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# Drinking Water Quality Management DWQMP – Annual Report

2015-2016

## Whitsunday Regional Council

Service Provider No.: 501 M

Whitsunday Region Water and Waste

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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](http://www.dews.qld.gov.au).

## 2. Overview of Operations

Water and waste is managed within Whitsunday Regional Council by a separate business unit "Whitsunday Region Water and Waste" since July 2015.

Whitsunday Region Water and Waste 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.	10300	10.7
Collinsville	Collinsville, Scottsville	Bowen River Weir, from Eungella Dam (Sunwater)	Conventional Flocculation and filtration. Disinfected with Sodium Hypochlorite.	1800	2.5
Proserpine	Proserpine, Mt Julian	Aquifer bores, supplemented from Peter Faust Dam	Conventional Flocculation with Dual media filtration. Disinfected with Sodium Hypochlorite.	5700	5.5
Coastal	Cannonvale, Airlie Beach, Mt Julian, Jubilee Pocket	Aquifer bores	Conventional Flocculation with Dual media filtration. Disinfected with Sodium Hypochlorite.	10100	5.1

## 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 criteria<sup>1</sup> in verification monitoring.**

Operational monitoring will be assessed as part of the next DWQMP review.

Verification monitoring was reviewed during this year.

### **Amendments made to the DWQMP**

An application for Amendment was sent by Whitsunday Regional Council on 3 September 2015. An Information Requirement Notice was received on 13 January 2016 with the response sent by Whitsunday Regional Council on 10 March 2016. Amendment approval was granted on 8 June 2016, with conditions. The response to these conditions that was sent is currently being assessed.

The Approved DWQMP as at 30 June 2016 is Version 1.4.

A full review and external audit are required next year.

## **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.

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

This financial year there were zero instances where the Regulator was notified under sections 102 or 102A of the Act.

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 incidents which required Whitsunday Region Council to issue a boil water or do not drink notice in the communities.

There were no non-compliances with water quality criteria.

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

## 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	1	18	0	19
Coastal	0	14	0	14
Collinsville	0	2	2	4
Proserpine	0	1	0	1
Total	1	35	2	38

### Suspected Illness

The single suspected illness complaint concerned a customer's suspicion that his water caused Giardia (not confirmed). The customer was the only concerned resident in the immediate area (including his family) and advised that previously he was fine after the line was flushed. No risk to human health was determined.

### Discoloured water

35 dirty water customer complaints were received from throughout the Whitsunday Regional Council area during the 2015-16 year. In each case the localised area was flushed to achieve clear water. No further action was required.

### Taste and odour

Both Taste complaints were the result of changes to the raw water takeoff at Collinsville, due to changes in weir level by Sunwater after a rain event. No risk to human health was determined.

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

The Information Requirement Notice received in January 2016 focussed on

- making corrections to ensure accuracy and consistency of schematics and source details across all schemes.
- Including the full hazard identification and risk assessment tables in the DWQMP.
- Clarifying incident actions
- Reviewing Verification monitoring requirements

These items were all satisfactorily addressed in the response sent by Whitsunday Regional Council on 10 March 2016.

The conditions attached to the DWQMP approval, dated 8 June 2016, relate to

- Revising the Hazard identification and risk assessment tables for consistent application of consequence and likelihood descriptors.
- Revising the Risk Management Improvement Program to include any actions identified as unacceptable risks.

## 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.

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	366	366	0	7.07	7.4	7.21
	Turbidity	NTU	0.01	366	366	0	0.01	0.89	0.09
	Conductivity	µS/cm	1	96	96	0	246	541	360
	Colour	Pt/Co	1	366	366	0	0	4	1.01
	Free chlorine residual	mg/L	0.1	366	366	0	1.64	3.2	2.37
	Total chlorine residual	mg/L	0.1	30	30	0	2.25	3.31	2.67
	Alkalinity	mg/L	0.1	94	94	0	50	99.8	72.9
	Total hardness	mg/L	0.1	94	94	0	52.8	105.6	72.2
	Iron	mg/L	0.01	365	323	0	0	0.03	0.01
	Manganese	mg/L	0.001	366	366	0	0.001	0.018	0.002
Aluminium	mg/L	0.001	366	366	0	0.003	0.037	0.016	
NATA Lab Results	pH	mg/L	0.1	22	22	0	7.22	7.72	7.51
	Turbidity	NTU	1	22	0	0	<1	<1	<1
	Colour	Pt/Co	0	22	2	0	2	3	2.5
	Conductivity	µS/cm	5	22	22	0	286	519	376.7
	Alkalinity	mg/L	5	22	22	0	65	91	79.4
	Total hardness	mg/L	5	22	22	0	54	101	74.6
	Total dissolved solids	mg/L	10	22	22	0	161	273	207
	Chloride	mg/L	2	22	22	0	36	86	57.9
	Sulphate	mg/L	2	22	22	0	11.6	16.6	13.8
	Fluoride	mg/L	0.05	22	22	0	0.01	0.12	0.07
	Nitrate	mg/L	0.05	22	7	0	0.5	2.3	0.89
	Silica	mg/L	5	22	22	0	14	19	16.59
	Sodium	mg/L	0.05	22	22	0	34	58	43.86
	Potassium	mg/L	0.05	22	22	0	2	3.9	2.69
	Calcium	mg/L	0.05	22	22	0	12	24	17.23
	Magnesium	mg/L	0.05	22	22	0	5.6	10	7.8
	Chlorate	mg/L	0.01	20	20	0	0.24	0.64	0.38
	Aluminium	mg/L	0.01	22	22	0	0.007	0.079	0.0168
	Antimony	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Arsenic	mg/L	0.0001	22	13	0	0.0002	0.0003	0.0002
	Barium	mg/L	0.001	22	22	0	0.026	0.059	0.0365
	Beryllium	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Boron	mg/L	0.001	22	22	0	0.022	0.03	0.0258
	Cadmium	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Chromium	mg/L	0.0001	22	5	0	0.0002	0.0002	0.0002
	Cobalt	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Copper	mg/L	0.001	22	22	0	0.008	0.19	0.062
	Iron	mg/L	0.005	22	13	0	0.005	0.051	0.0187
	Lead	mg/L	0.0001	22	15	0	0.0002	0.0012	0.0007
	Mercury	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Manganese	mg/L	0.001	22	22	0	0.0009	0.049	0.0064
	Molybdenum	mg/L	0.0001	22	14	0	0.0002	0.0004	0.0003
	Nickel	mg/L	0.0001	22	13	0	0.0002	0.0013	0.0004
	Selenium	mg/L	0.0001	22	0	0	<0.0001	<0.001	<0.0001
	Silver	mg/L	0.001	22	0	0	<0.001	<0.001	<0.001
	Strontium	mg/L	0.01	22	22	0	0.015	0.27	0.1884
	Thallium	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Tin	mg/L	0.0001	22	12	0	0.0002	0.0016	0.0007
	Titanium	mg/L	0.001	22	0	0	<0.001	<0.001	<0.001
	Uranium	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Vanadium	mg/L	0.0001	22	16	0	0.0002	0.0019	0.0006
	Zinc	mg/L	0.001	22	22	0	0.001	0.023	0.0092
	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
<b>In-House Test Results</b>	pH	mg/L	0.1	366	366	0	7.2	7.41	7.31
	Turbidity	NTU	0.01	366	366	0	0.05	0.28	0.1
	Conductivity	µS/cm	1	102	102	0	328	405	374.18
	Colour	Pt/Co	1	366	365	0	0	2	1
	Free chlorine residual	mg/L	0.1	365	365	0	0.12	1.96	1.49
	Total chlorine residual	mg/L	0.1	53	53	0	0.16	2.2	1.67
	Alkalinity	mg/L	0.1	102	102	0	67.6	96.8	84.25
	Total hardness	mg/L	0.1	102	102	0	71.6	93.6	82.85
	Iron	mg/L	0.01	366	293	0	0	0.03	0.009
	Manganese	mg/L	0.001	366	364	0	0	0.02	0.005
	Aluminium	mg/L	0.001	366	366	0	0.01	0.094	0.029
<b>NATA Lab Results</b>	pH	mg/L	0.1	22	22	0	7.21	7.73	7.54
	Turbidity	NTU	1	22	0	0	<1	<1	<1
	Colour	Pt/Co	1	22	14	0	<1	4	1.93
	Conductivity	µS/cm	5	22	22	0	326	417	375.1
	Alkalinity	mg/L	5	22	22	0	70	84	77
	Total hardness	mg/L	5	22	22	0	72	87	81.2
	Total dissolved solids	mg/L	10	22	22	0	194	260	217.2
	Chloride	mg/L	2	22	22	0	46	63	56
	Sulphate	mg/L	2	22	22	0	12.3	14.8	13.1
	Fluoride	mg/L	0.05	22	22	0	0.05	0.13	0.08
	Nitrate	mg/L	0.05	22	22	0	2.2	3.8	2.89
	Silica	mg/L	5	22	22	0	27	37	29.5
	Sodium	mg/L	0.05	22	22	0	35	48	40.18
	Potassium	mg/L	0.05	22	22	0	1.3	1.9	1.58
	Calcium	mg/L	0.05	22	22	0	16	19	17.82
	Magnesium	mg/L	0.05	22	22	0	7.9	10	8.99
	Chlorate	mg/L	0.01	20	20	0	0.08	0.52	0.34
	Aluminium	mg/L	0.01	22	22	0	0.011	0.21	0.0599
	Antimony	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Arsenic	mg/L	0.0001	22	16	0	0.0002	0.003	0.0005
	Barium	mg/L	0.001	22	22	0	0.022	0.034	0.0268
	Beryllium	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Boron	mg/L	0.001	22	22	0	0.021	0.028	0.0249
	Cadmium	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Chromium	mg/L	0.0001	22	4	0	0.0002	0.0003	0.0002
	Cobalt	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Copper	mg/L	0.001	22	22	0	0.002	0.018	0.01
	Iron	mg/L	0.005	22	19	0	0.005	0.071	0.0109
	Lead	mg/L	0.0001	22	16	0	0.0003	0.0015	0.0006
	Mercury	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Manganese	mg/L	0.001	22	22	0	0.001	0.026	0.0091
	Molybdenum	mg/L	0.0001	22	14	0	0.0002	0.0004	0.0003
	Nickel	mg/L	0.0001	22	11	0	0.0002	0.002	0.0005
	Selenium	mg/L	0.0001	22	0	0	<0.0001	<0.001	<0.0001
	Silver	mg/L	0.001	22	0	0	<0.001	<0.001	<0.001
	Strontium	mg/L	0.01	22	22	0	0.16	0.24	0.2132
	Thallium	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Tin	mg/L	0.0001	22	10	0	0.0002	0.0056	0.0009
	Titanium	mg/L	0.001	22	0	0	<0.001	<0.001	<0.001
	Uranium	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Vanadium	mg/L	0.0001	22	22	0	0.001	0.003	0.0016
	Zinc	mg/L	0.001	22	22	0	0.003	0.099	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
<b>In House Data</b>	pH	Units	0.1	366	366	0	6.94	7.75	7.22
	Turbidity	NTU	0.01	366	366	0	0.06	0.77	0.14
	Conductivity	µS/cm	1.0	104	104	0	123.00	380.00	229.15
	True Colour	HU	1	366	189	0	0.00	8.00	1.33
	Free chlorine residual	mg/L	0.1	365	365	0	0.11	2.90	1.72
	Total chlorine residual	mg/L	0.1	94	94	0	0.12	3.30	2.00
	Alkalinity	mg/L	0.1	59	59	0	35.00	130.00	69.82
	Total hardness	mg/L	0.1	0					
	Iron	mg/L	0.01	365	308	0	0.000	0.030	0.009
	Manganese	mg/L	0.001	364	287	0	0.000	0.041	0.006
Aluminium	mg/L	0.001	366	366	0	0.008	0.088	0.028	
<b>NATA Lab Results</b>	pH	mg/L	0.1	22	22	0	7.15	7.72	7.49
	Turbidity	NTU	1	22	2	0	<1	1	1
	Colour	Pt/Co	0	22	6	0	<1	2	1.33
	Conductivity	µS/cm	5	22	22	0	134	386	256.3
	Alkalinity	mg/L	5	22	22	0	25	104	65.8
	Total hardness	mg/L	5	22	22	0	33	115	71.3
	Total dissolved solids	mg/L	10	22	22	0	78	227	147.5
	Chloride	mg/L	2	22	22	0	14	31	21
	Sulphate	mg/L	2	22	22	0	11.1	48	24.5
	Fluoride	mg/L	0.05	22	12	0	0.01	0.1	0.06
	Nitrate	mg/L	0.05	22	4	0	0.5	0.5	0.5
	Silica	mg/L	5	22	22	0	11	18	14.77
	Sodium	mg/L	0.05	22	22	0	12	37	21.5
	Potassium	mg/L	0.05	22	22	0	0.08	2.6	1.56
	Calcium	mg/L	0.05	22	22	0	7.9	28	17.62
	Magnesium	mg/L	0.05	22	22	0	3.2	11	6.64
	Chlorate	mg/L	0.01	22	22	0	0.12	0.65	0.33
	Aluminium	mg/L	0.01	22	22	0	0.018	0.053	0.0338
	Antimony	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Arsenic	mg/L	0.0001	22	7	0	0.0002	0.001	0.0005
	Barium	mg/L	0.001	22	22	0	0.012	0.044	0.0265
	Beryllium	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Boron	mg/L	0.001	22	22	0	0.01	0.03	0.0179
	Cadmium	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Chromium	mg/L	0.0001	22	3	0	0.0002	0.0003	0.0002
	Cobalt	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Copper	mg/L	0.001	22	21	0	0.001	0.029	0.0098
	Iron	mg/L	0.005	22	16	0	0.005	0.027	0.0092
	Lead	mg/L	0.0001	22	7	0	0.0002	0.001	0.0006
	Mercury	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Manganese	mg/L	0.001	22	20	0	0.0005	0.087	0.0112
	Molybdenum	mg/L	0.0001	22	16	0	0.0002	0.001	0.0005
	Nickel	mg/L	0.0001	22	13	0	0.0002	0.001	0.0003
	Selenium	mg/L	0.0001	22	0	0	<0.0001	<0.001	<0.0001
	Silver	mg/L	0.001	22	1	0	0.1	0.1	0.1
	Strontium	mg/L	0.01	22	22	0	0.058	0.23	0.1388
	Thallium	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Tin	mg/L	0.0001	22	8	0	0.0002	0.0004	0.0003
	Titanium	mg/L	0.001	22	0	0	<0.001	<0.001	<0.001
	Uranium	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Vanadium	mg/L	0.0001	22	22	0	0.001	0.0032	0.002
	Zinc	mg/L	0.001	22	22	0	0.004	0.11	0.0244
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
<b>In House Results</b>	pH	mg/L	0.1	365	365	0	7.07	7.45	7.24
	Turbidity	NTU	0.01	365	365	0	0.011	0.15	0.06
	Conductivity	µS/cm	1	92	92	0	235	393	308
	Colour	Pt/Co	1	365	360	0	0	2	0.99
	Free chlorine residual	mg/L	0.1	365	365	0	1.1	1.81	1.48
	Total chlorine residual	mg/L	0.1	45	45	0	1.42	2.1	1.69
	Total hardness	mg/L	0.1	92	92	0	49.6	85.2	65
	Alkalinity	mg/L	0.1	92	92	0	48	98	63.9
	Iron	mg/L	0.01	362	315	0	0	0.03	0.009
	Manganese	mg/L	0.001	363	361	0	0	0.01	0.001
Aluminium	mg/L	0.001	363	363	0	0.011	0.075	0.024	
<b>NATA Lab Results</b>	pH	mg/L	0.1	22	22	0	7.24	7.7	7.5
	Turbidity	NTU	1	22	0	0	<1	<1	<1
	Colour	Pt/Co	0	22	2	0	<1	2	2
	Conductivity	µS/cm	5	22	22	0	242	431	312.5
	Alkalinity	mg/L	5	22	22	0	48	79	59.4
	Total hardness	mg/L	5	22	22	0	50	75	62.7
	Total dissolved solids	mg/L	10	22	22	0	141	262	181.4
	Chloride	mg/L	2	22	22	0	33	66	47.5
	Sulphate	mg/L	2	22	22	0	13.6	18.6	15.3
	Fluoride	mg/L	0.05	22	22	0	0.05	0.12	0.08
	Nitrate	mg/L	0.05	22	8	0	1.8	3.7	2.73
	Silica	mg/L	5	22	22	0	16	46	24.23
	Sodium	mg/L	0.05	22	22	0	26	55	34.95
	Potassium	mg/L	0.05	22	22	0	1.3	2.5	2
	Calcium	mg/L	0.05	22	22	0	11	15	13.31
	Magnesium	mg/L	0.05	22	22	0	5.4	9.8	7.18
	Chlorate	mg/L	0.01	20	20	0	0.24	0.54	0.38
	Aluminium	mg/L	0.01	22	22	0	0.017	0.049	0.0319
	Antimony	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Arsenic	mg/L	0.0001	22	16	0	0.0002	0.0003	0.0002
	Barium	mg/L	0.001	22	22	0	0.017	0.036	0.0259
	Beryllium	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Boron	mg/L	0.001	22	22	0	0.021	0.029	0.0253
	Cadmium	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Chromium	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Cobalt	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Copper	mg/L	0.001	22	22	0	0.003	0.02	0.0074
	Iron	mg/L	0.005	22	10	0	0.005	0.034	0.0127
	Lead	mg/L	0.0001	22	7	0	0.0003	0.0011	0.0007
	Mercury	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Manganese	mg/L	0.001	22	22	0	0.0001	0.031	0.0048
	Molybdenum	mg/L	0.0001	22	16	0	0.0002	0.0004	0.0004
	Nickel	mg/L	0.0001	22	6	0	0.0002	0.0002	0.0002
	Selenium	mg/L	0.0001	22	0	0	<0.0001	<0.001	<0.0001
	Silver	mg/L	0.001	22	0	0	<0.001	<0.001	<0.001
	Strontium	mg/L	0.01	22	22	0	0.013	0.19	0.1449
	Thallium	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Tin	mg/L	0.0001	22	9	0	0.0003	0.0016	0.0007
	Titanium	mg/L	0.001	22	0	0	<0.001	<0.001	<0.001
	Uranium	mg/L	0.0001	22	0	0	<0.0001	<0.0001	<0.0001
	Vanadium	mg/L	0.0001	22	22	0	0.0005	0.002	0.0011
	Zinc	mg/L	0.001	22	22	0	0.001	0.023	0.006
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	2015	July	13	0	149	0	100	YES
		Aug	14	0	153	0	100	YES
		Sept	16	0	161	0	100	YES
		Oct	17	0	161	0	100	YES
		Nov	15	0	164	0	100	YES
	Dec	16	0	170	0	100	YES	
	2016	Jan	11	0	168	0	100	YES
		Feb	15	0	167	0	100	YES
		Mar	14	0	169	0	100	YES
		Apr	26	0	183	0	100	YES
		May	27	0	198	0	100	YES
June		26	0	212	0	100	YES	
Proserpine Scheme	2015	July	13	0	124	0	100	YES
		Aug	32	0	145	0	100	YES
		Sept	31	0	165	0	100	YES
		Oct	33	0	185	0	100	YES
		Nov	28	0	204	0	100	YES
		Dec	26	0	226	0	100	YES
	2016	Jan	8	0	145	0	100	YES
		Feb	8	0	112	0	100	YES
		Mar	8	0	108	0	100	YES
		Apr	16	0	112	0	100	YES
		May	16	0	116	0	100	YES
June		16	0	123	0	100	YES	
Coastal Scheme	2015	July	13	0	124	0	100	YES
		Aug	32	0	145	0	100	YES
		Sept	31	0	165	0	100	YES
		Oct	33	0	185	0	100	YES
		Nov	28	0	204	0	100	YES
		Dec	26	0	226	0	100	YES
	2016	Jan	12	0	207	0	100	YES
		Feb	14	0	180	0	100	YES
		Mar	17	0	182	0	100	YES
		Apr	24	0	191	0	100	YES
		May	24	0	199	0	100	YES
June		24	0	207	0	100	YES	
Collinsville Scheme	2015	July	12	0	140	0	100	YES
		Aug	6	0	134	0	100	YES
		Sept	11	0	132	0	100	YES
		Oct	12	0	129	0	100	YES
		Nov	10	0	127	0	100	YES
		Dec	12	0	127	0	100	YES
	2016	Jan	11	0	127	0	100	YES
		Feb	10	0	124	0	100	YES
		Mar	15	0	130	0	100	YES
		Apr	10	0	130	0	100	YES
		May	18	0	137	0	100	YES
June		16	0	143	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 DWQMP**

Scheme Component / Sub-component	Action(s)	Target date/s	Status as at July 2016	Additional Detail
Bowen Supply	Sodium Hypochlorite monitoring equipment to be installed around Bowen network	June 2016	Design complete and installation underway	Due for completion by June 2017
Bowen Supply / Delivery line	Full asset check of line and valves. Maintenance schedule.	June 2016	Valve inspection complete. Pipeline inspection continuing.	Critical risk at Hay Gully identified, work to be complete by June 2017. Renewal of critical components to be 60% complete June 2017
Bowen Supply / Delivery Line	Pigging of delivery line to Bowen		Continuing	Each pigging run improves water quality aesthetics.
Bowen Supply	Farmers to use alternatives to treated water	Tbc	Continuing	Ag water contracts have decreased. Alternates including groundwater and recycled water are being investigated.
Storage Reservoirs	Full asset check of reservoirs, maintenance schedule, reconfiguration of valving	December 2015	Checks complete. Reconfiguration of valving continuing.	Numerous issues were identified during the checks. These are being worked through.
Reticulation	Consider chlorination of lines following repair	June 2016	Discussions will continue.	No formal procedure developed.
Reticulation	Council owned RPZD's maintenance	November 2015	Ongoing	Schedule compiled for each area.
Operation and Maintenance Procedures	Regular Review	December 2015	Ongoing	Review continuing.
Security	Review security at Treatment Plant sites, maintenance schedule	December 2015	Complete	Is included in quarterly checklist.
Staff Training and Awareness	Training and awareness workshops	December 2015	Ongoing	To coincide with DWQMP amendments
Customer Facing processes	Customer Service Standards	December 2015	Complete	Implemented for 2015-2020
Security	Risk assessment and control measures of water supply system	June 2016	Ongoing	As part of DWQMP review