous 12 month period	% of samples that comply	Compliance with 98% annual value
Bowen Scheme	2016	July	26	0	225	0	100	YES
		Aug	28	0	239	0	100	YES
		Sept	19	0	242	0	100	YES
		Oct	13	0	238	0	100	YES
		Nov	22	0	245	0	100	YES
	Dec	18	0	245	0	100	YES	
	2017	Jan	27	0	261	0	100	YES
		Feb	26	0	272	0	100	YES
		Mar	31	0	289	0	100	YES
		Apr	38	0	301	0	100	YES
		May	28	0	302	0	100	YES
June		28	0	304	0	100	YES	
Proserpine Scheme	2016	July	16	0	131	0	100	YES
		Aug	18	0	141	0	100	YES
		Sept	12	0	145	0	100	YES
		Oct	8	0	145	0	100	YES
		Nov	18	0	155	0	100	YES
		Dec	12	0	156	0	100	YES
	2017	Jan	18	0	166	0	100	YES
		Feb	12	0	170	0	100	YES
		Mar	17	0	179	0	100	YES
		Apr	21	0	184	0	100	YES
		May	17	0	185	0	100	YES
June	20	0	189	0	100	YES		
Coastal Scheme	2016	July	24	0	217	0	100	YES
		Aug	26	0	229	0	100	YES
		Sept	18	0	229	0	100	YES
		Oct	12	0	228	0	100	YES
		Nov	26	0	239	0	100	YES
		Dec	18	0	257	0	100	YES
	2017	Jan	26	0	253	0	100	YES
		Feb	18	0	257	0	100	YES
		Mar	18	0	258	0	100	YES
		Apr	41	0	275	0	100	YES
		May	25	0	276	0	100	YES
June	26	0	278	0	100	YES		
Collinsville Scheme	2016	July	16	0	147	0	100	YES
		Aug	17	0	158	0	100	YES
		Sept	12	0	159	0	100	YES
		Oct	8	0	155	0	100	YES
		Nov	14	0	159	0	100	YES
		Dec	13	0	160	0	100	YES
	2017	Jan	18	0	167	0	100	YES
		Feb	17	0	174	0	100	YES
		Mar	11	0	170	0	100	YES
		Apr	36	0	196	0	100	YES
		May	19	0	197	0	100	YES
June	19	0	200	0	100	YES		

Appendix B – Implementation of the DWQMP Risk Management Improvement Program

Table 5 - Progress against the Risk Management Improvement Plan in the approved DWQMPv1.5

Scheme Component / Sub-component	Action(s)	Target Date	Status as at July 2017	Additional Detail
WTP - Power supply	Investigate supply of generators to critical sites	Jun-17	Generators ordered for Bowen WTP, Bowen supply booster, Foxdale bores, Coastal WTP	Due for installation by Dec 2017
Reticulation	Sodium Hypochlorite monitoring equipment to be installed around Bowen network	Jun-17	4 units installed at Cannonvale reservoir, Bowen reservoir, Mandalay booster & Merinda bore 9	Investigate effect of closing down rechlorination stations
Reticulation	Consider chlorination of lines following repair	Dec-16	Procedure developed	Future to include repairs as well as new mains
Reticulation	All RPZDs to be tested	Nov-15	Schedule implemented. Ongoing.	North region complete; south region underway.
Reticulation	Flushing / pigging program		Ongoing	Bowen supply line included.
Bowen Supply line	Farmers to use alternative to treated water	Dec-16	Only 1 user allocation still in effect	Alternates including groundwater and recycled water are being investigated.
Storage Reservoirs	Assessment of system storage to be completed to determine if required to be on-line	Dec-16	Assessments complete. Reservoirs isolated	Work continuing on reservoirs
Storage Reservoirs	Full asset check of reservoir structures	Dec-16	Procedure developed, inspections ongoing	Repairs to gates, communication structures & graffiti removal completed. Roof repairs to be carried out under insurance claims from TC Debbie
Security	Access to sites	Dec-16	Gate & fencing repairs.	Removal of unauthorised camper at a reservoir site completed with assistance from Local Laws officers and Qld Police
Operation and Maintenance Procedures	Draft set of procedures to be reviewed and updated	Jun-17	Ongoing	Regular review