GLADSTONE
REGIONAL COUNCIL

ABN: 27 330 979 106

DRINKING WATER QUALITY MANAGEMENT PLAN REPORT

2014.15

SPID: 483

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Glossary of terms

ADWG 2004	Australian Drinking Water Guidelines (2004). Published by the National Health and Medical Research Council of Australia
ADWG 2011	Australian Drinking Water Guidelines (2011). Published by the National Health and Medical Research Council of Australia
E. coli	*Escherichia coli*, a bacterium which is considered to indicate the presence of faecal contamination and therefore potential health risk
GRC	Gladstone Regional Councl
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
WTP	Water Treatment Plant
<	Less than
>	Greater than

1. Introduction

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

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

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

2. Overview of Operations

The Gladstone Regional Council (GRC) provides water to its residents through four water schemes:

- **Lake Awoonga Scheme.** Under this scheme the Gladstone Area Water Board collects and treats raw water harvested from the Lake Awoonga Dam. The water is treated through a conventional water treatment plant before being sold to Gladstone Regional Council at a number of reservoir and supply points throughout Gladstone, Boyne Island, Tannum and Calliope. GRC distributes the water to approximately 21,300 connections.
- **Bororen Scheme.** GRC sources water from two production bores located to the west of Lagoon Creek within the Baffle Creek catchment. The groundwater is treated at the Bororen Water Treatment Plant (WTP) and disinfected before being reticulated to 90 connections within the Bororen Township.
- **Miriam Vale Scheme.** GRC sources water from Baffle Creek (~80%) and the Thorne Road bore. The water is mixed and treated through a conventional treatment process and disinfected before being reticulated to approximately 200 connections.
- **Agnes Water/1770 Scheme.** GRC sources water from seawater and 4 groundwater bores along Springs Road. The seawater is treated through a reverse osmosis desalination plant, and the bore water is treated through a conventional plant. Disinfected water is supplied to approximately 440 connections within the townships of Agnes Water and 1770. The treatment plants are operated and maintained under contract by Trility Pty Ltd.

GRC manages drinking water quality through an approved Drinking Water Quality Management Plan (DWQMP). This ensures that water supplied to its 22,400 customers is safe and public health is maintained.

3. Actions taken to implement the DWQMP

Progress in implementing the risk management improvement program

Management changes within GRC's Water Services team have impacted on progress against the risk management improvement program. With the appointment of a new Water Services Manager in May 2015, attention has been refocused on delivering improvements to reduce risks associated with water delivery activities.

Key initiatives implemented include reallocation of water service responsibilities to the Senior Engineer - Networks. Following on from the organisational restructure, a number of additional water quality related projects have been incorporated into the operational and capital budgets for 2015.16. This includes developing a water quality model for the four schemes, which will assist the operational team in identifying opportunities for improvement.

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

Revisions made to the operational monitoring program to assist in maintaining the compliance with water quality criteria[1] in verification monitoring.

Only minor changes have been made to the verification monitoring program. An additional sample point was added after a new reservoir was commissioned. Network and zoning audit and modelling will be completed next financial year (2015.16). A review of the monitoring programs will be completed as part of the audit and modelling project.

An inhouse Water Quality Data Management System has been built, which includes scheduling for verification monitoring (outward 2years), data recording, compliance verification (aesthetic and health based), and non-compliance notification. The System records all information and GPS data for each sample point and manages trend analysis.

Amendments made to the DWQMP

An internal review of the DWQMP is being carried out in the first half of the 2015.16 financial year. The review is not anticipated to result in any significant changes to the DWQMP.

4. Compliance with water quality criteria for drinking water

A summary of water quality performance over the four schemes is summarised in Tables 2 to 5 in Appendix A.

The Bororen, Miriam Vale and Agnes Water/1770 water supply schemes were fully compliant. Non-compliant water quality results were identified in the Lake Awoonga for E.coli and Fluoride.

Fluoride dosing only occurs in the Lake Awoonga Scheme. The dosing is carried out by the Gladstone Area Water Board with GRC having no control over the dosing system. The non-compliant results were for low fluoride levels, with no sample exceeding the ADWG levels for health (1.5mg/L). Gladstone Area Water Board advised that the low levels were due to the fluoride dosing system being taken off-line for repairs.

One sample within the Lake Awoonga Scheme returned an elevated E.Coli reading. See Section 5 below for details on the incident.

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

This financial year there was one (1) instance where the Regulator was notified under sections 102 or 102A of the Act. The notification 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. Zero (0) of these incidents required Gladstone Regional Council to issue a boil water or do not drink notice in the communities.

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

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

Incident Description: The non-compliance was a detection of *E. coli* from a routine sample taken on 27 January 2015 at sample point 032 (3 Ballook Street, Boyne Island). Three (3) *E. coli* organisms per 100 mL were detected, with a disinfection residual of 0.78 mg/L. Refer DWI-7-483-00013

Investigation and Cause: A retest was carried out at sample point 032 prior to any flushing occurring in the area. The retest returned a result of <1 mpn/100mL for both *E.coli* and Total Coliforms. Free Chlorine was 1.03 mg/L.

Microbiologcal results from across the network were all <1 mpn/100mL for both *E.coli* and Total Coliforms. All sample sites also had good residual free chlorine. This combined with the complying retest result confirmed there were no systemic issues within the reticulation supply.

An inspection of the sample point site was completed. The inspection noted that the connection fitting (for attaching the extended sample pipe and tap) was located very close to the ground and facing directly upwards. This allows approximately 20-50ml of water to sit in the connection fitting. The area under the fitting and adjoining boundary contain low points which allow water to pool and splash during heavy rain events as occurred prior to this routine monitoring. This combination increased the chance of environmental contamination.

On observing and questioning the sampler it also appeared that the fitting was not flushed on its own prior to installing the sample pipe, only after, potentially trapping contaminants within the thread of the fitting. It was also observed that while adequate flushing occurs at the sample point and the final outlet of the sample pipe/tap ensemble was flame sterilised adequately, no antibacterial surface disinfectant was used on the base fitting connections or inside of the sample pipe.

Corrective and Preventative Actions:

All sample pipe connection fittings were inspected across the Gladstone region. Similar connection fittings were identified and turned 90 degrees to prevent the fitting holding water and facilitating microbiological contaminants.

Sampling procedures updated to reflect additional disinfecting requirements. Refresher sampling procedure training provided for sampling staff.

Sampling crews supplied with 1L pump packs of liquid antibacterial surface.

Prescribed incidents or Events reported to the Regulator and corrective and preventive actions undertaken.

No prescribed incidents or events were reported to the Regulator.

6. Customer complaints related to water quality

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

	Suspected Illness	Discoloured water	Taste and odour	Total
Lake Awoonga Scheme	0	25	7	32
Agnes Scheme	0	1	1	2
Miriam vale Scheme	0	3		3
Bororen Scheme	0	0		
Total	**0**	**29**	**8**	**37**

Suspected Illness

Complaints are sometimes received from customers who suspect their water may be associated with an illness they are experiencing. Gladstone Regional Council investigates each complaint relating to alleged illness from our water quality, typically by testing various sampling points in reticulation for the presence of *E. coli*.

During 2014.15, there were no confirmed cases of illness arising from the water supply system.

Discoloured water

32 customer complaints were received across the four schemes related to dirty water. In response to dirty water complaints, Council staff flush the relevant mains until the water runs clear. Council staff also makes contact with the customer to advise them of the actions taken.

It is standard practice for Council to flush mains after breaks and in response to elevated water quality sample results.

Taste and odour

Gladstone Regional Council investigates taste and odour complaints and devise plans for prompt resolution, which may include flushing the reticulation system. Investigation of each complaint found no public health risks.

7. Findings and recommendations of the DWQMP auditor

The first audit of the DWQMP must be conducted by 1 November 2017. No audit has been carried out this period.

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

The first internal review of the DWQMP is due before 1 November 2015.

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.

Table 2 - Verification monitoring results - Lake Awoonga Scheme - Reticulation System

Parameter	Unit Of Measure	Test Type	Type	Total number of samples taken	Number of samples in which the parameter was detected	Number Non Compliance samples detected	Minimum concentration or count	Maximum concentration or count	Average (Mean) concentration or count
Alkalinity	mg/L $CaCO_3$	Internal Lab	Chemical	120	120	0	53	86	64.658
Aluminium	mg/L	ALS	Chemical	125	125	0	0.004	0.12	0.044
Antimony	mg/L	ALS	Chemical	9	0	0	0	0	0.000
Arsenic	mg/L	ALS	Chemical	9	1	0	0	0.001	0.000
Barium	mg/L	ALS	Chemical	9	9	0	0.01	0.013	0.011
Boron	mg/L	ALS	Chemical	9	0	0	0	0	0.000
Bromodichloromethane	mg/L	ALS	Disinfectant	126	126	0	0.006	0.021	0.013
Cadmium	mg/L	ALS	Chemical	9	0	0	0	0	0.000
Chlorate	mg/L	Lab	Disinfectant	124	121	0	0	1.74	0.262
Chloride	mg/L	Internal Lab	Chemical	227	226	0	0	37.4	23.977
Chromium	mg/L	ALS	Chemical	9	0	0	0	0	0.000
Copper	mg/L	ALS	Chemical	9	9	0	0.006	0.033	0.014
Dibromochloromethane	mg/L	ALS	Disinfectant	126	121	0	0	0.07	0.008
Dissolved Oxygen	mg/L	Internal Lab	Physical	129	129	0	7.52	9.32	8.505
E. coli	MPN/100mL	Internal Lab	Bacteriological	507	1	1	0	3	0.006
Electrical Conductivity	uS/cm	Internal Lab	Physical	627	627	0	1	333	280.214
Fluoride	mg/L	Internal Lab	Chemical	454	454	39	0.021	1.22	0.485
Free Chlorine	mg/L	Field	Disinfectant	632	632	0	0.05	2.7	1.074
HPC	MPN/mL	Internal Lab	Chemical	169	26	0	0	35	1.036
Iron	mg/L	ALS	Chemical	125	14	0	0	0.12	0.009
Lead	mg/L	ALS	Chemical	9	1	0	0	0.003	0.000
Total (Insoluble) Manganese	mg/L	Internal Lab	Chemical	125	22	0	0	0.039	0.001
Mercury	mg/L	ALS	Chemical	9	0	0	0	0	0.000

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Parameter	Unit Of Measure	Test Type	Type	Total number of samples taken	Number of samples in which the parameter was detected	Number Non Compliance samples detected	Minimum concentration or count	Maximum concentration or count	Average (Mean) concentration or count
Molybdenum	mg/L	ALS	Chemical	9	0	0	0	0	0.000
Nickel	mg/L	ALS	Chemical	9	0	0	0	0	0.000
Nitrate	mg/l	Internal Lab	Chemical	227	227	0	0.04	0.64	0.200
Nitrite	mg/l	Internal Lab	Chemical	227	0	0	0	0	0.000
pH		Internal Lab	Physical	636	636	0	7.01	8.98	7.664
Phosphate	mg/L	Internal Lab	Chemical	227	3	0	0	0.38	0.002
Selenium	mg/L	ALS	Chemical	9	0	0	0	0	0.000
Sulphate	mg/L	Internal Lab	Chemical	227	225	0	0	32	27.888
Temperature	oC	Field	Chemical	628	628	0	7.88	32.8	25.828
Total Coliforms(excluding E. coli)	cfu/100mL	Internal Lab	Bacteriological	508	17	0	0	95	0.443
Total Hardness	mg/L CaCO3	Internal Lab	Chemical	121	121	0	50	118	75.149
Tribromomethane	mg/L	ALS	Disinfectant	126	1	0	0	5	0.040
Trichloromethane	mg/L	ALS	Disinfectant	126	126	0	0.011	0.06	0.027
True Colour	HU	Internal Lab	Physical	627	391	0	0	5	0.852
Turbidity	NTU	Internal Lab	Physical	630	630	0	0.03	2.63	0.112
Zinc	mg/L	ALS	Chemical	9	7	0	0	0.023	0.010

Table 3 - Verification monitoring results - Bororen Scheme - Reticulation System

Parameter	Unit Of Measure	Test Type	Type	Total number of samples taken	Number of samples in which the parameter was detected	Number Non Compliance samples detected	Minimum concentration or count	Maximum concentration or count	Average (Mean) concentration or count
Alkalinity	mg/L CaCO3	Internal Lab	Chemical	12	12	0	196	249	225.000
Aluminium	mg/L	ALS	Chemical	12	1	0	0	0.01	0.001
Bromodichloromethane	mg/L	ALS	Disinfectant	12	12	0	0.006	0.01	0.008
Chlorate	mg/L	Lab	Disinfectant	11	9	0	0	0.911	0.334
Chloride	mg/L	Internal Lab	Chemical	4	4	0	120	151	135.250
Dibromochloromethane	mg/L	ALS	Disinfectant	12	12	0	0.011	0.024	0.019
Dissolved Oxygen	mg/L	Internal Lab	Physical	12	12	0	7.8	9.47	8.439
E. coli	MPN/100mL	Internal Lab	Bacteriological	12	0	0	0	0	0.000
Electrical Conductivity	uS/cm	Internal Lab	Physical	12	12	0	581	863	831.833
Free Chlorine	mg/L	Field	Disinfectant	12	12	0	0.53	1.48	0.996
HPC	MPN/mL	Internal Lab	Chemical	4	1	0	0	2	0.500
Iron	mg/L	ALS	Chemical	12	11	0	0	0.08	0.063
Total (Insoluble) Manganese	mg/L	Internal Lab	Chemical	12	12	0	0.001	0.007	0.003
Nitrate	mg/l	Internal Lab	Chemical	4	4	0	0.02	0.02	0.020
Nitrite	mg/l	Internal Lab	Chemical	4	0	0	0	0	0.000
pH		Internal Lab	Physical	12	12	0	7.51	8.03	7.614
Phosphate	mg/L	Internal Lab	Chemical	4	4	0	0.02	0.02	0.020
Sulphate	mg/L	Internal Lab	Chemical	4	4	0	3.4	4.8	3.925
Temperature	oC	Field	Chemical	12	12	0	23.3	36	29.983
Total Coliforms(excluding E. coli)	cfu/100mL	Internal Lab	Bacteriological	12	0	0	0	0	0.000
Total Hardness	mg/L CaCO3	Internal Lab	Chemical	11	11	0	271	350	316.364
Tribromomethane	mg/L	ALS	Disinfectant	12	12	0	0.01	0.026	0.018
Trichloromethane	mg/L	ALS	Disinfectant	12	0	0	0	0	0.000
True Colour	HU	Internal Lab	Physical	12	4	0	0	1	0.333
Turbidity	NTU	Internal Lab	Physical	12	12	0	0.24	0.99	0.693

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Table 4 - Verification monitoring results - Miriam Vale Scheme - Reticulation System

Parameter	Unit Of Measure	Test Type	Type	Total number of samples taken	Number of samples in which the parameter was detected	Number Non Compliance samples detected	Minimum concentration or count	Maximum concentration or count	Average (Mean) concentration or count
Alkalinity	mg/L CaCO3	Internal Lab	Chemical	34	34	0	46	90	66.088
Aluminium	mg/L	ALS	Chemical	33	33	0	0.01	0.08	0.033
Bromodichloromethane	mg/L	ALS	Disinfectant	33	33	0	0.007	0.031	0.019
Chlorate	mg/L	Lab	Disinfectant	32	31	0	0	2	0.708
Chloride	mg/L	Internal Lab	Chemical	12	12	0	43.7	139	93.408
Dibromochloromethane	mg/L	ALS	Disinfectant	33	27	0	0	0.023	0.009
Dissolved Oxygen	mg/L	Internal Lab	Physical	36	36	0	7.93	9.76	8.469
E. coli	MPN/100mL	Internal Lab	Bacteriological	36	0	0	0	0	0.000
Electrical Conductivity	uS/cm	Internal Lab	Physical	36	36	0	366	623	451.389
Free Chlorine	mg/L	Field	Disinfectant	35	35	0	0.03	2.1	0.878
HPC	MPN/mL	Internal Lab	Chemical	13	5	0	0	339	58.308
Iron	mg/L	ALS	Chemical	33	11	0	0	1.05	0.061
Total (Insoluble) Manganese	mg/L	Internal Lab	Chemical	33	27	0	0	0.151	0.019
Nitrate	mg/l	Internal Lab	Chemical	12	12	0	0.02	0.18	0.050
Nitrite	mg/l	Internal Lab	Chemical	12	0	0	0	0	0.000
pH		Internal Lab	Physical	36	36	0	6.7	7.53	7.211
Phosphate	mg/L	Internal Lab	Chemical	12	0	0	0	0	0.000
Sulphate	mg/L	Internal Lab	Chemical	12	12	0	1	2.87	2.266
Temperature	oC	Field	Chemical	36	36	0	0.16	30.9	25.121
Total Coliforms(excluding E. coli)	cfu/100mL	Internal Lab	Bacteriological	36	0	0	0	0	0.000
Total Hardness	mg/L CaCO3	Internal Lab	Chemical	34	34	0	37	89	57.735
Tribromomethane	mg/L	ALS	Disinfectant	33	1	0	0	0.005	0.000
Trichloromethane	mg/L	ALS	Disinfectant	33	33	0	0.017	0.074	0.042
True Colour	HU	Internal Lab	Physical	36	25	0	0	5	1.000
Turbidity	NTU	Internal Lab	Physical	39	38	0	0	6.1	0.817

Table 5 - Verification monitoring results - Agnes Water/1770 - Reticulation System

Parameter	Unit Of Measure	Test Type	Type	Total number of samples taken	Number of samples in which the parameter was detected	Number Non Compliance samples detected	Minimum concentration or count	Maximum concentration or count	Average (Mean) concentration or count
Alkalinity	mg/L CaCO3	Internal Lab	Chemical	26	26	0	37	54	45.692
Aluminium	mg/L	ALS	Chemical	26	26	0	0.02	0.1	0.046
Antimony	mg/L	ALS	Chemical	2	0	0	0	0	0.000
Arsenic	mg/L	ALS	Chemical	2	0	0	0	0	0.000
Barium	mg/L	ALS	Chemical	2	2	0	0.004	0.005	0.005
Boron	mg/L	ALS	Chemical	2	2	0	0.69	1	0.845
Bromodichloromethane	mg/L	ALS	Disinfectant	26	0	0	0	0	0.000
Cadmium	mg/L	ALS	Chemical	2	0	0	0	0	0.000
Chlorate	mg/L	Lab	Disinfectant	26	26	0	0.096	0.884	0.296
Chloride	mg/L	Internal Lab	Chemical	38	38	0	39	207	164.921
Chromium	mg/L	ALS	Chemical	2	1	0	0	0.002	0.001
Copper	mg/L	ALS	Chemical	2	2	0	0.006	0.007	0.007
Dibromochloromethane	mg/L	ALS	Disinfectant	26	0	0	0	0	0.000
Dissolved Oxygen	mg/L	Internal Lab	Physical	26	26	0	7.64	9.36	8.392
E. coli	MPN/100mL	Internal Lab	Bacteriological	154	0	0	0	0	0.000
Electrical Conductivity	uS/cm	Internal Lab	Physical	98	98	0	58	843	684.112
Free Chlorine	mg/L	Field	Disinfectant	98	98	0	0.81	1.56	1.041
HPC	MPN/mL	Internal Lab	Chemical	23	4	0	0	12	1.043
Iron	mg/L	ALS	Chemical	26	6	0	0	0.47	0.037
Lead	mg/L	ALS	Chemical	2	0	0	0	0	0.000
Total (Insoluble) Manganese	mg/L	Internal Lab	Chemical	26	23	0	0	0.018	0.003
Mercury	mg/L	ALS	Chemical	2	0	0	0	0	0.000
Molybdenum	mg/L	ALS	Chemical	2	0	0	0	0	0.000
Nickel	mg/L	ALS	Chemical	2	1	0	0	0.001	0.001
Nitrate	mg/l	Internal Lab	Chemical	38	37	0	0	0.36	0.081
Nitrite	mg/l	Internal Lab	Chemical	38	1	0	0	0.01	0.000
pH		Internal Lab	Physical	98	98	0	7.57	8.31	7.945
Phosphate	mg/L	Internal Lab	Chemical	38	5	0	0	0.04	0.004
Selenium	mg/L	ALS	Chemical	2	0	0	0	0	0.000

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Parameter	Unit Of Measure	Test Type	Type	Total number of samples taken	Number of samples in which the parameter was detected	Number Non Compliance samples detected	Minimum concentration or count	Maximum concentration or count	Average (Mean) concentration or count
Sulphate	mg/L	Internal Lab	Chemical	38	38	0	4	38.8	8.162
Temperature	oC	Field	Chemical	98	98	0	20.3	32.9	26.962
Total Coliforms(excluding E. coli)	cfu/100mL	Internal Lab	Bacteriological	154	3	0	0	3	0.032
Total Hardness	mg/L CaCO3	Internal Lab	Chemical	26	26	0	42	71	54.000
Tribromomethane	mg/L	ALS	Disinfectant	26	26	0	0.006	0.047	0.018
Trichloromethane	mg/L	ALS	Disinfectant	26	0	0	0	0	0.000
True Colour	HU	Internal Lab	Physical	98	27	0	0	3	0.357
Turbidity	NTU	Internal Lab	Physical	100	100	0	0.02	6.95	0.424
Zinc	mg/L	ALS	Chemical	2	2	0	0.006	0.027	0.017

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Table 6 - Reticulation *E. coli* verification monitoring - Lake Awoonga Scheme

Drinking water scheme: Lake Awoonga

Year	*2015*											
Month	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*
No. of samples collected	43	43	43	42	43	42						
No. of samples collected in which *E. coli* is detected (i.e. a failure)	1	0	0	0	0	0						
No. of samples collected in previous 12 month period	529	524	518	514	511	507	466	424	382	340	299	256
No. of failures for previous 12 month period	1	1	1	1	1	1	1	1	1	1	1	1
% of samples that comply	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.7%	99.7%	99.7%	99.6%
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 refered 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).

Table 7 - Reticulation *E. coli* verification monitoring - Bororen Scheme

Drinking water scheme: Bororen

Year	*2015*											
Month	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*
No. of samples collected	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						
No. of samples collected in previous 12 month period	14	14	14	13	12	12	11	10	9	8	7	6
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 refered 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).

Table 8 - Reticulation *E. coli* verification monitoring - Miriam Vale Scheme

Drinking water scheme: Miriam Vale

Year	*2015*											
Month	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*
No. of samples collected	3	3	3	3	3	3						
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0						
No. of samples collected in previous 12 month period	39	39	39	38	37	36	33	30	27	24	21	18
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 refered 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).

Table 9 - Reticulation *E. coli* verification monitoring - Agnes Water/1770

Drinking water scheme: Agnes Water/ Seventeen- Seventy

Year	*2015*											
Month	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*
No. of samples collected	12	12	12	12	12	12						
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0						
No. of samples collected in previous 12 month period	130	146	154	152	150	148	136	124	108	96	84	72
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 refered 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 10 – Progress against the risk management improvement program in the approved DWQMP

Item No.	Scheme Component	Sub-component	Action(s)	Target date/s	Status as at 30/7/15	Comments
1	Bororen	Catchment & Raw Water Bores	Investigate the boundaries of the Bororen bores recharge area to understand the risks better	Jun-16	Revised completion date with resources to be allocated in 2015.16.	Fourth year engineering student to commence investigations during Dec-Feb break.
2	Bororen	Catchment & Raw Water Bores	Investigate locations of dip sites within the catchment	Jun-16	Revised completion date with resources to be allocated in 2015.16.	Contaminated Land Register searches carried out for any known cattle dip sites (29/7/15). None found. Fourth year engineering student to carry out further investigations.
3	Bororen	Catchment & Raw Water Bores	Increase monitoring during rain events to understand risks better, include arsenic and Standing Water Level testing where feasible.	Dec-13 Ongoing	Commenced	Aaron added Lagoon Creek to the monitoring program - weekly until wet season - then during wet weather events. Start 2nd week of August 2015
4	Bororen	Catchment & Raw Water Bores	Review fire management practices around bore field, such mowing frequency	Dec-13 Ongoing	Completed	Note that the trees have been cleared prior to 2013. Whole lot of rock placed around the bores prior to November 2014 - withstood a grass fire. Access track gets mown.
5	Bororen	Catchment & Raw Water Bores	Review flood management practices including flood event monitoring and repair of damage	June-14 Ongoing	Completed	The weir is a local heritage(steam locomotions). Access issues to borefields is more due to problem with access from Agnes Waters. Bores capped to prevent water ingress. Cost would be in excess of $40K. No incidents reported following 1 in 2000 year event. Monitoring river height is not of value in managing.
6	Bororen	Catchment & Raw Water Bores	Review the operating philosophy of the WTP and look into options for optimisation	June-14 Ongoing	Partially completed	Manual completed by Trility. To be reviewed by new team and finalise operational manual for different water characteristics

Item No.	Scheme Component	Sub-component	Action(s)	Target date/s	Status as at 30/7/15	Comments
7	Bororen	Catchment & Raw Water Bores	Investigate through consultation with farmers and other land holders the presence of bores drawing from the aquifer and the condition of the bores. Consider mentoring the farmers on best practice to prevent aquifer contamination such as capping etc. and to ensure production security	Jun-16	Revised completion date with resources to be allocated in 2015.16.	
8	Bororen	Catchment & Raw Water Bores	Implement refurbishment of monitoring bore	Jun-16 for investigation	Delayed	Proposal was sought from external company to take over operation and maintenance of plant. Organisational restructure has resulted in a change in plan. Propose to use external resources to carry out task.
9	Bororen	Catchment & Raw Water Bores	Carry out an in-depth desk top study and review of the soil and catchment characteristics for Bororen	Jun-16	Revised completion date with resources to be allocated in 2015.16.	
10	Bororen	Oxidation	Develop SOP on changing of potassium permanganate dose and implement chain of authority process for changing of dose rate	Jun-16	Delayed	Proposal was sought from external company to take over operation and maintenance of plant. Organisational restructure has resulted in a change in plan. Propose to use external resources to carry out task.
11	Bororen	Oxidation	Implement supply agreement with chemical supplier	Dec-15	Commenced	Initial review of chlorine purchasing practices completed.
12	Bororen	Oxidation	Develop SOP for the correct storage and use of potassium permanganate	Jun-16	Delayed	Proposal was sought from external company to take over operation and maintenance of plant. Organisational restructure has resulted in a change in plan. Propose to use external resources to carry out task.
13	Bororen	All	Develop SOP for analysing SCADA trends	Jun-16	Delayed	Proposal was sought from external company to take over operation and maintenance of plant. Organisational restructure has resulted in a change in plan. Propose to use external resources to carry out task.

Item No.	Scheme Component	Sub-component	Action(s)	Target date/s	Status as at 30/7/15	Comments
14	Bororen	Clarification	Develop Plant Duty Checklist for operators to complete when attending site	Jun-16	Delayed	Proposal was sought from external company to take over operation and maintenance of plant. Organisational restructure has resulted in a change in plan. Propose to use external resources to carry out task.
15	Bororen	Clarification	Complete online turbidity meters installation for monitoring process steps performance	Dec-15	Commenced	Two meters have been purchased and are undergoing testing. Number and location to be reviewed
16	Bororen	Clarification	Develop SOP on changing of alum dose and implement chain of authority process for changing of dose rate	Jun-16	Delayed	Proposal was sought from external company to take over operation and maintenance of plant. Organisational restructure has resulted in a change in plan. Propose to use external resources to carry out task.
17	Bororen	Filtration	Review filter design and maintenance requirements	Jun-16	Delayed	Proposal was sought from external company to take over operation and maintenance of plant. Organisational restructure has resulted in a change in plan. Propose to use external resources to carry out task.
18	Bororen	All	Review WTP operating philosophy, including coagulant type and suitability	Jun-16	Delayed	Proposal was sought from external company to take over operation and maintenance of plant. Organisational restructure has resulted in a change in plan. Propose to use external resources to carry out task.
19	Bororen	Disinfection	Complete installation of online chlorine & pH meter	Dec-15	Commenced	Purchased & installed a chlorine meter which couldn't get to work.
20	Bororen	Catchment & Raw Water Bores	Register bores with EHP due to legal liability and possible supply issues as aquifer is not regulated.	Dec-15	Revised completion date with resources to be allocated in 2015.16.	Discuss with EHP long term water supply strategy
21	Bororen	Catchment & Raw Water Bores	Develop and implement a Catchment Management Plan	Dec-16	Revised completion date with resources to be allocated in 2015.16.	

Item No.	Scheme Component	Sub-component	Action(s)	Target date/s	Status as at 30/7/15	Comments
22	Bororen	Catchment & Raw Water Bores	Obtain independent water samples for each of the two production bores (GRC#1 and GRC#3). Conduct the standard water quality analysis to determine the extent of the variation between the two bores, on at least a monthly basis for two years.	Ongoing Dec-14	Commenced	September 2012: Included SWA for GRC#1 and GRC#3 in sampling schedule on a monthly basis. Review frequency
23	Bororen	Catchment & Raw Water Bores	Conduct testing of raw bore water for *Cryptosporidium* and *Giardia* at least quarterly. If detected testing interval should be increased to monthly.	Dec-15	Completed	September 2012: Included Crypto and Giardia for GRC#1 and GRC#3 in sampling schedule on a quarterly basis. Approximately 10 samples taken and nothing found - frequency to be reviewed by Aaron - maybe check after a flood event. Aaron to do a report up based on new literature and how to interpret the data.
24	Bororen	Catchment & Raw Water Bores	Unknown water quality of lagoon creek. Undertake investigation of water quality within Lagoon Creek, including Blue- green (cyanobacteria), herbicides and microbial analysis. Initially a detailed investigation is planned at multiple sampling locations to determine temporal and spatial variations.	Jun-16	In progress	September 2012: Identifying access areas. Talked to V. Struthers and he will find out where the creek is accessible by October 2012
25	Bororen	Catchment & Raw Water Bores	Establish and maintain regular contact with the owner of the immediate area surrounding the bore field (previously owned by Elders and operated as a tree farm). It is critical that the owner of this property is aware that the Bororen water supply is drawn from an aquifer beneath this property.	Jun-16	Revised completion date with resources to be allocated in 2015.16.	Add to stakeholder list
26	Bororen	All	Develop SOP for the chain authority in operating valves in the reticulation	Jun-16	Delayed	Proposal was sought from external company to take over operation and maintenance of plant. Organisational restructure has resulted in a change in plan. Propose to use external resources to carry out task.
27	All Schemes	All	Finalise Drinking Water Quality Policy Statement and put to Council for ratification	Dec-15	Delayed	Draft has been prepared and will be sent around
28	All Schemes	All	Develop Customer Service Standards for the whole of Gladstone Regional Council Water and Sewage	Dec-15	Delayed	Current Standards are for Gladstone City Council and were released in 2007

Item No.	Scheme Component	Sub-component	Action(s)	Target date/s	Status as at 30/7/15	Comments
29	All Schemes	All	Develop Emergency Management Plan with whole of council and sub plan specifically for WS	Sep-15	Underway for whole of Council	
30	All Schemes	All	Develop SOP for chemical acceptance and handling	Jun-14	Delayed	Proposal was sought from external company to take over operation and maintenance of plant. Organisational restructure has resulted in a change in plan. Propose to use external resources to carry out task.
31	All Schemes	All	Develop and implement chemical supplier agreements	Dec-15	Completed	Chlorine was signed in June 2015, Caustic, Alum and Polymers - purchased without agreement. Look to retender 2015.16.
32	All Schemes	All	Develop SOP for testing chemicals for quality	Dec-15	In progress	Chlorine suppliers charge $100 for a chemical analysis. Look at setting up monitoring program for each chemicals
33	All Schemes	All	Unable to maintain knowledge about historical water quality. All historic and ongoing water data should be collated and maintained in a spread sheet to enable ready data analysis (e.g. 90%ile). This would facilitate plotting of control graphs to enable efficient interpretation of water quality data.	Ongoing	In progress	Include all historical data that can be verified. Refer Task 35 and 74. Work commenced developing a database prior to 2012 to enable all water quality monitoring to be located in one area and reports generated.
34	All Schemes	All	Review operator training records and implement training where deemed necessary	Dec-15	In progress	Ongoing as part of biannual employee achievement reviews with input from Aaron and Reg services to audit. Training is developing training matrix.
35	All Schemes	All	Develop SOPs and review communication protocols	Jun-14	Delayed	Part of information management system. Refer Task 33 and 74
36	All Schemes	All	Review maintenance program and assets list	Dec-15	Delayed	Organisational changes have seen an asset officer join the water services team. This will be incorporated into new role.
37	All Schemes	All	Review mains repairs SOPs	Dec-15	In progress	
38	Miriam Vale	Catchment & Raw Water Bores	Undertake water quality determination upstream of the Baffle Creek water extraction area, taking into account the observations of the physical survey which will inform the types of parameters appropriate for testing.	Dec-15	PhD student aims to have completed by end of 2015.	Refer Task 49 To be included in research project conducted by CQU student's PHD project.

Item No.	Scheme Component	Sub-component	Action(s)	Target date/s	Status as at 30/7/15	Comments
39	Agnes Water / 1770	Stakeholder Engagement	Initiate and open communications with the Sunrise Development 1770	Jun-15	Delayed	Due to change in management
40	Lake Awoonga	Stakeholder Engagement	Finalise the agreement with GAWB relating to information sharing	Dec-15	In progress	Discussion being held regarding alignment
41	Lake Awoonga	Reticulation	Finalise investigations into the unexplained high pH readings that have been recorded for Boyne Island.	Dec-15	In progress	Small report to be prepared
42	Lake Awoonga	Reticulation	Review mains flushing program and ensure areas of concern regarding low free chlorine levels are included.	Jun-16	Delayed	Looking to engage WQ consultant in 2015.16 to model network for water quality issues. This will inform program.
43	All Schemes	Disinfection	Review result and investigate further to establish possible causesFurther detailed investigation including additional monitoring if requiredImplement best practice storage procedures to reduce impact of external influences such as temperature etc.Review and negotiate with supplier chemical characteristics to reduce formation of chlorateInvestigate and communicate with bulk water supplier to further possible reduction of chlorate received in bulk waterFurther discussions with the Office of the Water Supply Regulator in regards to notifiable concentration levels	Nov-15	Only issues noted at Mt Larcom	Aaron: Elite Chemicals have the tender and provide the chlorine fresh as they produce in Gladstone and supply to GAWB as well. Issues are with Bororen & Miriam Vale and we buy small quantities from local supplier.Outstanding actions - Audit on the turnover of chlorine from the suppliers in Bororen/Miriam Vale. We monitor for chlorate - no limits set in ADWG - but good practice suggests 0.7. Anne-Maree to be tasked with reviewing water quality data and quantify the extent of the problem. IF between the audit/data review there is a problem, investigate alternate supplies of Chlorine for Bororen and Miriam Vale.
44	All Schemes	All	Co-ordinate a program to add calibration data into H2OMAP software package to be able to reflect the existing conditions within the supply system	Jun-16	Delayed	Looking to engage WQ consultant in 2015.16 to model network for water quality issues. This will inform program.

Item No.	Scheme Component	Sub-component	Action(s)	Target date/s	Status as at 30/7/15	Comments
45	Bororen	Catchment & Raw Water Bores	Install a weather station including rain gauge, preferably with automatic logging capabilities and linked to the remote access SCADA system.		Completed	Meteorology weather stations have been installed by BOM. Rain guage installed at the Bororen bores. Works done about 3-4 years ago.
~~46~~	~~Bororen~~	~~Reticulation~~	~~Develop SOP for flushing and returning to service the reticulation system after a fire event which required raw water to be connected through the reticulation system~~	~~Dec-14~~	Completed	Cross connection removed
47	Bororen	Catchment & Raw Water Bores	Review monitoring program with relation to Bororen bores and consider implementing total petroleum hydrocarbon monitoring	Dec-15	Completed	Add to extra testing schedule - monitor for two years and then review
48	Miriam Vale	Catchment & Raw Water Bores	Conduct physical survey upstream of the Baffle Creek water extraction area to assess vegetation condition, bank stability and cattle/wild deer access locations.	Dec-15	In progress	Refer Task 38 To be included in research project conducted by CQU student's PHD project.
49	Miriam Vale	Catchment & Raw Water Bores	Undertake water quality determination upstream of the Baffle Creek water extraction area, taking into account the observations of the physical survey which will inform the types of parameters appropriate for testing.	Jul-16	In progress	Refer Task 38 To be included in research project conducted by CQU student's PHD project.
50	Miriam Vale	Catchment & Raw Water Bores	Further investigate the known occurrence and potential for toxicity of blue green algae (Cyanobacteria) with advice from local experts (e.g. Dr Larelle Fabbro, CQU and/or Howard Howell, Ecoscope).	Jul-16	In progress	Refer Task 38 To be included in research project conducted by CQU student's PHD project.
51	Miriam Vale	Catchment & Raw Water Bores	Develop and implement a Catchment Management Plan	Jun-16	Revised completion date with resources to be allocated in 2015.16.	Fourth year engineering student to commence investigations during Dec-Feb break.

Item No.	Scheme Component	Sub-component	Action(s)	Target date/s	Status as at 30/7/15	Comments
52	Miriam Vale	Catchment & Raw Water Bores	Investigate locations of dip sites within the catchment	Jul-16	Revised completion date with resources to be allocated in 2015.16.	Fourth year engineering student to commence investigations during Dec-Feb break.
53	Miriam Vale	Catchment & Raw Water Bores	Implement annual TPH monitoring	Dec-15	Completed	Add to extra testing schedule - monitor for two years and then review
54	Miriam Vale	Catchment & Raw Water Bores	Review monitoring program with relation to Miriam Vale raw water to enable better assessment of the risks	Jul-16	In progress	Included in research project conducted by CQU student's PHD project.
55	Miriam Vale	Catchment & Raw Water Bores	Distribute information pamphlets with annual rates notices to the community to educate the community on the importance of proper maintenance of septic tanks	Dec-15	In progress	Reviewing information for release via a fact sheet on the website
56	Miriam Vale	Catchment & Raw Water Bores	Consider undertaking a camera inspection of the bore to gain further information about bore construction and condition.	Oct-15	Delayed	Neels to look at what pumps have been upgraded in the last 3 years and see if condition assessments were done at the time. Do we carry spares
57	Miriam Vale	Catchment & Raw Water Bores	Obtain further information about the Thorne's bore aquifer from DERM. Consider registering the bore with DERM.	Jun-16	Revised completion date with resources to be allocated in 2015.16.	Student to do the research and investigate the issues with registering with DNR/EHP.
58	Miriam Vale	WTP	Complete the disconnection and blanking off of the raw water by pass.	Nov-16	In progress	Will be removed with upgrade of WTP - need to check the concept design
59	Miriam Vale	WTP	Finalise improvement strategies for Miriam Vale WTP and begin implementation of upgrades	Jun-14	In progress	Tenders released 18 September and close 1 October, with contract for WTP upgrade in November 2015.
60	Miriam Vale	Catchment & Raw Water Bores	*E. coli*, *Cryptosporidium* and *Giardia* testing to be implemented at least monthly for the raw waters of Baffle Creek and Thorne's Creek bore. The determination of other biological parameters such as *Salmonella* may also be considered.	Dec-15	Underway	Aaron to look for data which may have been collected by Andrea. If found review and determine required frequency. If none found by December 2015 will implement quarterly monitoring program for 12 months and then review the data.

Item No.	Scheme Component	Sub-component	Action(s)	Target date/s	Status as at 30/7/15	Comments
61	Miriam Vale	Catchment & Raw Water Bores	Implement annual radionuclide testing to assess the risk in Thorne's Road bore groundwater	Dec-16	Completed	Been included in the schedule - review in 2016 to see if necessary to continue monitoring
62	Agnes Water / 1770	Stakeholder Engagement	Establish legal documentation and/or Memorandum Of Understanding (MOU) with Sunrise@1770 Development regarding usage of water relating to management of bores to prevent contamination and managing water use to ensure viable ongoing use of aquifer.	Dec-15	Delayed	Something may be on ECM regarding Sunrise@1770 .
63	Agnes Water / 1770	Catchment & Raw Water Bores	Instigate annual inspection and water quality sampling of waste water treatment plants and septic tanks within the Cove Estate area.	Nov-15	In progress	Neels to confirm if they are part of the low pressure system. Anne Maree to review what other Councils/Water Authorities do when they have septics/package plants in their catchment. Requires additional funding and will depend on Council resolution
~~64~~	~~Agnes Water / 1770~~	~~Catchment & Raw Water Bores~~	~~Investigate options for upgrading the sewage system in Agnes Water and 1770~~	-	Completed	Agnes Water and Seventeen Seventy urban areas fully sewered - and new planning scheme addresses where new properties can be built etc
65	Agnes Water / 1770	Catchment & Raw Water Bores	Conduct water quality investigation of trenches and various ponds to include analysis for blue/green, arsenic and TPH in addition to standard parameters to determine temporal and rain event response.	Oct-15	In progress	Results of analysis to determine potential for contamination of aquifer. Appropriate remedial action to be taken may include decommissioning of trenches Refer Task 78. Anna to confirm with Trility if the trenches have been decommissioned
66	Agnes Water / 1770	Catchment & Raw Water Bores	Implement regular analysis of TPH in raw water	Oct-15	In progress	Anna to confirm if this is included in Trility contract
67	Agnes Water / 1770	WTP	Include THM's and Chlorates in monitoring program at WTP outlet	Oct-15	In progress	Anna to confirm if this is included in Trility contract
68	Agnes Water / 1770	WTP	*E. coli (monthly)*, *Cryptosporidium* and *Giardia* testing to be conducted at least quarterly for the raw and treated waters.	Oct-15	Completed	Monthly testing will commence in week 4 September 2012 for raw water, only. If detected in raw water treated water will be included in monitoring program - To review Trility monitoring program

Item No.	Scheme Component	Sub-component	Action(s)	Target date/s	Status as at 30/7/15	Comments
69	All Schemes	All	Review and update monitoring program for all schemes and all components	Oct-15	Delayed	Meeting scheduled for 15/9/15 to identify a strategy to review the monitoring program.
70	All Schemes	Disinfection	Implement upgrades of rechlorination facilities	Jul-16	In progress	Scope of works for the chlorine/water quality modelling within the system covers requirements for rechlorination
71	All Schemes	Reticulation	Review mains flushing program and ensure correct procedures and protocols are in place.	Nov-15	In progress	Neels has requested overseers to produce procedures and review the flushing program in parallel with the water quality modelling project.
72	All Schemes	All	Complete upgrade of all SCADA systems and components	Dec-14	In progress	New Miriam Vale WTP and interaction with GAWB
~~73~~	All Schemes	All	Review and update standard operating procedure for monitoring of drinking water for all schemes	Jun-16	Completed	Works were Completed - procedure decommissioned and contents divided between new SOPs, Laboratory Manual and Monitoring Program. Time to do another review
74	All Schemes	All	Review incident recording and response and records of actions undertaken. Review how changes are implemented to prevent reoccurrences.	Jun-16	In progress	Previous response: Water quality incidents are recorded in GRC's ECM system as well as reported to DEWS. Generally increased monitoring of the parameter of concern is initiated up and down stream immediately to locate the incident origin as well as appropriate corrective actions e.g.. Checking integrity of service reservoirs and/ or reticulation in affected area. A communication plan with all stakeholders is in place. The parameter of concern is then included in routine monitoring program to be able to judge if corrective measures are appropriate or not. Refer Task 33 and 35. Time to review
75	All Schemes	All	Review the risk methodology implemented including risk matrix and GRC's view on acceptable risk. As no "Extreme" or "High" consequence will result in an acceptable risk.	Oct-15	Ongoing	All future risk assessments will be carried out using the GRC risk matrix

Item No.	Scheme Component	Sub-component	Action(s)	Target date/s	Status as at 30/7/15	Comments
76	Agnes Water / 1770	All	Review communication between Trility and GRC and how GRC manages Trility and ensures they are operating as per contractual requirements and as per legislative requirements. Also look at the reporting of incidents between the two parties.		Completed	Monthly reports provided by Trility along with monthly and quarterly meetings where performance is discussed.
77	All Schemes	All	Implement document management system		Completed with ongoing improvements being implemented as technology changes	All documents in ECM or the cloud. Kiosks provided to allow field staff to access data.
78	Agnes Water / 1770	Catchment & Raw Water Bores	Consider filling in trenches	Dec-14	In progress	Refer Task 65
79	Agnes Water / 1770	Catchment & Raw Water Bores	Review fire management practices around bore field, such mowing frequency	Oct-15	In progress	Anna to check contract to see who is responsible for maintaining the bores & Consult with stakeholders and develop notification plan
80	Agnes Water / 1770	Catchment & Raw Water Bores	Review flood management practices	Dec-14	Completed	Trility has a monitoring process in place and if water quality deteriorates they can swap to desal
81	All Schemes	All	Review reservoirs inspection and maintenance program	Dec-15	In progress	Develop program for reservoirs - inspections/maintenance
82	Miriam Vale	Catchment & Raw Water Bores	Review fire management practices around bore field, such mowing frequency	Oct-15	In progress	Bore low risk, part of maintenance activities. Review Baffle Creek infrastructure. To be included in check list for recording purposes. Neels to confirm it is still happening
83	Miriam Vale	Catchment & Raw Water Bores	Review flood management practices including flood event monitoring of bores	Nov-16	In progress	Remote control as part of WTP upgrade and review design of infrastructure
84	Miriam Vale	WTP	Develop Plant Duty Checklist for operators to complete when attending site	Dec-15	In progress	Propose to upgrade WTP - Neels to complete an interim one as new plant not up and running until 2016.

Item No.	Scheme Component	Sub-component	Action(s)	Target date/s	Status as at 30/7/15	Comments
85	Miriam Vale	Reservoir	Complete repairs to reservoir hatch	Oct-15		Neels to check
86	Lake Awoonga	Reticulation	Develop SOP regarding the operation and chain of authority for operating zone valves within the system	Ongoing	In progress	Chain of authority done Neels to check if documented. Zone valves are marked in red for do not operate. Continuing to review and update - look at removing valves and replacing with hydrants on either side
87	All Schemes	All	Review security for infrastructure, in particular look at reservoirs	Nov-15	In progress	Include on checklist and inspection report
~~88~~	~~All Schemes~~	~~All~~	~~Develop SOP for mains flushing~~	~~Dec-14~~	~~Completed~~	~~See Task 71~~
~~88~~	~~All Schemes~~	~~All~~	~~Develop backflow register and inspection program~~	~~Dec-14~~	~~Completed~~	~~Plumbing Section - completed and done electronically on i-pad and in conquest.~~
89	Agnes Water / 1770	WTP	Monitor and collect water quality data on the desalination plant when it becomes operational. Re-assess risks when data is available.	Dec-15	In progress	Trility to review