

# **Drinking Water Quality Management Plan (DWQMP) report 2015-2016**

## **Livingstone Shire Council**

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## Glossary of terms

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

## 1. Introduction

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

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

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

## 2. Overview of Operations (optional)

## 3. Actions taken to implement the DWQMP

The DWQMP has been implemented via adherence to all requirements contained under the plan.

## 4. Compliance with water quality criteria for drinking water

See Appendix A - Table 2 & Table 3

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

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

## 6. Customer complaints related to water quality

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

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

**Table 1 - complaints about water quality**

Scheme No	Scheme Location	Suspected Illness	Discoloured Water	Taste & Odour	Total
Scheme 1	Capricorn Coast	0	34	13	47
Scheme 2	Mt.Charlton	0	10	0	10
Scheme 3	Nerimbera	0	0	0	0
Scheme 4	Marlborough	0	0	0	0
<b>Total</b>		<b>0</b>	<b>44</b>	<b>13</b>	<b>57</b>

### **Suspected Illness**

Livingstone Shire Council investigates each complaint relating to alleged illness from our water quality, typically by testing the customers tap and closest reticulation sampling point for presence of E.coli.

From 1/7/2015 to 30/6/2016 inclusive there were nil confirmed cases of illness arising from the drinking water supply system.

### **Discoloured water**

A total of forty four (44) complaints related to discoloured water were received from within Livingstone Shire Council from 1/7/2015 to 30/6/2016 inclusive.

From Table 1 of these forty four (44) complaints thirty four (34) were in the Capricorn Coast Drinking Water Supply Scheme & ten (10) were in the Mt Charlton Drinking Water Supply Scheme. In both of these schemes water mains were flushed in the adjacent local area network.

With regard to the Mt Charlton Drinking Water Supply Scheme, Livingstone Shire Council has no control over water quality as received from Bulk Water Service Provider Rockhampton Regional Council.

### **Taste and odour**

From Table 1 thirteen (13) customer complaints were related to taste & odour. Thirteen (13) complaints were from residents in the Capricorn Coast Drinking Water Supply Scheme. Complaints were investigated and where necessary appropriate testing was performed.

## 7. Findings and recommendations of the DWQMP auditor

There were nil Audits conducted in the period 1/7/2015 to 30/6/2016.

The first regular audit of the Drinking Water Quality Management Plan must be conducted by 31 August 2017.

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

Livingstone Shire Council reviewed the current DWQMP and there were no changes to be made.

Informed Water Supply and Regulation of this outcome (via email) on 5/9/2016.

## 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.

The verification monitoring was carried out as per the program stated in the DWQMP.

**Table 2 - Verification monitoring results**

Scheme Name	Scheme Location	System Component	Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples in which parameter was detected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Limit of Reporting	Laboratory Name
Capricorn Coast	Kelly's Offstream Storage	Source Water	Nitrate	mg/L	Monthly	12	12	0	<0.01	<0.01	<0.01	0.01	ALS Group
			Sulphate	mg/L	Monthly	12	12	0	2	4	2.6	1	ALS Group
			Fluoride (naturally occurring)	mg/L	Monthly	12	12	0	<0.1	0.2	<0.1	0.1	ALS Group
			Aluminium (acid-soluble)	mg/L	Monthly	11	11	0	0.012	0.035	0.023	0.005	ALS Group
			Copper	mg/L	Monthly	11	11	0	0.081	0.418	0.226	0.001	ALS Group
			Iron	mg/L	Monthly	11	11	0	0.57	2.2	1.001	0.05	ALS Group
			Lead	mg/L	Monthly	11	11	0	<0.001	0.001	<0.001	0.001	ALS Group
			Manganese	mg/L	Monthly	11	11	0	0.005	0.036	0.014	0.001	ALS Group
			Zinc	mg/L	Monthly	11	11	0	<0.005	0.016	0.009	0.005	ALS Group
			pH	pH Units	Monthly	12	12	0	6.53	7.22	6.82	0.01	ALS Group
			Turbidity	NTU	Monthly	12	12	0	1.4	4.4	2.4	0.1	ALS Group
			Alkalinity (Total as CaCO <sub>3</sub> )	mg/L	Monthly	12	12	0	3	12	7.75	1	ALS Group
			Calcium	mg/L	Monthly	12	12	0	1	2	1.25	1	ALS Group
			Chloride	mg/L	Monthly	12	12	0	25	34	29.83	1	ALS Group
			Colour (True)	PCU	Monthly	12	12	0	30	100	46.23	1	ALS Group
			Conductivity	µS/cm	Monthly	12	12	0	127	148	138.5	1	ALS Group
Magnesium	mg/L	Monthly	12	12	0	2	3	2	1	ALS Group			
Potassium	mg/L	Monthly	12	12	0	<1	<1	<1	1	ALS Group			

Capricorn Coast	Kelly's Offstream Storage	Source Water	Sodium	mg/L	Monthly	12	12	0	17	22	19.5	1	ALS Group
			Total Dissolved Solids (TDS)	mg/L	Monthly	12	12	0	73	98	86	5	ALS Group
			Hardness (Total as CaCO3)	mg/L	Monthly	12	12	0	11	17	11.8	1	ALS Group
			Total Organic Carbon (TOC)	mg/L	Quarterly	3	3	0	4	4	4	1	ALS Group
			Arsenic	mg/L	Yearly	1	1	0	<0.001	<0.001	<0.001	0.001	ALS Group
			Cadmium	mg/L	Yearly	1	1	0	<0.0001	<0.0001	<0.0001	0.0001	ALS Group
			Chromium	mg/L	Yearly	1	1	0	<0.001	<0.001	<0.001	0.001	ALS Group
			Nickel	mg/L	Yearly	1	1	0	<0.001	<0.001	<0.001	0.001	ALS Group
			Selenium	mg/L	Yearly	1	1	0	<0.01	<0.01	<0.01	0.01	ALS Group
			Mercury	mg/L	Yearly	1	1	0	<0.0001	<0.0001	<0.0001	0.0001	ALS Group
	Woodbury Water Treatment Plant	Water Treatment Plant	Nitrate	mg/L	Monthly	12	12	0	<0.01	0.06	0.036	0.01	ALS Group
			Sulphate	mg/L	Monthly	12	12	0	23	30	25.4	1	ALS Group
			Trihalomethanes (THMs) (Total)	ug/L	Quarterly	4	4	0	45	56	49.25	5	ALS Group
			Fluoride (naturally occurring)	mg/L	Monthly	12	12	0	<0.1	<0.1	<0.1	0.1	ALS Group
			Aluminium (acid-soluble)	mg/L	Monthly	11	11	0	0.032	0.111	0.072	0.005	ALS Group
			Copper	mg/L	Monthly	11	11	0	0.001	0.005	0.002	0.001	ALS Group
			Iron	mg/L	Monthly	11	11	0	<0.05	<0.05	<0.05	0.05	ALS Group
			Lead	mg/L	Monthly	11	11	0	<0.001	<0.001	<0.001	0.001	ALS Group
			Manganese	mg/L	Monthly	11	11	0	<0.001	0.011	0.005	0.001	ALS Group
			Zinc	mg/L	Monthly	11	11	0	<0.005	<0.005	<0.005	0.005	ALS Group
			pH	pH Units	Monthly	12	12	0	6.87	7.61	7.19	0.01	ALS Group
			Turbidity	NTU	Monthly	12	12	0	0.2	2.3	0.86	0.1	ALS Group
			Alkalinity (Total as CaCO3)	mg/L	Monthly	12	12	0	10	48	20.3	1	ALS Group
			Calcium	mg/L	Monthly	12	12	0	10	12	10.75	1	ALS Group
			Chloride	mg/L	Monthly	12	12	0	27	36	32	1	ALS Group
			Colour (True)	PCU	Monthly	12	12	0	2	5	3	1	ALS Group
			Conductivity	µS/cm	Monthly	12	12	0	200	225	209	1	ALS Group
Magnesium	mg/L	Monthly	12	12	0	2	3	2	1	ALS Group			
Nitrite	mg/L	Monthly	12	12	0	<0.01	0.04	<0.01	0.01	ALS Group			
Potassium	mg/L	Monthly	12	12	0	<1	<1	<1	1	ALS Group			
Sodium	mg/L	Monthly	12	12	0	22	28	23.8	1	ALS Group			
Total Dissolved Solids (TDS)	mg/L	Monthly	12	12	0	110	151	128	5	ALS Group			
Hardness (Total as CaCO3)	mg/L	Monthly	12	12	0	33	42	35	1	ALS Group			

Capricorn Coast	Woodbury Water Treatment Plant	Water Treatment Plant	Total Organic Carbon (TOC)	mg/L	Quarterly	4	4	0	2	2	2	1	ALS Group
			Arsenic	mg/L	Yearly	1	1	0	<0.001	<0.001	<0.001	0.001	ALS Group
			Cadmium	mg/L	Yearly	1	1	0	<0.0001	<0.0001	<0.0001	0.0001	ALS Group
			Chromium	mg/L	Yearly	1	1	0	<0.001	<0.001	<0.001	0.001	ALS Group
			Nickel	mg/L	Yearly	1	1	0	<0.001	<0.001	<0.001	0.001	ALS Group
			Selenium	mg/L	Yearly	1	1	0	<0.01	<0.01	<0.01	0.01	ALS Group
			Mercury	mg/L	Yearly	1	1	0	<0.0001	<0.0001	<0.0001	0.0001	ALS Group
			Chlorine (free)	mg/L	Daily	359	359	0	1.34	2.23	1.75	0.01	Inhouse- Telemetry
			pH	pH Units	Daily	359	359	0	6.95	7.45	7.26	0.01	Inhouse- Telemetry
			Turbidity	NTU	Daily	354	354	0	0.35	0.94	0.42	0.1	Inhouse- Telemetry
		Reticulation	Escherichia coli (E.coli)	MPN/100mL	Weekly	183	0	0	<1	<1	<1	1	Ecoscope Environmental
			Chlorine (free)	mg/L	Weekly	169	169	0	0	1.64	0.64	0.01	Inhouse
			pH	pH Units	Weekly	169	169	0	6.7	8.6	7.89	0.01	Inhouse
			Turbidity	NTU	Weekly	169	169	0	0.09	4.67	0.41	0.1	Inhouse
Total Trihalomethanes (Schofield Pde Nth)	µg/L		Quarterly	4	4	0	189	229	201	5	ALS Group		
Total Trihalomethanes (Pacific Heights)	µg/L		Quarterly	4	4	0	126	172	150	5	ALS Group		
Total Trihalomethanes (The Caves)	µg/L		Quarterly	4	4	0	94	177	137	5	ALS Group		
Total Trihalomethanes (Nerimbera)	µg/L		Quarterly	3	3	0	65	112	85	5	ALS Group		
Marlborough	Marlborough Water Treatment Plant	Source Water	Nitrate	mg/L	Monthly	11	11	0	0.47	0.55	0.5	0.01	ALS Group
			Sulphate	mg/L	Monthly	11	11	0	20	26	23	1	ALS Group
			Fluoride (naturally occurring)	mg/L	Monthly	11	11	0	0.1	0.2	0.13	0.1	ALS Group
			Aluminium (acid-soluble)	mg/L	Monthly	10	10	0	<0.005	0.006	<0.005	0.005	ALS Group
			Copper	mg/L	Monthly	10	10	0	<0.001	0.013	0.006	0.001	ALS Group
			Iron	mg/L	Monthly	10	10	0	<0.05	<0.05	<0.05	0.05	ALS Group
			Lead	mg/L	Monthly	10	10	0	<0.001	<0.001	<0.001	0.001	ALS Group
			Manganese	mg/L	Monthly	10	10	0	<0.001	0.001	<0.001	0.001	ALS Group
			Zinc	mg/L	Monthly	10	10	0	<0.005	0.027	0.019	0.005	ALS Group
			pH	pH Units	Monthly	11	11	0	7.74	8.42	8.12	0.01	ALS Group
			Turbidity	NTU	Monthly	11	11	0	0.2	3.3	1.04	0.1	ALS Group
			Alkalinity (Total as CaCO3)	mg/L	Monthly	11	11	0	422	483	454	1	ALS Group
			Calcium	mg/L	Monthly	11	11	0	20	25	23	1	ALS Group
			Chloride	mg/L	Monthly	11	11	0	167	186	178	1	ALS Group
Colour (True)	PCU	Monthly	11	11	0	2	5	3	1	ALS Group			



Marlborough	Marlborough Water Treatment Plant	Source Water	Conductivity	µS/cm	Monthly	11	11	0	973	1340	1278	1	ALS Group
			Magnesium	mg/L	Monthly	11	11	0	88	117	101	1	ALS Group
			Nitrite	mg/L	Monthly	11	11	0	<0.01	<0.01	<0.01	0.01	ALS Group
			Potassium	mg/L	Monthly	11	11	0	<1	1	1	1	ALS Group
			Sodium	mg/L	Monthly	11	11	0	92	123	106	1	ALS Group
			Total Dissolved Solids (TDS)	mg/L	Monthly	11	11	0	687	737	714	5	ALS Group
			Hardness (Total as CaCO3)	mg/L	Monthly	11	11	0	412	544	474	1	ALS Group
			Total Organic Carbon (TOC)	mg/L	Quarterly	4	4	0	<1	14	7.6	1	ALS Group
			Arsenic	mg/L	Yearly	1	1	0	0.002	0.002	0.002	0.001	ALS Group
			Cadmium	mg/L	Yearly	1	1	0	<0.0001	<0.0001	<0.0001	<0.0001	ALS Group
			Chromium	mg/L	Yearly	1	1	0	0.005	0.005	0.005	0.001	ALS Group
			Nickel	mg/L	Yearly	1	1	0	0.003	0.003	0.003	0.001	ALS Group
			Selenium	mg/L	Yearly	1	1	0	<0.01	<0.01	<0.01	0.01	ALS Group
			Mercury	mg/L	Yearly	1	1	0	<0.0001	<0.0001	<0.0001	0.0001	ALS Group
		Water Treatment Plant	Nitrate	mg/L	Monthly	11	11	0	0.27	0.34	0.29	0.01	ALS Group
			Sulphate	mg/L	Monthly	11	11	0	6	10	7.5	1	ALS Group
			Trihalomethanes (THMs) (Total)	µg/L	Quarterly	4	4	0	<5	<5	<5	5	ALS Group
			Fluoride	mg/L	Monthly	11	11	0	<0.1	<0.1	<0.1	0.1	ALS Group
			Aluminium (acid-soluble)	mg/L	Monthly	10	10	0	<0.005	<0.005	<0.005	0.005	ALS Group
			Copper	mg/L	Monthly	10	10	0	0.003	0.07	0.014	0.001	ALS Group
			Iron	mg/L	Monthly	10	10	0	<0.005	<0.005	<0.005	0.05	ALS Group
			Lead	mg/L	Monthly	10	10	0	<0.001	0.002	<0.001	0.001	ALS Group
			Manganese	mg/L	Monthly	10	10	0	<0.001	0.008	0.0045	0.001	ALS Group
			Zinc	mg/L	Monthly	10	10	0	0.006	0.028	0.012	0.005	ALS Group
			pH	pH Units	Monthly	11	11	0	7.6	8.4	8.07	0.01	ALS Group
			Turbidity	NTU	Monthly	11	11	0	0.3	1.8	0.7	0.1	ALS Group
			Alkalinity (Total as CaCO3)	mg/L	Monthly	11	11	0	155	182	172	1	ALS Group
Calcium	mg/L	Monthly	11	11	0	7	9	8	1	ALS Group			
Chloride	mg/L	Monthly	11	11	0	62	72	67	1	ALS Group			
Colour (True)	PCU	Monthly	11	11	0	2	5	3	1	ALS Group			
Conductivity	µS/cm	Monthly	11	11	0	416	561	527	1	ALS Group			
Magnesium	mg/L	Monthly	11	11	0	31	40	35	1	ALS Group			
Nitrite	mg/L	Monthly	11	11	0	<0.01	<0.01	<0.01	0.01	ALS Group			

Marlborough	Marlborough Water Treatment Plant	Water Treatment Plant	Potassium	mg/L	Monthly	11	11	0	<1	<1	<1	1	ALS Group
			Sodium	mg/L	Monthly	11	11	0	42	56	47	1	ALS Group
			Total Dissolved Solids (TDS)	mg/L	Monthly	11	11	0	273	335	304	5	ALS Group
			Hardness (Total as CaCO3)	mg/L	Monthly	11	11	0	145	187	166	1	ALS Group
			Total Organic Carbon (TOC)	mg/L	Quarterly	4	4	0	<1	1	0.5	1	ALS Group
			Arsenic	mg/L	Yearly	1	1	0	<0.001	<0.001	<0.001	0.001	ALS Group
			Cadmium	mg/L	Yearly	1	1	0	<0.0001	<0.0001	<0.0001	0.0001	ALS Group
			Chromium	mg/L	Yearly	1	1	0	0.002	0.002	0.002	0.001	ALS Group
			Nickel	mg/L	Yearly	1	1	0	<0.001	<0.001	<0.001	0.001	ALS Group
			Selenium	mg/L	Yearly	1	1	0	<0.01	<0.01	<0.01	0.01	ALS Group
			Mercury	mg/L	Yearly	1	1	0	<0.0001	<0.0001	<0.0001	0.0001	ALS Group
			Chlorine (free)	mg/L	Daily	356	356	0	0.37	0.97	0.80	0.01	Inhouse- Telemetry
			pH	pH Units	Daily	365	365	0	7.02	7.63	7.28	0.01	Inhouse- Telemetry
			Turbidity	NTU	Daily	148	148	0	0.01	0.35	0.10	0.1	Inhouse- Telemetry
Conductivity	µS/cm	Daily	365	365	0	236	448	362	1	Inhouse- Telemetry			
Reticulation	Escherichia coli (E.coli)	MPN/100mL	Weekly	20	0	0	<1	<1	<1	1	Ecoscope Environmental		
	Chlorine (free)	mg/L	Weekly	21	21	0	0.38	1.05	0.7	0.01	Inhouse		
	pH	pH Units	Weekly	20	20	0	6.7	7.9	7.4	0.01	Inhouse		
	Turbidity	NTU	Weekly	20	20	0	0.08	10.3	0.67	0.1	Inhouse		
	Total Trihalomethanes (School)	µg/L	Quarterly	4	4	0	<5	7	6	5	ALS Group		
Glenmore (RRC)	Glenmore Water Treatment Plant (RRC)	Source Water	Nitrate	mg/L	Monthly	12	12	0	<0.005	0.38	0.205	0.005	Symbio Laboratories
			Sulphate	mg/L	Monthly	12	12	0	<5.0	18	11.7	5	Symbio Laboratories
			Fluoride	mg/L	Monthly	12	12	0	<0.05	0.12	0.097	0.05	Symbio Laboratories
			Aluminium (acid-soluble)	mg/L	Monthly	12	12	0	<0.01	2.4	0.34	0.01	Symbio Laboratories
			Copper	mg/L	Monthly	10	10	0	0.00074	0.017	0.00398	0.0005	Symbio Laboratories
			Iron	mg/L	Monthly	10	10	0	0.033	5.3	1.197	0.005	Symbio Laboratories
			Lead	mg/L	Monthly	10	10	0	<0.0001	0.0061	0.0015	0.0001	Symbio Laboratories
			Manganese	mg/L	Monthly	10	10	0	0.02	0.34	0.07	0.0005	Symbio Laboratories
			Zinc	mg/L	Monthly	10	10	0	0.0019	0.092	0.0233	0.0005	Symbio Laboratories
			pH	pH Units	Monthly	12	12	0	6.26	8.71	7.71	0.01	Symbio Laboratories
			Turbidity	NTU	Monthly	12	12	0	3	983	109.8	0.1	Symbio Laboratories
			Alkalinity (Total as CaCO3)	mg/L	Monthly	12	12	0	51	131	87	1	Symbio Laboratories
Calcium	mg/L	Monthly	12	12	0	2.2	23	15.2	0.1	Symbio Laboratories			

Glenmore (RRC)	Glenmore Water Treatment Plant (RRC)	Source Water	Chloride	mg/L	Monthly	12	12	0	21	85	53	2	Symbio Laboratories
			Colour (True)	PCU	Monthly	12	12	0	2	200	55	2	Symbio Laboratories
			Conductivity	µS/cm	Monthly	12	12	0	160	480	317	1	Symbio Laboratories
			Magnesium	mg/L	Monthly	12	12	0	1.5	19	11.4	0.05	Symbio Laboratories
			Nitrite	mg/L	Monthly	12	12	0	<0.005	1	0.254	0.005	Symbio Laboratories
			Potassium	mg/L	Monthly	12	12	0	1.2	5.3	3.98	0.2	Symbio Laboratories
			Sodium	mg/L	Monthly	12	12	0	2.8	42	26.65	1	Symbio Laboratories
			Total Dissolved Solids (TDS)	mg/L	Monthly	12	12	0	120	340	253	2	Symbio Laboratories
			Hardness (Total as CaCO3)	mg/L	Monthly	12	12	0	12	140	86	1	Symbio Laboratories
			Total Organic Carbon (TOC)	mg/L	Quarterly	5	5	0	7.1	13	9.4	1	Symbio Laboratories
			Arsenic	mg/L	Yearly	1	1	0	0.0019	0.0019	0.0019	0.0005	Symbio Laboratories
			Cadmium	mg/L	Yearly	1	1	0	<0.0001	<0.0001	<0.0001	0.0001	Symbio Laboratories
			Chromium	mg/L	Yearly	1	1	0	<0.0005	<0.0005	<0.0005	0.0005	Symbio Laboratories
			Nickel	mg/L	Yearly	1	1	0	0.0018	0.0018	0.0018	0.0001	Symbio Laboratories
		Selenium	mg/L	Yearly	1	1	0	<0.0005	<0.0005	<0.0005	0.0005	Symbio Laboratories	
		Mercury	mg/L	Yearly	1	1	0	<0.0001	<0.0001	<0.0001	0.0001	Symbio Laboratories	
		Water Treatment Plant	Nitrate	mg/L	Monthly	12	12	0	0.049	0.44	0.181	0.005	Symbio Laboratories
			Sulphate	mg/L	Monthly	12	12	0	<5.0	17	12	5	Symbio Laboratories
			Trihalomethanes (THMs) (Total)	µg/L	Quarterly	3	3	0	43	71	54	4	Symbio Laboratories
			Fluoride	mg/L	Monthly	12	12	0	<0.05	0.11	0.09	0.05	Symbio Laboratories
			Aluminium (acid-soluble)	mg/L	Monthly	12	12	0	<0.010	0.12	0.04	0.01	Symbio Laboratories
			Copper	mg/L	Monthly	10	10	0	0.0033	0.012	0.0063	0.0005	Symbio Laboratories
			Iron	mg/L	Monthly	10	10	0	<0.005	0.0053	<0.005	0.005	Symbio Laboratories
			Lead	mg/L	Monthly	10	10	0	0.00037	0.0035	0.00124	0.0001	Symbio Laboratories
			Manganese	mg/L	Monthly	10	10	0	<0.0005	0.0028	0.0013	0.0005	Symbio Laboratories
			Zinc	mg/L	Monthly	10	10	0	0.0017	0.042	0.0079	0.0005	Symbio Laboratories
			pH	pH Units	Monthly	12	12	0	6.25	7.79	7.38	0.01	Symbio Laboratories
			Turbidity	NTU	Monthly	12	12	0	<0.1	0.4	0.18	0.1	Symbio Laboratories
Alkalinity (Total as CaCO3)	mg/L		Monthly	12	12	0	47	108	79	1	Symbio Laboratories		
Calcium	mg/L		Monthly	12	12	0	12	21	17	0.1	Symbio Laboratories		
Chloride	mg/L	Monthly	12	12	0	29	100	60	2	Symbio Laboratories			
Colour (True)	PCU	Monthly	12	12	0	<2	2	<2	2	Symbio Laboratories			

			Conductivity	µS/cm	Monthly	12	12	0	190	480	329	1	Symbio Laboratories
			Magnesium	mg/L	Monthly	12	12	0	4.1	19	11.35	0.05	Symbio Laboratories
			Nitrite	mg/L	Monthly	12	12	0	<0.005	1.1	0.37	0.005	Symbio Laboratories
			Potassium	mg/L	Monthly	12	12	0	2.2	5	4.1	0.2	Symbio Laboratories
			Sodium	mg/L	Monthly	12	12	0	14	41	27	1	Symbio Laboratories
			Total Dissolved Solids (TDS)	mg/L	Monthly	12	12	0	100	310	208	2	Symbio Laboratories
			Hardness (Total as CaCO3)	mg/L	Monthly	12	12	0	47	130	89	1	Symbio Laboratories
			Total Organic Carbon (TOC)	mg/L	Quarterly	5	5	0	2	4.4	3.2	1	Symbio Laboratories
			Arsenic	mg/L	Yearly	1	1	0	0.00075	0.00075	0.00075	0.0005	Symbio Laboratories
			Cadmium	mg/L	Yearly	1	1	0	<0.0001	<0.0001	<0.0001	0.0001	Symbio Laboratories
			Chromium	mg/L	Yearly	1	1	0	<0.0005	<0.0005	<0.0005	0.0005	Symbio Laboratories
			Nickel	mg/L	Yearly	1	1	0	0.001	0.001	0.001	0.0001	Symbio Laboratories
			Selenium	mg/L	Yearly	1	1	0	<0.0005	<0.0005	<0.0005	0.0005	Symbio Laboratories
			Mercury	mg/L	Yearly	1	1	0	<0.0001	<0.0001	<0.0001	0.0001	Symbio Laboratories

**Table 3 - Reticulation *E. coli* verification monitoring**

The Public Health Regulation 2005 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:	Capricorn Coast - Saint Faith's System												
	Year	2015						2016					
		Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
No. of samples collected		4	5	3	0	5	0	2	3	0	3	1	2
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		51	51	52	50	46	47	42	40	39	39	33	30
No. of failures for previous 12 month period		0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply (monthly samples)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value (previous 12 months)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Drinking Water Scheme:	Capricorn Coast - Taranganba and Lammermoor System												
	Year	2015						2016					
		Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
No. of samples collected		4	5	4	4	0	4	2	2	4	0	3	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		51	51	52	51	51	47	46	44	42	41	37	36
No. of failures for previous 12 month period		0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply (monthly samples)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value (previous 12 months)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Drinking Water Scheme:	Capricorn Coast - Emu Park and Keppel Sands System												
	Year	2015						2016					
		Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
No. of samples collected		8	10	7	4	5	4	4	5	4	3	4	3
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		99	99	101	99	95	94	88	84	81	75	70	66
No. of failures for previous 12 month period		0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply (monthly samples)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value (previous 12 months)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Drinking Water Scheme:	Capricorn Coast - Rockhampton to Yeppoon Pipeline												
	Year	2015						2016					
	Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
<b>No. of samples collected</b>		4	5	3	2	3	2	2	2	2	1	2	1
<b>No. of samples collected in which E. coli is detected</b> (i.e. a failure)		0	0	0	0	0	0	0	0	0	0	0	0
<b>No. of samples collected in previous 12 month period</b>		12	16	21	24	26	29	31	33	33	34	34	32
<b>No. of failures for previous 12 month period</b>		0	0	0	0	0	0	0	0	0	0	0	0
<b>% of samples that comply</b> (monthly samples)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Compliance with 98% annual value</b> (previous 12 months)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Drinking Water Scheme:	Nerimbera												
	Year	2015						2016					
	Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
<b>No. of samples collected</b>		4	5	3	1	1	1	1	1	1	1	1	0
<b>No. of samples collected in which E. coli is detected</b> (i.e. a failure)		0	0	0	0	0	0	0	0	0	0	0	0
<b>No. of samples collected in previous 12 month period</b>		25	29	34	37	38	39	40	37	34	30	27	24
<b>No. of failures for previous 12 month period</b>		0	0	0	0	0	0	0	0	0	0	0	0
<b>% of samples that comply</b> (monthly samples)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Compliance with 98% annual value</b> (previous 12 months)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Drinking Water Scheme:	Mount Charlton System												
	Year	2015						2016					
	Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
<b>No. of samples collected</b>		4	5	3	1	1	1	0	2	1	0	1	1
<b>No. of samples collected in which E. coli is detected</b> (i.e. a failure)		0	0	0	0	0	0	0	0	0	0	0	0
<b>No. of samples collected in previous 12 month period</b>		51	51	52	50	47	44	40	36	34	30	26	23
<b>No. of failures for previous 12 month period</b>		0	0	0	0	0	0	0	0	0	0	0	0
<b>% of samples that comply</b> (monthly samples)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Compliance with 98% annual value</b> (previous 12 months)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Drinking Water Scheme: Year Month	Marlborough Reticulation											
	2015						2016					
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
<b>No. of samples collected</b>	3	3	2	0	1	1	1	1	1	1	1	1
<b>No. of samples collected in which E. coli is detected</b> (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
<b>No. of samples collected in previous 12 month period</b>	42	41	40	37	33	30	26	25	24	22	20	18
<b>No. of failures for previous 12 month period</b>	0	0	0	0	0	0	0	0	0	0	0	0
<b>% of samples that comply</b> (monthly samples)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Compliance with 98% annual value</b> (previous 12 months)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

## Appendix B – Implementation of the DWQMP Risk Management Improvement Program

Livingstone Shire Council is currently addressing the requirements of the DWQMP Risk Improvement Program and is developing a number of procedures. In addition to this Livingstone Shire Council is working in conjunction with Bulk Water Service Provider Rockhampton Regional Council to install continuous online monitoring at the boundary change over point on the Rockhampton to Yeppoon Pipeline.