



Drinking Water Quality Management Plan (DWQMP) Annual Report

1 July 2015 to 30 June 2016

Central Highlands Regional Council

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Table of Contents

1	Introduction.....	1
2	Overview of operations.....	1
3	Actions taken to implement the DWQMP.....	2
3.1	Progress in implementing the risk management improvement program	2
3.2	Revisions made to the operational monitoring program to maintain compliance with the water quality criteria in verification monitoring	2
3.3	Amendments made to the DWQMP	2
4	Compliance with water quality criteria for drinking water	3
5	Notifications to the Regulator under sections 102 and 102A of the Act.....	4
5.1	Non-compliances with the water quality criteria and corrective and preventive actions undertaken.....	4
5.2	Prescribed Incidents or Events reported to the Regulator and corrective and preventive actions undertaken.....	4
6	Customer complaints related to water quality	5
6.1	Suspected Illness	7
6.2	Appearance or Discoloured.....	7
6.3	Taste and Odour	7
7	Findings and recommendations of the DWQMP auditor.....	8
8	Outcome of the review of the DWQMP and how issues raised have been addressed	8
8.1	Hazards and hazardous events that affected the quality of drinking water during the year and that were not addressed in the DWQMP	8
	Appendix A – Summary of compliance with water quality criteria	9
	Appendix B – Implementation of the DWQMP risk management improvement program.....	30

List of Figures

Figure 1 – Monthly complaints about water quality.....	6
Figure 2 – Complaints about water quality by scheme	6

List of Tables

Table 1 – Overview of water supply schemes	1
Table 2 – Non-compliance notifications	4
Table 3 - Complaints about water quality (including per 1000 customers).....	5
Table 4.1 – 4.14 - Verification monitoring results.....	9
Table 5.1 – 5.12 - Reticulation <i>E. coli</i> verification monitoring	18
Table 6.1 to 6.14 – Progress against the risk management improvement program in the approved DWQMP....	30

Glossary of terms

ADWG	Australian Drinking Water Guidelines (2011). Published by the National Health and Medical Research Council of Australia
BW	Blackwater
CFU/100mL	Colony Forming Units per 100 millilitres
CHRC	Central Highlands Regional Council
C. raciborskii and Cylindro	<i>Cylindrospermopsis raciborskii</i> , a freshwater cyanobacteria known to produce the toxin cylindrospermopsin and a potential health risk
DWQMP	Drinking Water Quality Management Plan
<i>E. coli</i>	<i>Escherichia coli</i> , a bacterium that is considered to indicate the presence of faecal contamination and is a potential health risk
LOR	Limit of Reporting
mg/L	Milligrams per litre
µg/L	Micrograms per litre
NTU	Nephelometric Turbidity Units
pH	Power of Hydrogen
RMIP	Risk Management Improvement Program
THM	Trihalomethanes
WTP	Water Treatment Plant
>	Greater than
	Greater than or equal to
<	Less than

1 Introduction

This report documents the performance of Central Highlands Regional Council's drinking water service.

It details performance of the water quality and the implementation of actions detailed in the Drinking Water Quality Management Plan (DWQMP) required under the *Water Supply (Safety and Reliability) Act 2008* (the Act).

The report assists the regulator to determine compliance with the current approved DWQMP and provides a public report on the council's management of drinking water.

2 Overview of operations

This report relates to the drinking water supply schemes that the Central Highlands Regional Council owned and operated from 1 July 2015 to 30 June 2016.

Table 1 lists the water supply scheme, water source, water treatment process, population and average drinking water demand for the water supply schemes covered in this report.

Table 1 – Overview of water supply schemes

Scheme Name	Communities Served	Water Source	Treatment Process	Population served	Demand for 15/16 (ML)
Anakie	Anakie	May Creek Bore	Disinfection	98	28.4
Bauhinia	Bauhinia Downs	Artesian Bore	Disinfection	25	13.6
Blackwater	Blackwater	Mackenzie River	Coagulation, Filtration, pH correction, Fluoridation and Disinfection	5,141	1,725
	Bluff			379	91.8
Capella	Capella	Capella Creek / Mackenzie River	Coagulation, Filtration, pH correction and Disinfection	950	278.2
Comet	Comet	Comet River	Coagulation, Filtration, pH correction and Disinfection	153	39.2
Dingo	Dingo	Springton Creek/ Dingo Creek	Coagulation, Filtration, and Disinfection	202	47.5
Duaringa	Duaringa	Dawson River	Coagulation, Filtration and Disinfection	268	106.1
Emerald	Emerald	Nogoa River	Coagulation, Filtration, pH correction, Fluoridation and Disinfection	14,832	3,829
Rolleston	Rolleston	Comet River / Sub-artesian Bores	Coagulation, Filtration, and Disinfection	279	32.1
Sapphire / Rubyvale	Sapphire / Rubyvale	Retreat Creek Bores	Fluoridation and Disinfection	1,165	191.7
Springsure	Springsure	Shallow Basalt / Deeper Sandstone Bores	Aeration and Disinfection	920	317.1
Tieri	Tieri	Mackenzie River	Coagulation, Filtration, pH correction, Fluoridation and Disinfection	1,755	561.2

Available town populations sourced @ <http://www.qgso.qld.gov.au/products/tables/erp-ucl-qld/index.php>

3 Actions taken to implement the DWQMP

The DWQMP describes the operating strategies, operating limits and approaches to water quality monitoring and the overall management of risks to water quality. Specific changes or improvements to the drinking water services provided by council have occurred with the implementation of a risk management improvement program (RMIP).

3.1 Progress in implementing the risk management improvement program

A completely reviewed RMIP was part of the DWQMP amendment that was approved in September 2016. During 2015 -2016, while anticipating the approval, council has actioned some items of the RMIP. A summary of that progress and descriptions of the progress made towards the completion of specific tasks can be found in Appendix B. As per section 13 of the overarching volume of the DWQMP the items have been prioritised as short, medium and long term actions. Short-term actions will be undertaken as soon as possible (and completed within 6-12 months), medium-term actions are intended to be completed in the current financial year or within 12-18 months, and long-term actions follow on from short/medium items and will be introduced as items in future council budgets in order to secure funding.

3.2 Revisions made to the operational monitoring program to maintain compliance with the water quality criteria in verification monitoring

As part of the plan amendment the operational monitoring program was updated with corrective actions or relevant procedure references. Critical limits were reviewed for consistency where possible and as stated in the plan “the critical limits generally do not change, other than to improve processes” and their associated risks.

3.3 Amendments made to the DWQMP

An amendment of a fully reviewed DWQMP was submitted to the regulator in November 2015, as per the additional conditions set in the original DWQMP approval, and was subsequently approved in September 2016.

In accordance with the nature and intent of those additional conditions the amendment included changes and updates to:

- Details of infrastructure for providing the service.
- Identify hazards and hazardous events.
- Information gathering - water quality and catchment characteristics.
- Assessment of risks.
- Risk management measures.
- Management of incidents and emergencies.
- Risk management improvement program.
- Operational monitoring.
- Verification monitoring.

4 Compliance with water quality criteria for drinking water

Appendix A provides an overview of the results from the water quality monitoring program for the reporting period of 1 July 2015 to 30 June 2016. The water quality monitoring program was generally carried out as per Section 12 of the approved amended Central Highlands Regional Council overarching volume of the DWQMP. A small number of missed samples are attributed to the Queensland Government Forensic and Scientific Services laboratory closing down during the Christmas and New Year break. At least one example was due to a sample not being received by the laboratory the next day but two days later. The sample was no longer viable and the window to resample and deliver it for that week had closed. In these cases other parameters like chlorine residual continue to be monitored and the verification monitoring is resumed as soon as possible. Although the vast majority of samples are taken, analysed and the results are checked, the internal database and results in Appendix A are considered incomplete. This has been identified by council as an improvement in the risk management improvement plan (items CHR 1 and CHR2) and an update of progress is available in Appendix B.

The drinking water results were compared against the water quality criteria, i.e. the health guideline values in the current Australian Drinking Water Guidelines (ADWG), as well as the standards in the *Public Health Regulation 2005*. Appendix A (Tables 4.1 to 4.12) contain a summary of the results of the water quality monitoring program for all of council's water supply schemes. Most physicochemical drinking water quality results from the standard monitoring program met the recommended values in the ADWG. Some exceptions were the total Trihalomethanes (THM) values in some schemes sourced from surface water namely Blackwater, Bluff, Capella and Tieri. The details of these are discussed in the next section of this report. Other aesthetic exceedances like pH in Rolleston and Springsure and total hardness in Anakie, Sapphire and Rubyvale were recorded with actions and projects implemented or being considered to make improvements in those areas. A single turbidity exceedance was recorded for Bluff. Appendix A (Tables 2.1 to 2.12) contain a summary of the results of the reticulation *E. coli* verification monitoring program for all council water supply schemes. All samples taken tested negative for *E. coli*.

C. raciborskii levels were seasonally monitored in surface water schemes with a recognised risk. The DWQMP trigger level for cylindrospermopsin toxin testing was only reached for the Capella scheme. Monitoring showed that while levels of the toxin varied in the raw water no detection of cylindrospermopsin was made in the treated water throughout the blue green algae bloom.

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

This financial year there were five instances where the regulator was notified under sections 102 or 102A of the Act. None of these notifications involved 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.

As shown in table 2 all five notifications were non-compliances with water quality criteria related to Trihalomethanes (THM).

None of these incidents required the council to issue a ‘boil water alert’ or ‘do not drink notice’ to the public.

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

Table 2 – Non-compliance notifications

Scheme	Non-compliance	Level reported µg/L	Health Value (Interim value)* µg/L	Date of non-compliance	Corrective and Preventative Actions
Bluff	THM	273	250	18/11/2015	Retesting and coagulation improvements. Reduced network residence time and water transfer between schemes were possible and reviewed chlorine dosing while not compromising effective disinfection
BW		253		5/01/2016	
Capella		286		6/01/2016	
Tieri		328		6/01/2016	
Bluff	THM Sub Species	59	60 (NZ) 6 (AGWR)	1/03/2016	Regulator clarified that this interim value exceedence did not require notification as total THM health values were not exceeded. The THM sub species was bromodichloromethane

* Health Value is from the ADWG and the Interim Values are from the New Zealand guidelines and Australian Guideline of Water Recycling.

5.2 Prescribed Incidents or Events reported to the Regulator and corrective and preventive actions undertaken

This financial year no prescribed incidents or events were required to be reported to the regulator.

6 Customer complaints related to water quality

The council is required to report on the number of complaints, general details of complaints, and the responses undertaken. Table 3 provides an overview of the customer complaints relating to drinking water quality during this period and also adds some context by including the complaints per 1000 customers.

Table 3 - Complaints about water quality (including per 1000 customers)

Scheme	Suspected Illness	Appearance or Discoloured	Taste or Odour	Total
Anakie				0
Bauhinia				0
Blackwater/Bluff		4 (0.7)		4 (0.7)
Capella				0
Comet			1 (6.7)	1 (6.7)
Dingo				0
Duaringa		4 (14.8)	1 (3.7)	5 (18.5)
Emerald	1 (0.1)	15 (1.0)	1 (0.1)	17 (1.1)
Rolleston	1 (3.6)	2 (7.1)	1 (3.6)	4 (14.3)
Sapphire/Rubyvale				0
Springsure	1 (1.1)	5 (5.4)	1 (1.1)	7 (7.6)
Tieri		2 (1.1)	2 (1.1)	4 (2.3)
Totals	3	31	8	42

*Complaints with multiple categories or multiple complaints for a same event in the system have all been counted as individual complaints for this report. Within the system there are 34 applicable records that total the 42 complaints.

The two graphs below show the breakdown of customer complaints by month in Figure 1 and by scheme in Figure 2. There is a general spread of water quality complaints through the whole reporting period with slightly higher frequency of suspected illness and taste or odour in the warmer months. As statistically expected there is a higher frequency of complaints for the schemes that service larger communities. Encouragingly after the WTP upgrades in Blackwater there has been a dramatic reduction in water quality complaints compared with recent history.

Figure 1 – Monthly complaints about water quality

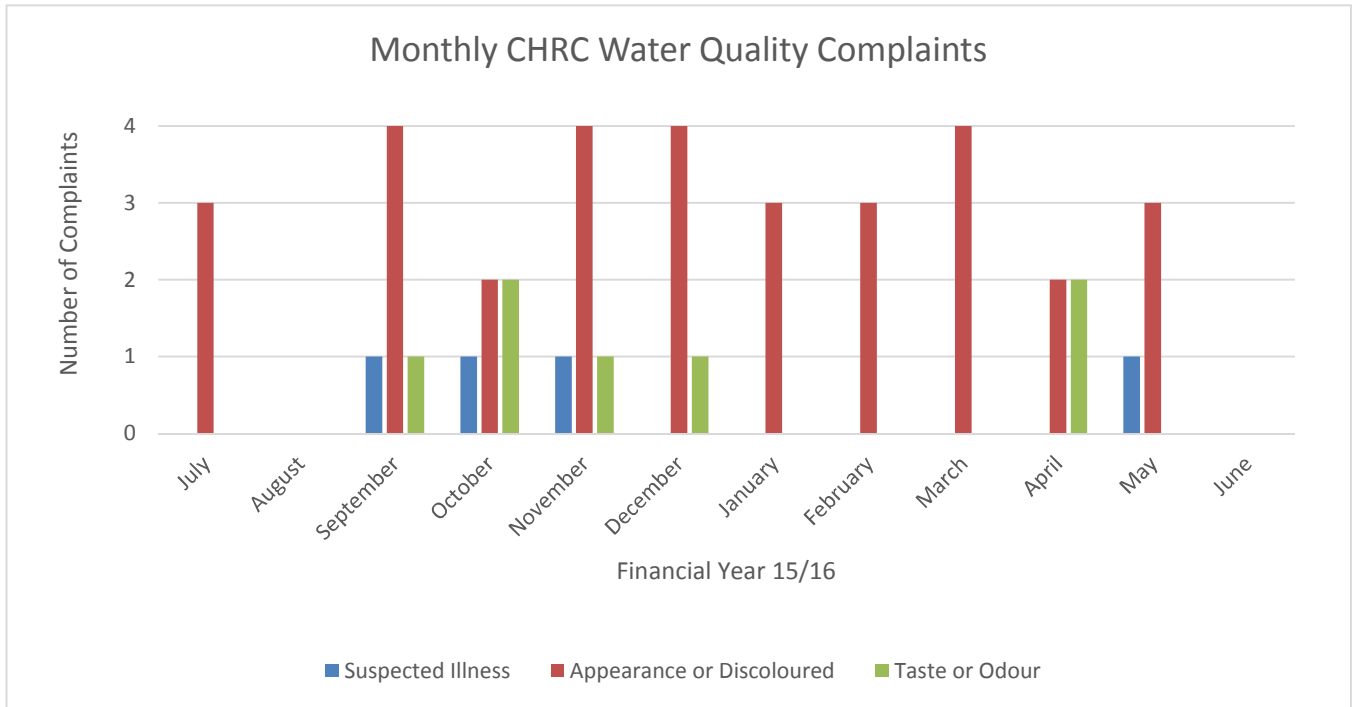
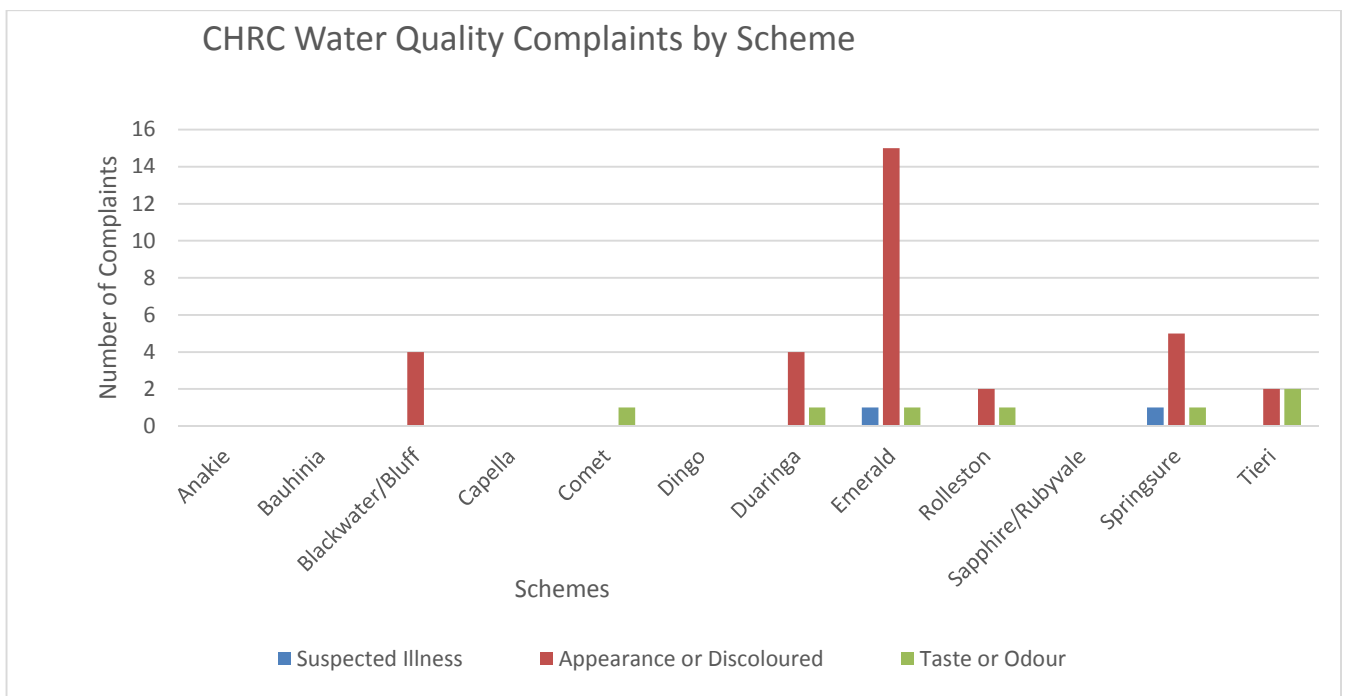


Figure 2 – Complaints about water quality by scheme



6.1 Suspected Illness

Complaints are sometimes received from customers who suspect their water may be associated with an illness they are experiencing. Council investigates each complaint relating to alleged illness from its water quality, typically by testing the customer's tap and other sampling points close by for the presence of *E. coli*. and/or getting a standard water analysis as required.

During the 2015-16 financial year council is not aware of any confirmed cases of illness arising from the water supply system. All three complaints regarding illness were investigated by council however testing results showed both compliance with the ADWG and no sign of poor quality water that was likely attributing to the customers suspected illness.

6.2 Appearance or Discoloured

A total of 31 customer complaints associated with discoloured water or appearance were received between July 2015 and June 2016. The majority of 15 complaints were for the largest community of Emerald. However Duaringa, Rolleston and Springsure were noted as schemes with high complaint rates per 1000 customers.

Council investigates each complaint relating to discoloured water or unusual water appearance. Testing the water quality, typically by testing the customer's tap and other sampling points close by for turbidity, chlorine levels and/or getting a standard water analysis as required. Most of the complaints received are usually associated with a water main break, presence of air in the water or sedentary water at the extremities of the supply zone. When dealing with water main breaks staff conduct the repairs while ensuring the water quality is protected at all times, as well as managing storage levels in the affected reservoirs to ensure no one was without water. The area is then flushed to remove the dirty water and to achieve detectable chlorine residual results. The flushing targets specific areas such as dead-end mains, where it was anticipated the dirty water would not be flushed through normal use. Customers that report a complaint in this context are advised of the reasons for the dirty water or unusual water appearance and are requested to allow the main a short period of time to settle.

6.3 Taste and Odour

A total of 8 customer complaints associated with unfavourable taste and/or odour were received between July 2015 and June 2016. Higher than average chlorine levels were the reason for most of the complaints especially in the small schemes however in each investigation the chlorine levels did not exceed the ADWG guidelines. Other complaints have been attributed to sedentary water at the extremities of the supply zone and raw water quality changes.

7 Findings and recommendations of the DWQMP auditor

During this reporting period, the council was not required to engage an auditor to conduct an audit of the DWQMP. In accordance with legislative requirements, an audit of the DWQMP needs to be completed before 10 November 2018, with subsequent findings of the audit to be incorporated as appropriate in future revisions of the DWQMP.

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

The next internal review of the DWQMP was to be due before 10 November 2016 however, as discussed in section 3 of this report, an additional condition of approval of the DWQMP was to review and submit an amendment application within 12 months of the initial approval.

With the approval of the amendment application, it was acknowledged by the regulator that council had fulfilled its obligation to undertake the first review of its approved DWQMP.

8.1 Hazards and hazardous events that affected the quality of drinking water during the year and that were not addressed in the DWQMP

This financial year no hazards and hazardous events affected the quality of drinking water that are not addressed in the DWQMP.

Appendix A – Summary of compliance with water quality criteria

The drinking water results were compared against the water quality criteria, i.e. the health guideline values in the current Australian Drinking Water Guidelines (ADWG), as well as the standards in the *Public Health Regulation 2005*. Most physicochemical drinking water quality results from the standard monitoring program met the recommended values in the ADWG. Some exceptions were the total Trihalomethanes (THM) values in some schemes sourced from surface water namely Blackwater, Bluff, Capella and Tieri. Other aesthetic exceedances like pH in Rolleston and Springsure and total hardness in Anakie, Sapphire and Rubyvale were recorded with actions and projects implemented or being considered to make improvements in those areas. A single turbidity exceedance was recorded for Bluff.

Table 4.1 – 4.14 - Verification monitoring results

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples with values the LOR	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	LOR	Laboratory name	
Anakie	Reticulation	Chlorine (Free)	mg/L	Monthly	11	11	0	0.62	2.2	1.2	0.01	Q Health	
		E. coli	CFU/100mL	Monthly	12	0	0	0	0	0	0	0	Q Health
		Chloroform	CFU/100mL	Monthly	12	0	0	0	0	0	0	0	Q Health
		Conductivity	µs/cm	Monthly	10	10	No value	672	719	697	1	1	Q Health
		pH	at 22°C	Monthly	10	10	0	7.26	7.54	7.4	0.01	0.01	Q Health
		Total Hardness	mg CaCO ₃ /L	Monthly	10	10	10	222	227	224	1	1	Q Health
		Alkalinity	mg CaCO ₃ /L	Monthly	10	10	No value	275	285	281	1	1	Q Health
		Silica	mg/L	Monthly	10	10	0	47	50	48	1	1	Q Health
		Dissolved Solids	mg/L	Monthly	12	10	0	416	423	419	1	1	Q Health
		True Colour	hazen	Monthly	12	1	0	<1	2	1	1	1	Q Health
		Turbidity	NTU	Monthly	12	0	0	<1	<1	<1	1	1	Q Health
		Sodium	mg/L	Monthly	10	10	0	64	66	65	1	1	Q Health
		Potassium	mg/L	Monthly	10	10	No value	1.2	1.3	1.3	0.1	0.1	Q Health
		Calcium	mg/L	Monthly	10	10	No value	39	40	39	0.1	0.1	Q Health
		Magnesium	mg/L	Monthly	10	10	No value	30	31	30	0.1	0.1	Q Health
		Chloride	mg/L	Monthly	10	10	0	44	48	46	1	1	Q Health
		Fluoride	mg/L	Monthly	10	10	0	0.13	0.28	0.2	0.01	0.01	Q Health
		Nitrate	mg/L	Monthly	10	10	0	<0.5	<0.5	<0.5	0.5	0.5	Q Health
		Sulphate	mg/L	Monthly	10	10	0	20	22	20	0.1	0.1	Q Health
		Iron	mg/L	Monthly	10	0	0	<0.01	<0.01	<0.01	0.01	0.01	Q Health
Manganese	mg/L	Monthly	10	0	0	<0.01	<0.01	<0.01	0.01	0.01	Q Health		
Zinc	mg/L	Monthly	10	10	0	0.01	0.06	0.02	0.01	0.01	Q Health		
Aluminium	mg/L	Monthly	10	10	0	<0.05	<0.05	<0.05	0.05	0.05	Q Health		
Boron	mg/L	Monthly	10	10	0	0.04	0.05	0.04	0.01	0.01	Q Health		
Copper	mg/L	Monthly	10	1	0	<0.03	0.05	0.03	0.03	0.03	Q Health		

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples with values the LOR	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	LOR	Laboratory name	
Bauhinia	Reticulation	Chlorine (Free)	mg/L	Monthly	1	1	0	0.07	0.07	0.07	0.01	Q Health	
		Coliforms	CFU/100mL	Monthly	11	0	0	0	2	0.2	0	0	Q Health
		E. coli	CFU/100mL	Monthly	11	0	0	0	0	0	0	0	Q Health
		Atrazine	µg/L	Seasonally	2	0	0	<0.02	<0.02	<0.02	0.01	0.01	Q Health
		Desethyl Atrazine	µg/L	Seasonally	2	0	No value	<0.02	<0.02	<0.02	0.01	0.01	Q Health
		Simazine	µg/L	Seasonally	2	0	0	<0.02	<0.02	<0.02	0.01	0.01	Q Health
		Tebuthiuron	µg/L	Seasonally	2	0	No value	<0.02	<0.02	<0.02	0.01	0.01	Q Health
		Metolachlor	µg/L	Seasonally	2	0	0	<0.02	<0.02	<0.02	0.01	0.01	Q Health
		Conductivity	us/cm	Monthly	7	7	No value	446	469	453	1	1	Q Health
		pH	mg/L	Monthly	7	7	0	7.71	8.02	7.82	0.01	0.01	Q Health
		Total Hardness	mg CaCO ₃ /L	Monthly	7	7	0	51	56	54	1	1	Q Health
		Alkalinity	mg CaCO ₃ /L	Monthly	7	7	No value	146	158	152	1	1	Q Health
		Silica	mg/L	Monthly	7	7	0	18	18	18	1	1	Q Health
		Dissolved Solids	mg/L	Monthly	7	7	0	253	265	258	1	1	Q Health
		True Colour	hazen	Monthly	7	0	0	<1	<1	<1	1	1	Q Health
		Turbidity	NTU	Monthly	7	0	0	<1	<1	<1	1	1	Q Health
		Sodium	mg/L	Monthly	7	7	0	61	65	63	1	1	Q Health
		Potassium	mg/L	Monthly	7	7	No value	20	21	21	0.1	0.1	Q Health
		Calcium	mg/L	Monthly	7	7	No value	9	9.8	9.5	0.1	0.1	Q Health
		Magnesium	mg/L	Monthly	7	7	No value	7	7.7	7.3	0.1	0.1	Q Health
		Chloride	mg/L	Monthly	7	7	0	46	48	47	1	1	Q Health
		Fluoride	mg/L	Monthly	7	7	0	0.12	0.20	0.16	0.01	0.01	Q Health
		Nitrate	mg/L	Monthly	7	1	0	<0.5	0.6	0.5	0.5	0.5	Q Health
		Sulphate	mg/L	Monthly	7	0	0	<1	<1	<1	0.1	0.1	Q Health
		Iron	mg/l	Monthly	7	4	0	<0.01	0.04	0.02	0.01	0.01	Q Health
		Manganese	mg/L	Monthly	7	1	0	<0.01	0.01	0.01	0.01	0.01	Q Health
		Zinc	mg/L	Monthly	7	5	0	<0.01	0.02	0.01	0.01	0.01	Q Health
Aluminium	mg/L	Monthly	7	0	0	<0.05	0.05	0.05	0.05	0.05	Q Health		
Boron	mg/L	Monthly	7	7	0	0.03	0.05	0.04	0.01	0.01	Q Health		
Copper	mg/L	Monthly	7	0	0	<0.03	<0.03	<0.03	0.03	0.03	Q Health		

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples with values the LOR	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	LOR	Laboratory name	
Blackwater	Reticulation	Chlorine (Free)	mg/L	Weekly	60	56	0	0	1.69	0.51	0.01	Q Health	
		Coliforms	CFU/100mL	Weekly	65	0	0	0	0	0	0	0	Q Health
		E. coli	CFU/100mL	Weekly	65	0	0	0	0	0	0	0	Q Health
		Trihalomethanes	µg/L	Seasonally/Event	31	31	1	113	253	177	1	1	Q Health
		Atrazine	µg/L	Seasonally	5	5	0	0.37	0.47	0.42	0.01	0.01	Q Health
		Desethyl Atrazine	µg/L	Seasonally	4	3	No value	0.06	0.07	0.07	0.01	0.01	Q Health
		Simazine	µg/L	Seasonally	4	0	0	<0.02	<0.02	<0.02	0.01	0.01	Q Health
		Tebuthiuron	µg/L	Seasonally	4		No value	0.1	0.11	0.11	0.01	0.01	Q Health
		Metolachlor	µg/L	Seasonally	4		0	0.1	0.19	0.14	0.01	0.01	Q Health
		Conductivity	us/cm	Monthly	24	24	No value	335	655	467	1	1	Q Health
		pH	mg/L	Monthly	24	24	0	7.63	8.05	7.88	0.01	0.01	Q Health
		Total Hardness	mg CaCO3/L	Monthly	24	24	0	91	157	120	1	1	Q Health
		Alkalinity	mg CaCO3/L	Monthly	24	24	No value	75	132	103	1	1	Q Health
		Silica	mg/L	Monthly	24	24	0	8	14	12	1	1	Q Health
		Dissolved Solids	mg/L	Monthly	24	24	0	188	342	254	1	1	Q Health
		True Colour	hazen	Monthly	24	17	0	<1	4	1	1	1	Q Health
		Turbidity	NTU	Monthly	24	0	0	<1	<1	<1	1	1	Q Health
		Sodium	mg/L	Monthly	24	24	0	27	63	44	1	1	Q Health
		Potassium	mg/L	Monthly	24	24	No value	5.1	6.2	5.7	0.1	0.1	Q Health
		Calcium	mg/L	Monthly	24	24	No value	22	34	27	0.1	0.1	Q Health
		Magnesium	mg/L	Monthly	24	24	No value	8	18	13	0.1	0.1	Q Health
		Chloride	mg/L	Monthly	24	24	0	33	100	64	1	1	Q Health
		Fluoride	mg/L	Monthly	24	24	0	0.09	0.71	0.21	0.01	0.01	Q Health
		Nitrate	mg/L	Monthly	24	1	0	<0.5	0.6	0.5	0.5	0.5	Q Health
		Sulphate	mg/L	Monthly	24	24	0	12	44	27	0.1	0.1	Q Health
		Iron	mg/l	Monthly	24	3	0	<0.01	0.03	0.01	0.01	0.01	Q Health
		Manganese	mg/L	Monthly	24	0	0	<0.01	<0.01	<0.01	0.01	0.01	Q Health
		Zinc	mg/L	Monthly	24	17	0	<0.01	0.07	0.02	0.01	0.01	Q Health
		Aluminium	mg/L	Monthly	24	8	0	<0.05	0.07	0.05	0.05	0.05	Q Health
		Boron	mg/L	Monthly	24	24	0	0.04	0.05	0.04	0.01	0.01	Q Health
		Copper	mg/L	Monthly	24	0	0	<0.03	<0.03	<0.03	0.03	0.03	Q Health
		Aluminium (total)	mg/L	Event	1	1	0	0.063	0.063	0.063	0.003	0.003	Q Health
		Arsenic	mg/L	Event	1	1	0	0.0003	0.0003	0.0003	0.0001	0.0001	Q Health
		Cadmium	mg/L	Event	1	0	0	<0.0001	<0.0001	<0.0001	0.0001	0.0001	Q Health
	Chromium	mg/L	Event	1	1	0	0.0002	0.0002	0.0002	0.0001	0.0001	Q Health	
	Copper (total)	mg/L	Event	1	1	0	0.005	0.005	0.005	0.001	0.001	Q Health	
	Iron (total)	mg/L	Event	1	1	0	0.062	0.062	0.062	0.005	0.005	Q Health	
	Lead	mg/L	Event	1	1	0	0.0003	0.0003	0.0003	0.0001	0.0001	Q Health	
	Manganese (total)	mg/L	Event	1	1	0	0.0016	0.0016	0.0016	0.0001	0.0001	Q Health	
	Nickel	mg/L	Event	1	1	0	0.0011	0.0011	0.0011	0.0001	0.0001	Q Health	
	Zinc (total)	mg/L	Event	1	1	0	0.006	0.006	0.006	0.001	0.001	Q Health	
	Raw Water	Atrazine	µg/L	Seasonally	6	6	NA	0.1	0.5	0.3	0.01	0.01	Q Health
		Desethyl Atrazine	µg/L	Seasonally	6		NA	<0.02	0.1	0.1	0.01	0.01	Q Health
		Simazine	µg/L	Seasonally	6		NA	<0.02	0	0	0.01	0.01	Q Health
		Tebuthiuron	µg/L	Seasonally	6	6	NA	0.1	0.2	0.1	0.01	0.01	Q Health
		Metolachlor	µg/L	Seasonally	6	6	NA	0.1	0.2	0.1	0.01	0.01	Q Health
		Conductivity	us/cm	Monthly	16	16	NA	301	642	470	1	1	Q Health
pH		mg/L	Monthly	16	16	NA	7.14	8.32	8.12	0.01	0.01	Q Health	
Total Hardness		mg CaCO3/L	Monthly	16	16	NA	89	159	126	1	1	Q Health	
Alkalinity		mg CaCO3/L	Monthly	16	16	NA	69	147	120	1	1	Q Health	
Silica		mg/L	Monthly	16	16	NA	12	15	13	1	1	Q Health	
Dissolved Solids		mg/L	Monthly	16	16	NA	169	330	253	1	1	Q Health	
True Colour		hazen	Monthly	16	16	NA	9	25	15	1	1	Q Health	
Turbidity		NTU	Monthly	16	16	NA	11	33	22	1	1	Q Health	
Sodium		mg/L	Monthly	16	16	NA	23	60	43	1	1	Q Health	
Potassium		mg/L	Monthly	16	16	NA	5.3	6.2	5.8	0.1	0.1	Q Health	
Calcium		mg/L	Monthly	16	16	NA	19	32	9.9	0.1	0.1	Q Health	
Magnesium		mg/L	Monthly	16	16	NA	9.9	19	14.8	0.1	0.1	Q Health	
Chloride		mg/L	Monthly	16	16	NA	28	96	64	1	1	Q Health	
Fluoride		mg/L	Monthly	16	16	NA	0.1	0.21	0.17	0.01	0.01	Q Health	
Nitrate		mg/L	Monthly	16	0	NA	<0.5	<0.5	<0.5	0.5	0.5	Q Health	
Sulphate		mg/L	Monthly	16	16	NA	7.4	39	14.2	0.1	0.1	Q Health	
Iron		mg/l	Monthly	16	0	NA	<0.01	<0.01	<0.01	0.01	0.01	Q Health	
Manganese		mg/L	Monthly	16	0	NA	<0.01	<0.01	<0.01	0.01	0.01	Q Health	
Zinc		mg/L	Monthly	16		NA	<0.01	0.04	0.02	0.01	0.01	Q Health	
Aluminium		mg/L	Monthly	16	0	NA	<0.05	<0.05	<0.05	0.05	0.05	Q Health	
Boron		mg/L	Monthly	16		NA	0.04	0.06	0.04	0.01	0.01	Q Health	
Copper		mg/L	Monthly	16	0	NA	<0.03	<0.03	<0.03	0.03	0.03	Q Health	
Aluminium (total)		mg/L	Event	1	1	NA	0.75	0.75	0.75	0.003	0.003	Q Health	
Arsenic		mg/L	Event	1	1	NA	0.0015	0.0015	0.0015	0.0001	0.0001	Q Health	
Cadmium		mg/L	Event	1	0	NA	<0.0001	<0.0001	<0.0001	0.0001	0.0001	Q Health	
Chromium		mg/L	Event	1	1	NA	0.001	0.001	0.001	0.0001	0.0001	Q Health	
Copper (total)		mg/L	Event	1	1	NA	0.004	0.004	0.004	0.001	0.001	Q Health	
Iron (total)		mg/L	Event	1	1	NA	0.81	0.81	0.81	0.005	0.005	Q Health	
Lead	mg/L	Event	1	1	NA	0.0006	0.0006	0.0006	0.0001	0.0001	Q Health		
Manganese (total)	mg/L	Event	1	1	NA	0.034	0.034	0.034	0.0001	0.0001	Q Health		
Nickel	mg/L	Event	1	1	NA	0.003	0.003	0.003	0.0001	0.0001	Q Health		
Zinc (total)	mg/L	Event	1	1	NA	0.005	0.005	0.005	0.001	0.001	Q Health		

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples with values the LOR	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	LOR	Laboratory name	
Bluff	Reticulation	Chlorine (Free)	mg/L	Monthly	11	11	0	0.66	2.2	1.02	0.01	Q Health	
		Coliforms	CFU/100mL	Monthly	13	0	0	0	0	0	0	0	Q Health
		E. coli	CFU/100mL	Monthly	13	0	0	0	0	0	0	0	Q Health
		Trihalomethanes	µg/L	Seasonally/ Event	20	20	10	131	320	233	1	1	Q Health
		Conductivity	us/cm	Monthly	5	5	No value	356	581	459	1	1	Q Health
		pH	mg/L	Monthly	5	5	0	7.93	8.23	8.07	0.01	0.01	Q Health
		Total Hardness	mg CaCO3/L	Monthly	5	5	0	99	144	117	1	1	Q Health
		Alkalinity	mg CaCO3/L	Monthly	5	5	No value	81	124	101	1	1	Q Health
		Silica	mg/L	Monthly	5	5	0	12	14	13	1	1	Q Health
		Dissolved Solids	mg/L	Monthly	5	5	0	200	310	252	1	1	Q Health
		True Colour	hazen	Monthly	5	2	0	<1	3	1.6	1	1	Q Health
		Turbidity	NTU	Monthly	5	1	1	<1	12	3.2	1	1	Q Health
		Sodium	mg/L	Monthly	5	5	0	30	57	43	1	1	Q Health
		Potassium	mg/L	Monthly	5	5	No value	5.3	6.1	5.6	0.1	0.1	Q Health
		Calcium	mg/L	Monthly	5	5	No value	25	32	28.2	0.1	0.1	Q Health
		Magnesium	mg/L	Monthly	5	5	No value	8.5	16	11.5	0.1	0.1	Q Health
		Chloride	mg/L	Monthly	5	5	0	38	85	60	1	1	Q Health
		Fluoride	mg/L	Monthly	5	5	0	0.1	0.65	0.25	0.01	0.01	Q Health
		Nitrate	mg/L	Monthly	5	1	0	<0.5	0.6	0.5	0.5	0.5	Q Health
		Sulphate	mg/L	Monthly	5	5	0	21	43	29.4	0.1	0.1	Q Health
Iron	mg/l	Monthly	5	1	0	<0.01	0.02	0.01	0.01	0.01	Q Health		
Manganese	mg/L	Monthly	5	1	0	<0.01	0.01	0.01	0.01	0.01	Q Health		
Zinc	mg/L	Monthly	5	5	0	0.02	0.2	0.06	0.01	0.01	Q Health		
Aluminium	mg/L	Monthly	5	0	0	<0.05	<0.05	<0.05	0.05	0.05	Q Health		
Boron	mg/L	Monthly	5	5	0	0.04	0.05	0.04	0.01	0.01	Q Health		
Copper	mg/L	Monthly	5	0	0	<0.03	<0.03	<0.03	0.03	0.03	Q Health		

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples with values the LOR	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	LOR	Laboratory name	
Capella	Reticulation	Chlorine (Free)	mg/L	Monthly	12	12	0	1.7	2.2	2.07	0.01	Q Health	
		Coliforms	CFU/100mL	Monthly	30	0	0	0	0	0	0	0	Q Health
		E. coli	CFU/100mL	Monthly	30	0	0	0	0	0	0	0	Q Health
		Trihalomethanes	µg/L	Seasonally/ Event	16	16	1	83	286	162	1	1	Q Health
		Atrazine	µg/L	Seasonally	5	5	0	0.17	0.39	0.3	0.01	0.01	Q Health
		Desethyl Atrazine	µg/L	Seasonally	5	1	No value	0.04	0.06	0.05	0.01	0.01	Q Health
		Simazine	µg/L	Seasonally	5	0	0	<0.02	<0.02	<0.02	0.01	0.01	Q Health
		Tebuthiuron	µg/L	Seasonally	5	0	No value	<0.02	0.04	0.02	0.01	0.01	Q Health
		Metolachlor	µg/L	Seasonally	5	5	0	0.05	0.13	0.1	0.01	0.01	Q Health
		Conductivity	us/cm	Monthly	7	7	No value	436	809	650	1	1	Q Health
		pH	mg/L	Monthly	7	7	0	7.46	8.11	7.87	0.01	0.01	Q Health
		Total Hardness	mg CaCO3/L	Monthly	7	7	0	97	173	141	1	1	Q Health
		Alkalinity	mg CaCO3/L	Monthly	7	7	No value	98	175	152	1	1	Q Health
		Silica	mg/L	Monthly	7	7	0	13	15	14	1	1	Q Health
		Dissolved Solids	mg/L	Monthly	7	7	0	255	429	367	1	1	Q Health
		True Colour	hazen	Monthly	7	2	0	<1	1	1	1	1	Q Health
		Turbidity	NTU	Monthly	7	0	0	<1	<1	<1	1	1	Q Health
		Sodium	mg/L	Monthly	7	7	0	50	93	79	1	1	Q Health
		Potassium	mg/L	Monthly	7	7	No value	3.9	6.1	5.1	0.1	0.1	Q Health
		Calcium	mg/L	Monthly	7	7	No value	22	31	27.1	0.1	0.1	Q Health
		Magnesium	mg/L	Monthly	7	7	No value	10	23	17.9	0.1	0.1	Q Health
		Chloride	mg/L	Monthly	7	7	0	33	96	69	1	1	Q Health
		Fluoride	mg/L	Monthly	7	7	0	0.1	0.2	0.17	0.01	0.01	Q Health
		Nitrate	mg/L	Monthly	7	1	0	<0.5	0.7	0.5	0.5	0.5	Q Health
		Sulphate	mg/L	Monthly	7	7	0	58	68	64	0.1	0.1	Q Health
		Iron	mg/l	Monthly	7	0	0	<0.01	<0.01	<0.01	0.01	0.01	Q Health
		Manganese	mg/L	Monthly	7	0	0	<0.01	<0.01	<0.01	0.01	0.01	Q Health
	Zinc	mg/L	Monthly	7	2	0	<0.01	0.04	0.02	0.01	0.01	Q Health	
	Aluminium	mg/L	Monthly	7	5	0	<0.05	0.09	0.06	0.05	0.05	Q Health	
	Boron	mg/L	Monthly	7	7	0	0.08	0.11	0.1	0.01	0.01	Q Health	
	Copper	mg/L	Monthly	7	0	0	<0.03	<0.03	<0.03	0.03	0.03	Q Health	
	Algae (pot. toxic)	Cells/mL	Seasonally	10	10	No value	35	3150	767	1	1	Q Health	
	Toxin (cyllindro)	µg/L	Seasonally	6	0	No value	<0.2	<0.2	<0.2	0.2	0.2	Q Health	
	Raw Water	Atrazine	µg/L	Seasonally	5	5	NA	0.41	0.53	0.48	0.01	0.01	Q Health
Desethyl Atrazine		µg/L	Seasonally	5	5	NA	0.16	0.28	0.21	0.01	0.01	Q Health	
Simazine		µg/L	Seasonally	5	0	NA	<0.02	<0.02	<0.02	0.01	0.01	Q Health	
Tebuthiuron		µg/L	Seasonally	5	0	NA	<0.02	<0.02	<0.02	0.01	0.01	Q Health	
Metolachlor		µg/L	Seasonally	5	5	NA	0.11	0.33	0.22	0.01	0.01	Q Health	
Algae (pot. toxic)		Cells/mL	Seasonally	11	11	No value	185	32451	13905	1	1	Q Health	
Toxin (cyllindro)	µg/L	Seasonally	6	5	No value	0	0.6	0.3	0.2	0.2	Q Health		

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples with values the LOR	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	LOR	Laboratory name	
Comet	Reticulation	Chlorine (Free)	mg/L	Monthly	12	12	0	0.09	1.97	0.79	0.01	Q Health	
		Coliforms	CFU/100mL	Monthly	12	0	0	0	0	0	0	0	Q Health
		E. coli	CFU/100mL	Monthly	12	0	0	0	0	0	0	0	Q Health
		Trihalomethanes	µg/L	Seasonally/ Event	9	9	0	91	217	155	1	1	Q Health
		Atrazine	µg/L	Seasonally	5	5	0	0.1	0.46	0.32	0.01	0.01	Q Health
		Desethyl Atrazine	µg/L	Seasonally	5	4	No value	<0.02	0.11	0.08	0.01	0.01	Q Health
		Simazine	µg/L	Seasonally	5	0	0	<0.02	<0.02	<0.02	0.01	0.01	Q Health
		Tebuthiuron	µg/L	Seasonally	5	1	No value	<0.02	0.06	0.04	0.01	0.01	Q Health
		Metolachlor	µg/L	Seasonally	5	1	0	<0.02	0.05	0.03	0.01	0.01	Q Health
		Conductivity	us/cm	Monthly	8	8	No value	189	425	309	1	1	Q Health
		pH	mg/L	Monthly	8	8	0	7.51	8.31	8.06	0.01	0.01	Q Health
		Total Hardness	mg CaCO3/L	Monthly	8	8	0	48	154	101	1	1	Q Health
		Alkalinity	mg CaCO3/L	Monthly	8	8	No value	62	177	119	1	1	Q Health
		Silica	mg/L	Monthly	8	8	0	11	23	15	1	1	Q Health
		Dissolved Solids	mg/L	Monthly	8	8	0	114	235	174	1	1	Q Health
		True Colour	hazen	Monthly	8	5	0	<1	4	2	1	1	Q Health
		Turbidity	NTU	Monthly	8	0	0	<1	<1	<1	1	1	Q Health
		Sodium	mg/L	Monthly	8	8	0	13	27	21	1	1	Q Health
		Potassium	mg/L	Monthly	8	8	No value	4.4	8.3	6.2	0.1	0.1	Q Health
		Calcium	mg/L	Monthly	8	8	No value	12	33	23	0.1	0.1	Q Health
		Magnesium	mg/L	Monthly	8	8	No value	4.6	17	10.8	0.1	0.1	Q Health
		Chloride	mg/L	Monthly	8	8	0	14	29	24	1	1	Q Health
		Fluoride	mg/L	Monthly	8	8	0	0.09	0.21	0.14	0.01	0.01	Q Health
		Nitrate	mg/L	Monthly	8	4	0	<0.5	0.7	0.5	0.5	0.5	Q Health
		Sulphate	mg/L	Monthly	8	8	0	2	3.5	2.7	0.1	0.1	Q Health
	Iron	mg/l	Monthly	8	0	0	<0.01	<0.01	<0.01	0.01	0.01	Q Health	
	Manganese	mg/L	Monthly	8	0	0	<0.01	<0.01	<0.01	0.01	0.01	Q Health	
	Zinc	mg/L	Monthly	8	4	0	<0.01	0.04	0.02	0.01	0.01	Q Health	
	Aluminium	mg/L	Monthly	8	0	0	<0.05	<0.05	<0.05	0.05	0.05	Q Health	
	Boron	mg/L	Monthly	8	8	0	0.03	0.05	0.04	0.01	0.01	Q Health	
Copper	mg/L	Monthly	8	2	0	<0.03	0.03	0.03	0.03	0.03	Q Health		
Raw Water	Atrazine	µg/L	Seasonally	1	1	NA	1	1	1	0.01	0.01	Q Health	
	Desethyl Atrazine	µg/L	Seasonally	1	1	NA	0.2	0.2	0.2	0.01	0.01	Q Health	
	Simazine	µg/L	Seasonally	1	0	NA	0	0	0	0.01	0.01	Q Health	
	Tebuthiuron	µg/L	Seasonally	1	1	NA	0.4	0.4	0.4	0.01	0.01	Q Health	
	Metolachlor	µg/L	Seasonally	1	1	NA	1.7	1.7	1.7	0.01	0.01	Q Health	

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples with values the LOR	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	LOR	Laboratory name	
Dingo	Reticulation	Chlorine (Free)	mg/L	Monthly	11	11	0	0.16	2.2	0.87	0.01	Q Health	
		Coliforms	CFU/100mL	Monthly	12	0	0	0	0	0	0	0	Q Health
		E. coli	CFU/100mL	Monthly	12	0	0	0	0	0	0	0	Q Health
		Trihalomethanes	µg/L	Seasonally	1	1	0	175	175	175	1	1	Q Health
		Atrazine	µg/L	Seasonally	3	0	0	<0.02	<0.02	<0.02	0.01	0.01	Q Health
		Desethyl Atrazine	µg/L	Seasonally	3	0	No value	<0.02	<0.02	<0.02	0.01	0.01	Q Health
		Simazine	µg/L	Seasonally	3	0	0	<0.02	<0.02	<0.02	0.01	0.01	Q Health
		Tebuthiuron	µg/L	Seasonally	3	0	No value	<0.02	<0.02	<0.02	0.01	0.01	Q Health
		Metolachlor	µg/L	Seasonally	3	0	0	<0.02	<0.02	<0.02	0.01	0.01	Q Health
		Conductivity	us/cm	Monthly	8	8	No value	155	175	165	1	1	Q Health
		pH	mg/L	Monthly	8	8	0	7.21	7.84	7.63	0.01	0.01	Q Health
		Total Hardness	mg CaCO3/L	Monthly	8	8	0	26	33	30	1	1	Q Health
		Alkalinity	mg CaCO3/L	Monthly	8	8	No value	43	48	46	1	1	Q Health
		Silica	mg/L	Monthly	8	8	0	12	14	13	1	1	Q Health
		Dissolved Solids	mg/L	Monthly	8	8	0	92	101	96	1	1	Q Health
		True Colour	hazen	Monthly	8	7	0	<1	4	1	1	1	Q Health
		Turbidity	NTU	Monthly	8	8	0	1	3	2	1	1	Q Health
		Sodium	mg/L	Monthly	8	8	0	17	21	19	1	1	Q Health
		Potassium	mg/L	Monthly	8	8	No value	3.8	4	3.9	0.1	0.1	Q Health
		Calcium	mg/L	Monthly	8	8	No value	4.6	6.2	5.5	0.1	0.1	Q Health
		Magnesium	mg/L	Monthly	8	8	No value	3.5	4.3	4	0.1	0.1	Q Health
		Chloride	mg/L	Monthly	8	8	0	19	24	21	1	1	Q Health
		Fluoride	mg/L	Monthly	8	8	0	0.08	0.17	0.13	0.01	0.01	Q Health
		Nitrate	mg/L	Monthly	8	0	0	<0.5	<0.5	<0.5	0.5	0.5	Q Health
		Sulphate	mg/L	Monthly	8	8	0	1.2	2	1.7	0.1	0.1	Q Health
	Iron	mg/l	Monthly	8	0	0	<0.01	<0.01	<0.01	0.01	0.01	Q Health	
	Manganese	mg/L	Monthly	8	0	0	<0.01	<0.01	<0.01	0.01	0.01	Q Health	
	Zinc	mg/L	Monthly	8	3	0	<0.01	0.02	0.01	0.01	0.01	Q Health	
	Aluminium	mg/L	Monthly	8	0	0	<0.05	<0.05	<0.05	0.05	0.05	Q Health	
	Boron	mg/L	Monthly	8	8	0	0.05	0.07	0.06	0.01	0.01	Q Health	
Copper	mg/L	Monthly	8	1	0	<0.03	0.08	0.04	0.03	0.03	Q Health		
Raw Water	Atrazine	µg/L	Seasonally	2	1	NA	<0.02	0.03	0.02	0.01	0.01	Q Health	
	Desethyl Atrazine	µg/L	Seasonally	2	0	NA	<0.02	<0.02	<0.02	0.01	0.01	Q Health	
	Simazine	µg/L	Seasonally	2	0	NA	<0.02	<0.02	<0.02	0.01	0.01	Q Health	
	Tebuthiuron	µg/L	Seasonally	2	1	NA	<0.02	0.07	0.03	0.01	0.01	Q Health	
	Metolachlor	µg/L	Seasonally	2	0	NA	<0.02	<0.02	<0.02	0.01	0.01	Q Health	
	Algae (pot. toxic)	Cells/mL	Seasonally	1	1	No value	205	205	205	1	1	Q Health	
	Toxin (cyindro)	µg/L	Seasonally	0	-	No value	-	-	-	0.2	0.2	Q Health	

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples with values the LOR	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	LOR	Laboratory name	
Duaringa	Reticulation	Chlorine (Free)	mg/L	Monthly	11	11	0	0.12	2.2	0.88	0.01	Q Health	
		Coliforms	CFU/100mL	Monthly	12	0	0	0	0	0	0	0	Q Health
		E. coli	CFU/100mL	Monthly	12	0	0	0	0	0	0	0	Q Health
		Trihalomethanes	µg/L	Seasonally	2	2	0	141	149	145	1	1	Q Health
		Atrazine	µg/L	Seasonally	4	4	0	0.1	0.17	0.12	0.01	0.01	Q Health
		Desethyl Atrazine	µg/L	Seasonally	4	4	No value	0.04	0.04	0.04	0.01	0.01	Q Health
		Simazine	µg/L	Seasonally	4	0	0	<0.02	<0.02	<0.02	0.01	0.01	Q Health
		Tebuthiuron	µg/L	Seasonally	4	4	No value	0.07	0.09	0.07	0.01	0.01	Q Health
		Metolachlor	µg/L	Seasonally	4	4	0	0.05	0.19	0.1	0.01	0.01	Q Health
		Conductivity	us/cm	Monthly	9	9	No value	272	661	478	1	1	Q Health
		pH	mg/L	Monthly	9	9	0	7.49	8.27	7.99	0.01	0.01	Q Health
		Total Hardness	mg CaCO3/L	Monthly	9	9	0	65	165	121	1	1	Q Health
		Alkalinity	mg CaCO3/L	Monthly	9	9	No value	81	126	107	1	1	Q Health
		Silica	mg/L	Monthly	9	9	0	8	17	12	1	1	Q Health
		Dissolved Solids	mg/L	Monthly	9	9	0	158	342	259	1	1	Q Health
		True Colour	hazen	Monthly	9	6	0	<1	10	3	1	1	Q Health
		Turbidity	NTU	Monthly	9	7	0	<1	3	1	1	1	Q Health
		Sodium	mg/L	Monthly	9	9	0	26	67	46	1	1	Q Health
		Potassium	mg/L	Monthly	9	9	No value	5.9	7.1	6.5	0.1	0.1	Q Health
		Calcium	mg/L	Monthly	9	9	No value	15	32	24.8	0.1	0.1	Q Health
		Magnesium	mg/L	Monthly	9	9	No value	6.1	21	14.1	0.1	0.1	Q Health
		Chloride	mg/L	Monthly	9	9	0	30	120	72	1	1	Q Health
		Fluoride	mg/L	Monthly	9	9	0	0.09	0.3	0.16	0.01	0.01	Q Health
		Nitrate	mg/L	Monthly	9	4	0	<0.05	0.08	0.6	0.5	0.5	Q Health
		Sulphate	mg/L	Monthly	9	9	0	3	31	18.9	0.1	0.1	Q Health
		Iron	mg/l	Monthly	9	0	0	<0.01	<0.01	<0.01	0.01	0.01	Q Health
		Manganese	mg/L	Monthly	9	0	0	<0.01	<0.01	<0.01	0.01	0.01	Q Health
		Zinc	mg/L	Monthly	9	1	0	<0.01	0.03	0.01	0.01	0.01	Q Health
		Aluminium	mg/L	Monthly	9	0	0	<0.05	<0.05	<0.05	0.05	0.05	Q Health
		Boron	mg/L	Monthly	9	9	0	0.03	0.06	0.05	0.01	0.01	Q Health
		Copper	mg/L	Monthly	9	0	0	<0.03	<0.03	<0.03	0.03	0.03	Q Health
		Aluminium (total)	mg/L	Event	1	1	0	0.21	0.21	0.21	0.003	0.003	Q Health
		Arsenic	mg/L	Event	1	1	0	0.0011	0.0011	0.0011	0.0001	0.0001	Q Health
		Cadmium	mg/L	Event	1	0	0	<0.0001	<0.0001	<0.0001	0.0001	0.0001	Q Health
	Chromium	mg/L	Event	1	0	0	<0.0001	<0.0001	<0.0001	0.0001	0.0001	Q Health	
	Copper (total)	mg/L	Event	1	1	0	0.005	0.005	0.005	0.001	0.001	Q Health	
	Iron (total)	mg/L	Event	1	1	0	0.05	0.05	0.05	0.005	0.005	Q Health	
	Lead	mg/L	Event	1	0	0	<0.0001	<0.0001	<0.0001	0.0001	0.0001	Q Health	
	Manganese (total)	mg/L	Event	1	1	0	0.0015	0.0015	0.0015	0.0001	0.0001	Q Health	
	Nickel	mg/L	Event	1	1	0	0.0009	0.0009	0.0009	0.0001	0.0001	Q Health	
	Zinc (total)	mg/L	Event	1	1	0	0.001	0.001	0.001	0.001	0.001	Q Health	
	Raw Water	Atrazine	µg/L	Seasonally	2	2	NA	0.04	0.1	0.07	0.01	0.01	Q Health
Desethyl Atrazine		µg/L	Seasonally	2	1	NA	<0.02	0.04	0.02	0.01	0.01	Q Health	
Simazine		µg/L	Seasonally	2	1	NA	<0.02	0.11	0.4	0.01	0.01	Q Health	
Tebuthiuron		µg/L	Seasonally	2	2	NA	0.34	0.39	0.36	0.01	0.01	Q Health	
Metolachlor		µg/L	Seasonally	2	1	NA	<0.02	0.05	0.03	0.01	0.01	Q Health	

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples with values the LOR	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	LOR	Laboratory name		
Emerald	Reticulation	Chlorine (Free)	mg/L	Weekly	86	86	0	0.16	2.2	1.03	0.01	Q Health		
		Coliforms	CFU/100mL	Weekly	99	0	0	0	0	0	0	0	Q Health	
		E. coli	CFU/100mL	Weekly	99	0	0	0	0	0	0	0	Q Health	
		Trihalomethanes	µg/L	Seasonally	8	8	0	54	92	69	1	1	Q Health	
		Atrazine	µg/L	Seasonally	10	7	0	<0.02	0.08	0.05	0.01	0.01	Q Health	
		Desethyl Atrazine	µg/L	Seasonally	10	1	No value	<0.02	0.03	0.02	0.01	0.01	Q Health	
		Simazine	µg/L	Seasonally	10	1	0	<0.02	0.03	0.02	0.01	0.01	Q Health	
		Tebuthiuron	µg/L	Seasonally	10	9	No value	<0.02	0.15	0.1	0.01	0.01	Q Health	
		Metolachlor	µg/L	Seasonally	10	0	0	<0.02	<0.02	<0.02	<0.02	<0.02	Q Health	
		Conductivity	us/cm	Monthly	45	45	No value	362	529	414	1	1	Q Health	
		pH	mg/L	Monthly	45	45	0	7.14	7.99	7.67	0.01	0.01	Q Health	
		Total Hardness	mg CaCO3/L	Monthly	45	45	0	103	141	119	1	1	Q Health	
		Alkalinity	mg CaCO3/L	Monthly	45	45	No value	81	142	119	1	1	Q Health	
		Silica	mg/L	Monthly	45	45	0	6	11	10	1	1	Q Health	
		Dissolved Solids	mg/L	Monthly	45	45	0	197	280	223	1	1	Q Health	
		True Colour	hazen	Monthly	45	11	0	<1	5	1.2	1	1	Q Health	
		Turbidity	NTU	Monthly	45	0	0	<1	<1	<1	1	1	Q Health	
		Sodium	mg/L	Monthly	45	45	0	27	49	33	1	1	Q Health	
		Potassium	mg/L	Monthly	45	45	No value	6.9	8.1	7.3	0.1	0.1	Q Health	
		Calcium	mg/L	Monthly	45	45	No value	22	30	26.3	0.1	0.1	Q Health	
		Magnesium	mg/L	Monthly	45	45	No value	11	16	12.9	0.1	0.1	Q Health	
		Chloride	mg/L	Monthly	45	45	0	33	66	41	1	1	Q Health	
		Fluoride	mg/L	Monthly	45	45	0	0.15	0.65	0.43	0.01	0.01	Q Health	
		Nitrate	mg/L	Monthly	45	14	0	<0.5	1.3	0.6	0.5	0.5	Q Health	
		Sulphate	mg/L	Monthly	45	45	0	7.2	58	20.6	0.1	0.1	Q Health	
		Iron	mg/l	Monthly	45	0	0	<0.01	<0.01	<0.01	0.01	0.01	Q Health	
		Manganese	mg/L	Monthly	45	0	0	<0.01	<0.01	<0.01	0.01	0.01	Q Health	
		Zinc	mg/L	Monthly	45	36	0	<0.01	0.08	0.02	0.01	0.01	Q Health	
		Aluminium	mg/L	Monthly	45	0	0	<0.05	<0.05	<0.05	0.05	0.05	Q Health	
		Boron	mg/L	Monthly	45	45	0	0.04	0.07	0.05	0.01	0.01	Q Health	
		Copper	mg/L	Monthly	45	19	0	<0.03	0.06	0.03	0.03	0.03	Q Health	
		Raw Water	Atrazine	µg/L	Seasonally	9	8	NA	0	0.1	0.1	0.01	0.01	Q Health
			Desethyl Atrazine	µg/L	Seasonally	9	0	NA	0	0	0	0.01	0.01	Q Health
			Simazine	µg/L	Seasonally	9	0	NA	0	0	0	0.01	0.01	Q Health
			Tebuthiuron	µg/L	Seasonally	9	9	NA	0.1	0.2	0.2	0.01	0.01	Q Health
			Metolachlor	µg/L	Seasonally	9	0	NA	0	0	0	0.01	0.01	Q Health
	Conductivity		us/cm	Seasonally	2	2	NA	347	402	374	1	1	Q Health	
	pH		mg/L	Seasonally	2	2	NA	8.13	8.15	8.14	0.01	0.01	Q Health	
	Total Hardness		mg CaCO3/L	Seasonally	2	2	NA	111	115	113	1	1	Q Health	
	Alkalinity		mg CaCO3/L	Seasonally	2	2	NA	120	134	127	1	1	Q Health	
	Silica		mg/L	Seasonally	2	2	NA	9	10	10	1	1	Q Health	
	Dissolved Solids		mg/L	Seasonally	2	2	NA	198	221	210	1	1	Q Health	
	True Colour		hazen	Seasonally	2	2	NA	4	10	7	1	1	Q Health	
	Turbidity		NTU	Seasonally	2	2	NA	8	9	9	1	1	Q Health	
	Sodium		mg/L	Seasonally	2	2	NA	29	33	31	1	1	Q Health	
Potassium	mg/L		Seasonally	2	2	NA	7.1	7.2	7.2	0.1	0.1	Q Health		
Calcium	mg/L		Seasonally	2	2	NA	25	26	25.5	0.1	0.1	Q Health		
Magnesium	mg/L		Seasonally	2	2	NA	12	12	12	0.1	0.1	Q Health		
Chloride	mg/L		Seasonally	2	2	NA	28	37	33	1	1	Q Health		
Fluoride	mg/L		Seasonally	2	2	NA	0.24	0.26	0.25	0.01	0.01	Q Health		
Nitrate	mg/L		Seasonally	2	0	NA	<0.5	<0.5	<0.5	0.5	0.5	Q Health		
Sulphate	mg/L	Seasonally	2	2	NA	7.4	25	16.2	0.1	0.1	Q Health			
Iron	mg/l	Seasonally	2	0	NA	<0.01	<0.01	<0.01	0.01	0.01	Q Health			
Manganese	mg/L	Seasonally	2	0	NA	<0.01	<0.01	<0.01	0.01	0.01	Q Health			
Zinc	mg/L	Seasonally	2	0	NA	<0.01	<0.01	<0.01	0.01	0.01	Q Health			
Aluminium	mg/L	Seasonally	2	0	NA	<0.05	<0.05	<0.05	0.05	0.05	Q Health			
Boron	mg/L	Seasonally	2	2	NA	0.05	0.05	0.05	0.01	0.01	Q Health			
Copper	mg/L	Seasonally	2	0	NA	<0.03	<0.03	<0.03	0.03	0.03	Q Health			

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples with values the LOR	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	LOR	Laboratory name	
Springsure	Upper Reticulation Zone	Chlorine (Free)	mg/L	Monthly	12	12	0	0.13	2.2	1.25	0.01	Q Health	
		Coliforms	CFU/100mL	Monthly	12	0	0	0	0	0	0	0	Q Health
		E. coli	CFU/100mL	Monthly	12	0	0	0	0	0	0	0	Q Health
		Conductivity	us/cm	Monthly	8	8	No value	890	1150	967	1	1	Q Health
		pH	mg/L	Monthly	8	8	1	8.14	8.59	8.35	0.01	1	Q Health
		Total Hardness	mg CaCO3/L	Monthly	8	8	0	13	30	20	1	1	Q Health
		Alkalinity	mg CaCO3/L	Monthly	8	8	No value	440	613	484	1	1	Q Health
		Silica	mg/L	Monthly	8	8	0	18	30	24	1	1	Q Health
		Dissolved Solids	mg/L	Monthly	8	8	1	548	726	592	1	1	Q Health
		True Colour	hazen	Monthly	8	3	0	<1	2	1	1	1	Q Health
		Turbidity	NTU	Monthly	8	1	0	<1	2	1	1	1	Q Health
		Sodium	mg/L	Monthly	8	8	0	208	295	234	1	1	Q Health
		Potassium	mg/L	Monthly	8	8	No value	3.8	4.7	4.2	0.1	1	Q Health
		Calcium	mg/L	Monthly	8	8	No value	3.3	7.1	5	0.1	1	Q Health
		Magnesium	mg/L	Monthly	8	8	No value	1	3	1.9	0.1	1	Q Health
		Chloride	mg/L	Monthly	8	8	0	30	36	32	1	1	Q Health
		Fluoride	mg/L	Monthly	8	8	0	0.31	0.48	0.39	0.01	1	Q Health
		Nitrate	mg/L	Monthly	8	0	0	<0.5	<0.5	<0.5	0.5	1	Q Health
		Sulphate	mg/L	Monthly	8	0	0	<1	<1	<1	0.1	1	Q Health
		Iron	mg/l	Monthly	8	7	0	<0.01	0.1	0.04	0.01	1	Q Health
	Manganese	mg/L	Monthly	8	0	0	<0.01	<0.01	<0.01	0.01	1	Q Health	
	Zinc	mg/L	Monthly	8	5	0	<0.01	0.03	<0.01	0.01	1	Q Health	
	Aluminium	mg/L	Monthly	8	0	0	<0.05	<0.05	<0.05	0.05	1	Q Health	
	Boron	mg/L	Monthly	8	8	0	0.14	0.25	0.16	0.01	1	Q Health	
	Copper	mg/L	Monthly	8	0	0	<0.03	<0.03	<0.03	0.03	1	Q Health	
	Lower Reticulation Zone	Chlorine (Free)	mg/L	Monthly	12	12	0	0.21	1.99	1.19	0.01	1	Q Health
		Coliforms	CFU/100mL	Monthly	12	0	0	0	0	0	0	0	Q Health
		E. coli	CFU/100mL	Monthly	12	0	0	0	0	0	0	0	Q Health
		Conductivity	us/cm	Monthly	9	9	No value	892	1200	1073	1	1	Q Health
		pH	mg/L	Monthly	9	9	5	8.21	8.63	8.45	0.01	1	Q Health
		Total Hardness	mg CaCO3/L	Monthly	9	9	0	12	28	17	1	1	Q Health
		Alkalinity	mg CaCO3/L	Monthly	9	9	No value	461	590	535	1	1	Q Health
		Silica	mg/L	Monthly	9	9	0	18	29	21	1	1	Q Health
		Dissolved Solids	mg/L	Monthly	9	9	6	571	711	650	1	1	Q Health
		True Colour	hazen	Monthly	9	3	0	<1	2	1	1	1	Q Health
		Turbidity	NTU	Monthly	9	0	0	<1	<1	<1	1	1	Q Health
Sodium		mg/L	Monthly	9	9	0	218	294	262	1	1	Q Health	
Potassium		mg/L	Monthly	9	9	No value	3.5	4.7	4	0.1	1	Q Health	
Calcium		mg/L	Monthly	9	9	No value	3.1	6.6	4.3	0.1	1	Q Health	
Magnesium		mg/L	Monthly	9	9	No value	1	2.7	1.5	0.1	1	Q Health	
Chloride		mg/L	Monthly	9	9	0	31	45	35	1	1	Q Health	
Fluoride	mg/L	Monthly	9	9	0	0.32	0.42	0.37	0.01	1	Q Health		
Nitrate	mg/L	Monthly	9	0	0	<0.5	<0.5	<0.5	0.5	1	Q Health		
Sulphate	mg/L	Monthly	9	1	0	<1	1.1	1	0.1	1	Q Health		
Iron	mg/l	Monthly	9	6	0	<0.01	0.06	0.03	0.01	1	Q Health		
Manganese	mg/L	Monthly	9	0	0	<0.01	<0.01	<0.01	0.01	1	Q Health		
Zinc	mg/L	Monthly	9	1	0	<0.01	0.07	0.02	0.01	1	Q Health		
Aluminium	mg/L	Monthly	9	0	0	<0.05	<0.05	<0.05	0.05	1	Q Health		
Boron	mg/L	Monthly	9	9	0	0.14	0.23	0.2	0.01	1	Q Health		
Copper	mg/L	Monthly	9	0	0	<0.03	<0.03	<0.03	0.03	1	Q Health		

Scheme name	Scheme component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples with values the LOR	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	LOR	Laboratory name	
Tier I	Reticulation	Chlorine (Free)	mg/L	Weekly	24	24	0	0.74	1.95	1.16	0.01	Q Health	
		Coliforms	CFU/100mL	Weekly	54	0	0	0	0	0	0	0	Q Health
		E. coli	CFU/100mL	Weekly	54	0	0	0	0	0	0	0	Q Health
		Trihalomethanes	µg/L	Seasonally/ Event	36	36	4	143	328	206	1	1	Q Health
		Atrazine	µg/L	Seasonally	5	5	0	0.14	0.21	0.18	0.01	0.01	Q Health
		Desethyl Atrazine	µg/L	Seasonally	5	3	No value	<0.02	0.05	0.03	0.01	0.01	Q Health
		Simazine	µg/L	Seasonally	5	0	0	<0.02	<0.02	<0.02	0.01	0.01	Q Health
		Tebuthiuron	µg/L	Seasonally	5	5	No value	0.07	0.11	0.09	0.01	0.01	Q Health
		Metolachlor	µg/L	Seasonally	5	4	0	<0.02	0.03	0.02	0.01	0.01	Q Health
		Conductivity	us/cm	Monthly	7	7	No value	421	904	633	1	1	Q Health
		pH	mg/L	Monthly	7	7	0	7.24	7.82	7.59	0.01	0.01	Q Health
		Total Hardness	mg CaCO3/L	Monthly	7	7	0	90	189	136	1	1	Q Health
		Alkalinity	mg CaCO3/L	Monthly	7	7	No value	95	173	133	1	1	Q Health
		Silica	mg/L	Monthly	7	7	0	8	16	12	1	1	Q Health
		Dissolved Solids	mg/L	Monthly	7	7	0	233	478	345	1	1	Q Health
		True Colour	hazen	Monthly	7	0	0	<1	<1	<1	1	1	Q Health
		Turbidity	NTU	Monthly	7	1	0	<1	2	1	1	1	Q Health
		Sodium	mg/L	Monthly	7	7	0	46	106	73	1	1	Q Health
		Potassium	mg/L	Monthly	7	7	No value	5	6.7	5.9	0.1	0.1	Q Health
		Calcium	mg/L	Monthly	7	7	No value	21	38	29.3	0.1	0.1	Q Health
		Magnesium	mg/L	Monthly	7	7	No value	8.8	23	15.3	0.1	0.1	Q Health
		Chloride	mg/L	Monthly	7	7	0	44	150	88	1	1	Q Health
		Fluoride	mg/L	Monthly	7	7	0	0.48	0.72	0.59	0.01	0.01	Q Health
		Nitrate	mg/L	Monthly	7	1	0	<0.5	0.6	0.5	0.5	0.5	Q Health
		Sulphate	mg/L	Monthly	7	7	0	30	57	42.1	0.1	0.1	Q Health
		Iron	mg/l	Monthly	7	0	0	<0.01	<0.01	<0.01	0.01	0.01	Q Health
		Manganese	mg/L	Monthly	7	0	0	<0.01	<0.01	<0.01	0.01	0.01	Q Health
		Zinc	mg/L	Monthly	7	1	0	<0.01	0.05	0.02	0.01	0.01	Q Health
	Aluminium	mg/L	Monthly	7	1	0	<0.05	0.09	0.06	0.05	0.05	Q Health	
	Boron	mg/L	Monthly	7	7	0	0.04	0.05	0.05	0.01	0.01	Q Health	
	Copper	mg/L	Monthly	7	0	0	<0.03	<0.03	<0.03	0.03	0.03	Q Health	
	Raw Water	Atrazine	µg/L	Seasonally	5	5	NA	0.24	0.37	0.3	0.01	0.01	Q Health
		Desethyl Atrazine	µg/L	Seasonally	5	5	NA	0.06	0.1	0.08	0.01	0.01	Q Health
		Simazine	µg/L	Seasonally	5	0	NA	<0.02	<0.02	<0.02	0.01	0.01	Q Health
		Tebuthiuron	µg/L	Seasonally	5	5	NA	0.09	0.12	0.1	0.01	0.01	Q Health
		Metolachlor	µg/L	Seasonally	5	5	NA	0.02	0.04	0.03	0.01	0.01	Q Health
		Conductivity	us/cm	Seasonally	5	5	NA	370	814	638	1	1	Q Health
		pH	mg/L	Seasonally	5	5	NA	7.97	8.27	8.12	0.01	0.01	Q Health
		Total Hardness	mg CaCO3/L	Seasonally	5	5	NA	107	191	157	1	1	Q Health
		Alkalinity	mg CaCO3/L	Seasonally	5	5	NA	106	169	142	1	1	Q Health
Silica		mg/L	Seasonally	5	5	NA	11	15	12	1	1	Q Health	
Dissolved Solids		mg/L	Seasonally	5	5	NA	203	425	321	1	1	Q Health	
True Colour		hazen	Seasonally	5	5	NA	6	11	8	1	1	Q Health	
Turbidity		NTU	Seasonally	5	5	NA	4	18	10	1	1	Q Health	
Sodium		mg/L	Seasonally	5	5	NA	30	88	65	1	1	Q Health	
Potassium		mg/L	Seasonally	5	5	NA	5.6	6.7	6.2	0.1	0.1	Q Health	
Calcium		mg/L	Seasonally	5	5	NA	24	39	32.8	0.1	0.1	Q Health	
Magnesium		mg/L	Seasonally	5	5	NA	11	23	18.2	0.1	0.1	Q Health	
Chloride		mg/L	Seasonally	5	5	NA	41	140	101	1	1	Q Health	
Fluoride		mg/L	Seasonally	5	5	NA	0.12	0.26	0.2	0.01	0.01	Q Health	
Nitrate		mg/L	Seasonally	5	5	NA	<0.5	<0.5	<0.5	0.5	0.5	Q Health	
Sulphate		mg/L	Seasonally	5	5	NA	11.6	32	21.4	0.1	0.1	Q Health	
Iron		mg/l	Seasonally	5	5	NA	<0.01	<0.01	<0.01	0.01	0.01	Q Health	
Manganese	mg/L	Seasonally	5	5	NA	<0.01	<0.01	<0.01	0.01	0.01	Q Health		
Zinc	mg/L	Seasonally	5	5	NA	<0.01	0.02	0.01	0.01	0.01	Q Health		
Aluminium	mg/L	Seasonally	5	5	NA	<0.05	0.06	0.05	0.05	0.05	Q Health		
Boron	mg/L	Seasonally	5	5	NA	0.04	0.05	0.05	0.01	0.01	Q Health		
Copper	mg/L	Seasonally	5	5	NA	<0.03	0.06	0.04	0.03	0.03	Q Health		

All samples taken tested negative for *E. coli* and below are summaries of the results of the reticulation *E. coli* verification monitoring program for all council water supply schemes.

Table 5.1 – 5.12 - Reticulation *E. coli* verification monitoring

Drinking water scheme: Anakie

Year	2015 - 2016											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	1	1	1	1	1	1	1	1	1	1	1	1
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						12	12	12	12	12	12	12
No. of failures for previous 12 month period						0	0	0	0	0	0	0
% of samples that comply						100%	100%	100%	100%	100%	100%	100.0%
Compliance with 98% annual value						YES	YES	YES	YES	YES	YES	YES

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

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.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Bauhinia - hall

Year	2015 - 2016											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	0	1	1	1	1	1	1	1	1	1	1	1
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						8	9	10	10	11	11	11
No. of failures for previous 12 month period						0	0	0	0	0	0	0
% of samples that comply						100%	100%	100%	100%	100%	100%	100.0%
Compliance with 98% annual value						YES	YES	YES	YES	YES	YES	YES

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

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.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Blackwater & Bluff Schemes

Year	2015 - 2016											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	9	10	9	9	8	3	3	4	4	5	6	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						82	79	83	83	82	82	77
No. of failures for previous 12 month period						0	0	0	0	0	0	0
% of samples that comply						100%	100%	100%	100%	100%	100%	100.0%
Compliance with 98% annual value						YES	YES	YES	YES	YES	YES	YES

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

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.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Capella Scheme

Year	2015 - 2016											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	4	4	4	4	2	4	1	1	1	1	1	1
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	15	18	21	24	25	22	12	12	12	12	12	12
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

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

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.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Comet Scheme

Year	2015 - 2016											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	1	1	1	1	1	1	1	1	1	1	1	1
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							9	10	10	11	12	12
No. of failures for previous 12 month period							0	0	0	0	0	0
% of samples that comply							100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value							YES	YES	YES	YES	YES	YES

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

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.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Dingo Scheme

Year	2015 - 2016											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	1	1	1	1	1	1	1	1	1	1	1	1
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							11	12	12	12	12	12
No. of failures for previous 12 month period							0	0	0	0	0	0
% of samples that comply							1	1	1	1	1	100.0%
Compliance with 98% annual value							YES	YES	YES	YES	YES	YES

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

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.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Duaringa Scheme

Year	2015 - 2016											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	1	1	1	1	1	1	1	1	1	1	1	1
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							11	12	12	12	12	12
No. of failures for previous 12 month period							0	0	0	0	0	0
% of samples that comply							100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value							YES	YES	YES	YES	YES	YES

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

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.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Emerald

Year	2015 - 2016											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	10	11	7	7	6	7	8	8	8	8	10	8
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						84	92	100	106	106	106	98
No. of failures for previous 12 month period						0	0	0	0	0	0	0
% of samples that comply						100%	100%	100%	100%	100%	100%	100.0%
Compliance with 98% annual value						YES	YES	YES	YES	YES	YES	YES

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

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.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Rolleston

Year	2015 - 2016											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	1	1	1	1	1	1	1	1	1	1	1	1
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						8	9	10	10	11	12	12
No. of failures for previous 12 month period						0	0	0	0	0	0	0
% of samples that comply						100%	100%	100%	100%	100%	100%	100.0%
Compliance with 98% annual value						YES	YES	YES	YES	YES	YES	YES

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

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.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Sapphire & Rubyvale Schemes

Year	2015 - 2016											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	8	10	6	6	6	7	8	8	8	8	10	8
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						67	75	83	89	89	95	93
No. of failures for previous 12 month period						0	0	0	0	0	0	0
% of samples that comply						100%	100%	100%	100%	100%	100%	100.0%
Compliance with 98% annual value						YES	YES	YES	YES	YES	YES	YES

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

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.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Springsure Scheme

Year	2015 - 2016											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	2	2	2	2	2	2	2	2	2	2	2	2
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						14	16	18	20	22	24	24
No. of failures for previous 12 month period						0	0	0	0	0	0	0
% of samples that comply						100%	100%	100%	100%	100%	100%	100.0%
Compliance with 98% annual value						YES	YES	YES	YES	YES	YES	YES

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

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.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Tieri Water Scheme

Year	2015 - 2016											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	7	6	7	4	6	3	2	1	5	4	4	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	40	41	44	43	45	44	50	46	47	47	46	47
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

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

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.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Appendix B – Implementation of the DWQMP risk management improvement program

Table 6.1 to 6.14 – Progress against the risk management improvement program in the approved DWQMP

RMIP Reference	Process Step	Risk Management Improvements			Status as at 30/06/2016
		Short term	Medium term	Long term	
	CHRC WIDE				
CHR 1, CHR 2	SWIM Local Project	Ensure all schemes (verification monitoring location) are represented in SWIM and all new data is captured	Work to fill any gaps in the data, collected between old DEWS database and new CHRC SWIM database and also KPI required data		Started and working - not fool proof and procedure/EHO input recommended

RMIP Reference	Process Step	Risk Management Improvements			Status as at 30/06/2016
		Short term	Medium term	Long term	
	ANAKIE				
ANA 1	Procedures		Procedures required for bore inspection, reservoir inspection, disinfection, mains breaks.		Disinfection drafted and being checked by operators for current accuracy

RMIP Reference	Process Step	Risk Management Improvements			Status as at 30/06/2016
		Short term	Medium term	Long term	
	BAUHINIA				
BAU 1	Procedures		Procedures required for bore inspection, reservoir inspection, disinfection, mains breaks.		Disinfection drafted and being checked by operators for current accuracy
BAU 1, BAU 2	Disinfection	roll out procedure	increase reporting into SWIM to monitor.		Daily rounds data being collected / Need to work on SWIM input
BAU 4			Investigate extra capacity online permanently		No use of extra tanks in the last 12 months
BAU 3		fill vacancies	plan for up skilling		Most operator roles filled - some support roles empty

RMIP Reference	Process Step	Risk Management Improvements			Status as at 30/06/2016
		Short term	Medium term	Long term	
	BLACKWATER				
BLK 1	Procedures		Procedures required for bore inspection, reservoir inspection, disinfection, mains breaks.		Coagulation, filtration and disinfection drafted and being checked by operators for current accuracy
BLK 1, BLK 2, BLK 3		data collection for procedure target ranges	procedures to be documented / New filter media		New filter media in
BLK 1, BLK 4		procedure being documented at present	permanganate		System commissioned
BLK 1, BLK 2		data collection for procedure target ranges	procedure to be documented with auto shutdown		Auto shutdown commissioned
BLK 1, BLK 2, BLK 3, BLK 6	Filtration	data collection for procedure target ranges	procedure to be documented / new media	auto backwash , shutdowns	New filter media in / drafted procedure / Auto backwash and shutdowns
BLK 1, BLK 2			ripen to waste		4 filters can ripen to waste - 2 others need to be investigated
BLK 1, BLK 2, BLK 7	Disinfection	data collection for procedure target ranges	procedure to be documented / WTP upgrades		WTP upgrades complete
BLK 1, BLK 7		chlorination procedure being documented at present	online monitoring and alarms		Online monitoring and alarms
BLK 15	System Wide		More operators to cert 3		At least 1 from BW go it so all now have cert 3
BLK 16			Plan for up skilling		Trainee at BW, extra operators know Bluff, Dingo and Duaringa plants now

RMIP Reference	Process Step	Risk Management Improvements			Status as at 30/06/2016
		Short term	Medium term	Long term	
	CAPELLA				
CAP 1	Procedures		Procedures required for pH correction, coagulation, filtration, disinfection, mains breaks, reservoir inspection, transfer procedure		Coagulation, filtration and disinfection drafted and being checked by operators for current accuracy
CAP 1, CAP 3, CAP 4	Catchment	chlorination procedure being documented at present	online monitoring	Media Replacement	Online chlorine and turbidity
CAP 12	Transfer from Tieri to Capella			monitor for THMs	Monitoring has started
CAP 1, CAP 17	System Wide	Continued procedure development	More operators to Cert 3 - purchase order issued		1 operator got cert 3 leaving just 1 of 3 to complete
CAP 18 CAP 19			Fill vacancies	Plan for up skilling	Most operator roles filled - some support roles empty

RMIP Reference	Process Step	Risk Management Improvements			Status as at 30/06/2016
		Short term	Medium term	Long term	
	COMET				
COM 1	Procedures		Procedures required for pH correction, coagulation, filtration, disinfection, mains breaks, reservoir inspection		Coagulation, filtration and disinfection drafted and being checked by operators for current accuracy
COM 1, COM 5, COM 6	Filtration	develop filtration procedure	auto backwash , shutdowns, to be investigated.	Investigate need to replace filter media	topped filter media and auto backwash and/or shutdown
COM 13	System Wide		More operators to cert 3 - purchase order issued		3 operators - one to Springsure
COM 14, COM 15			Fill vacancies	Plan for up skilling	Most operator roles filled - some support roles empty

RMIP Reference	Process Step	Risk Management Improvements			Status as at 30/06/2016
		Short term	Medium term	Long term	
	DINGO				
DIN 1	Procedures		Procedures required for coagulation, filtration, disinfection, mains breaks, reservoir inspection		Coagulation, filtration and disinfection drafted and being checked by operators for current accuracy
DIN 1, DIN 2, DIN 7		data collection for procedure target ranges	coagulation procedure to be documented	relocation and add extra check valve	Valves relocated and added
DIN 1, DIN 2, DIN 8	Coagulation	PLC replacement / data collection for procedure target ranges	Develop Coagulation procedure		PLC replaced
DIN 23			Investigate permanently disconnecting tanks		Disconnected
DIN 17				monitor for THMs	Monitoring has started
DIN 18	System Wide		More operators to cert 3		on the list for next session

RMIP Reference	Process Step	Risk Management Improvements			Status as at 30/06/2016
		Short term	Medium term	Long term	
	DUARINGA				
DUA 1	Procedures		Procedures required for coagulation, filtration, disinfection, mains breaks, reservoir inspection		Coagulation, filtration and disinfection drafted and being checked by operators for current accuracy
DUA 5	Raw Water Abstraction			Two large pumps and one small pump	Completed
DUA 18				monitor for THMs	Monitoring has started
DUA 19	System Wide		More operators to cert 3		Operator is on the list for next course

RMIP Reference	Process Step	Risk Management Improvements			Status as at 30/06/2016
		Short term	Medium term	Long term	
	EMERALD EAST NOGOA				
EMEN 1	Procedures		Procedures required for pH correction, coagulation, filtration, disinfection, mains breaks, reservoir inspection		Coagulation, filtration and disinfection drafted and being checked by operators for current accuracy
EMEN 10				monitor for THMs	Monitoring has started
EMEN 11	System Wide		More operators to cert 3 - purchase order issued		3 operators - one to Springsure

RMIP Reference	Process Step	Risk Management Improvements			Status as at 30/06/2016
		Short term	Medium term	Long term	
	EMERALD OPAL ST				
EMOS 1	Procedures		Procedures required for coagulation, reservoir inspection, mains breaks.		Coagulation, filtration and disinfection drafted and being checked by operators for current accuracy
EMOS 7			investigate installing actuators and ripen to waste		Completed
EMOS 17				monitor for THMs	Monitoring has started
EMOS 18	System Wide		More operators to cert 3 - purchase order issued		3 operators - one to Springsure
EMOS 19, EMOS 20		Fill vacancies	Plan for up skilling		Most operator roles filled - some support roles empty
EMOS 22			remove dead tree near 9ML clear water tank.		Completed

RMIP Reference	Process Step	Risk Management Improvements			Status as at 30/06/2016
		Short term	Medium term	Long term	
	ROLLESTON				
ROL 1	Procedures		Procedures required for bore inspection, reservoir inspection, PAC, coagulation, filtration, disinfection, mains breaks.		Coagulation, filtration and disinfection drafted and being checked by operators for current accuracy
ROL 2			test each bore for SWA and heavy metals.		checked all commissioned bores
ROL 1, ROL 4, ROL 5, ROL 6		manual turbidity testing at clarifier (ROL 4)	turbidity meters, jar testing, take spare pump (same pump for coagulant and disinfection)(ROL 5) / coagulation procedure to be documented	SCADA (ROL 6)	spare parts and pumps and manual turbidity taken but not in SWIM
ROL 8, ROL 9			calculation of CT, probably OK, but need to check.	pH adjustment to be considered.	concept design for pH
ROL 1, ROL 11	Bore Disinfection	Check configuration	develop procedure for bore operation only.		confirmed configuration
ROL 12			continue THM testing		Monitoring and reacting to trends continues
ROL 1, ROL 6, ROL 13	System Wide	Operator currently doing cert III	Developing procedures for WTP	SCADA	1 completed and other on the list for next course

RMIP Reference	Process Step	Risk Management Improvements			Status as at 30/06/2016
		Short term	Medium term	Long term	
	SAPPHIRE				
SAP 1	Procedures		Procedures required for bore inspection, reservoir inspection, disinfection, mains breaks.		Disinfection drafted and being checked by operators for current accuracy

RMIP Reference	Process Step	Risk Management Improvements			Status as at 30/06/2016
		Short term	Medium term	Long term	
	SPRINGSURE				
SPR 1	Procedures		Procedures required for bore inspection, reservoir inspection, disinfection, mains breaks.		Disinfection drafted and being checked by operators for current accuracy

RMIP Reference	Process Step	Risk Management Improvements			Status as at 30/06/2016
		Short term	Medium term	Long term	
	TIERI				
TIE 1	Procedures		Procedures required for pH correction, coagulation, filtration, disinfection, mains breaks, reservoir inspection		Coagulation, filtration and disinfection drafted and being checked by operators for current accuracy
TIE 1, TIE1 6	System Wide	Continued procedure development	More operators to cert 3 - purchase order issued		1 operator got cert 3 leaving just 1 of 3 to complete
TIE 17, TIE 18			Fill vacancies	Plan for up skilling	Most operator roles filled - some support roles empty