

Drinking Water Quality Management Plan (DWQMP) report

2018/2019

FLINDERS SHIRE COUNCIL

SPID: 51

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Hughenden, QLD, 4821

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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 Flinders 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.

The Flinders Shire drinking water service covers the following schemes:

- Hughenden
- Prairie
- Torrens Creek

Stamford is not a registered scheme.

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 https://www.dnrme.qld.gov.au/data/assets/pdf_file/0003/1409142/dwqmp-report-guidance-note.pdf

2. Actions taken to implement the DWQMP

Implementation of the DWQMP carried on throughout the 2018/2019 financial year.

Progress in implementing the risk management improvement program

Flinders Shire Council's DWQMP includes a Risk Management Improvement Program (RMIP) which aims to manage any unacceptable residual risks identified by the hazard/risk assessment and improve parts of the Plan where deficiencies in information did not allow the criteria to be completely and accurately addressed.

The RMIP identifies areas where Council could implement changes to manage hazards/risks and uncertainties. The program outlines interim, short-term and long-term actions for Council to implement in order to manage the identified hazards/risks and uncertainties.

Appendix B contains an excerpt from the RMIP table in Council's DWQMP and addresses the actions in the DWQMP that have been completed, currently in progress or have been deferred.

3. Compliance with water quality criteria for drinking water

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

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

This financial year there were three notifications to the Regulator. One notification was for E.coli (this was quickly resolved as the investigation revealed the sample had been taken from a private tap that ran from a private water tank. The remaining 2 notifications were for a detection of lead and manganese at a tap in Prairie. The tap was used for irrigation purposes and no other tap in Prairie returned elevated samples.

5. Customer complaints related to water quality

Flinders 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.

	Suspected Illness	Discoloured water	Taste and odour	Total
Hughenden	0	0	1	1
Prairie	0	0	0	0
Torrens Creek	0	0	0	0

Suspected Illness

During 2018/2019 there were no complaints regarding illness arising from the water supply system.

Taste and Odour

One complaint was received in relation to the water smelling and tasting like rotten eggs. The area in question is situated on a Dead end Main; tests in the area also show that Sulphate levels are under 100 mg/L. Plumbers are flushing the mains regularly so that the water remains oxygenated.

6. DWQMP review outcomes

The amended DWQMP was approved on the 01/03/2018. Pursuant to section 99(2) b and 106 of the Act, regular reviews of the approved amended Drinking Water Quality Management Plan must be undertaken at specified intervals. The plan is to be reviewed by 31 May 2020.

7. DWQMP audit

Pursuant to section 99(2) C of the Act, regular audits of the approved DWQMP are required at specific intervals. The second audit of Flinders Shire's DWQMP must be completed by 31 May 2021. Further audits are required to be completed every four (4) years from that date.

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*.

Table 2 - Verification monitoring results – Hughenden Source Water (raw water)

Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
Aluminium	mg/L	4 times a year	14	0	<0.0030	0.0040	0.0040	FSS Health Support Qld
Antimony	mg/L	4 times a year	14	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Arsenic	mg/L	4 times a year	14	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Barium	mg/L	4 times a year	14	0	0.0330	0.1100	0.1100	FSS Health Support Qld
Beryllium	mg/L	4 times a year	14	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Bismuth	mg/L	4 times a year	14	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Boron	mg/L	4 times a year	14	0	0.0680	0.0820	0.0820	FSS Health Support Qld
Cadmium	mg/L	4 times a year	14	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Chromium	mg/L	4 times a year	14	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Cobalt	mg/L	4 times a year	14	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Copper	mg/L	4 times a year	14	0	0.0010	0.0030	0.0030	FSS Health Support Qld
Iron	mg/L	4 times a year	14	0	0.0110	1.3000	1.3000	FSS Health Support Qld
Lead	mg/L	4 times a year	14	0	0.0001	0.0005	0.0005	FSS Health Support Qld
Mercury	mg/L	4 times a year	14	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Manganese	mg/L	4 times a year	14	0	0.0008	0.0880	0.0880	FSS Health Support Qld & In-house
Molybdenum	mg/L	4 times a year	14	0	0.0001	0.0002	0.0002	FSS Health Support Qld
Nickel	mg/L	4 times a year	14	0	0.0001	0.0013	0.0013	FSS Health Support Qld
Selenium	mg/L	4 times a year	14	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Silver	mg/L	4 times a year	14	0	0.0010	0.0010	0.0010	FSS Health Support Qld
Strontium	mg/L	4 times a year	14	0	0.0610	0.1900	0.1900	FSS Health Support Qld
Thallium	mg/L	4 times a year	14	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Tin	mg/L	4 times a year	14	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Titanium	mg/L	4 times a year	14	0	0.0010	0.0010	0.0010	FSS Health Support Qld
Uranium	mg/L	4 times a year	14	0	0.0001	0.0001	0.0001	FSS Health Support Qld

Vanadium	mg/L	4 times a year	14	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Zinc		4 times a year	14	0	0.0010	0.0230	0.0230	FSS Health Support Qld
Conductivity	mg/L	4 times a year	7	0	0.0000	1170.0000	1170.0000	FSS Health Support Qld
pH	mg/L	4 times a year	7	0	7.2100	8.2300	8.2300	FSS Health Support Qld
Total Hardness	mg/L	4 times a year	7	0	8.8000	18.0000	18.0000	FSS Health Support Qld
Temporary Hardness	mg/L	4 times a year	7	0	8.8000	18.0000	18.0000	FSS Health Support Qld
Alkalinity	mg/L	4 times a year	7	0	207.0000	220.0000	220.0000	FSS Health Support Qld
Residual Alkalinity	mg/L	4 times a year	7	0	3.9000	4.0000	4.0000	FSS Health Support Qld
Silica	mg/L	4 times a year	7	0	16.0000	778.0000	18.0000	FSS Health Support Qld
TDI	Hazen	4 times a year	7	0	592.0000	805.0000	805.0000	FSS Health Support Qld
TDS	NTU	4 times a year	7	0	481.0000	695.0000	695.0000	FSS Health Support Qld
True Colour	mg/L	4 times a year	7	0	1.0000	1.0000	3.0000	FSS Health Support Qld
Turbidity	mg/L	4 times a year	7	0	1.0000	250.0000	1.0000	FSS Health Support Qld
Sodium	mg/L	4 times a year	7	0	180.0000	250.0000	250.0000	FSS Health Support Qld
Potassium	mg/L	4 times a year	7	0	1.8000	5.3000	2.7000	FSS Health Support Qld
Calcium	mg/L	4 times a year	7	0	2.6000	4.2000	5.3000	FSS Health Support Qld
Magnesium	mg/L	4 times a year	7	0	0.5000	0.7000	1.2000	FSS Health Support Qld
Hydrogen	mg/L	4 times a year	7	0	0.0000	268.0000	0.0000	FSS Health Support Qld
Bicarbonate	mg/L	4 times a year	7	0	247.0000	247.0000	268.0000	FSS Health Support Qld
Carbonate	mg/L	4 times a year	7	0	0.2000	2.6000	2.6000	FSS Health Support Qld
Hydroxide	mg/L	4 times a year	7	0	0.0000	130.0000	0.0000	FSS Health Support Qld
Chloride	mg/L	4 times a year	7	0	91.0000	130.0000	130.0000	FSS Health Support Qld
Fluoride	mg/L	4 times a year	7	0	0.0800	1.0000	0.1300	FSS Health Support Qld
Nitrate				0	0.5000	140.0000	1.0000	FSS Health Support Qld
Sulphate				0	63.0000	170.0000	170.0000	FSS Health Support Qld
Gross Alpha Activity	Bq/L	Twice a year	8	0	<0.03	0.07±0.05	0.045	FSS Health Support Qld
K40 Corrected Beta Activity	Bq/L	Twice a year	8	0	0.04	0.2±0.2	0.08875	FSS Health Support Qld

Table 3: Verification Monitoring for Pesticides - Hughenden Source water (raw water)

ParameterER	Units	Frequency of Sampling	Total No. Samples collected	No. of samples exceeding water quality criteria	Min	Max	Mean	Laboratory name
Aldrin	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Dieldrin	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total Aldrin & Dieldrin	µg/L	4 times a year	8	0	<0.2	<0.2	<0.2	FSS Health Support Qld
Chlordane cis	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Chlordane trans	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total Chlordane	µg/L	4 times a year	8	0	<0.2	<0.2	<0.2	FSS Health Support Qld
DDD (pp)	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
DDE (pp)	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
DDT (op)	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
DDT (pp)	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total DDT	µg/L	4 times a year	8	0	<0.4	<0.4	<0.4	FSS Health Support Qld
Total Dicofol	µg/L	4 times a year	8	0	<1.5	<1.5	<1.5	FSS Health Support Qld
a-Endosulfan	µg/L	4 times a year	8	0	<0.5	<0.5	<0.5	FSS Health Support Qld
b-Endosulfan	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Endosulfan Sulfate	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total Endosulfan	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Heptachlor	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Heptachlor Epoxide	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total Heptachlor	µg/L	4 times a year	8	0	<0.2	<0.2	<0.2	FSS Health Support Qld
Lindane (g-HCH)	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Methoxychlor	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Oxychlordane	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Azinphos-methyl	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Bromophos-ethyl	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Carbophenothion	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Chlorfenvinphos	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Chlorpyrifos	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Diazinon	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld

Dichlorvos	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Dimethoate	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Omethoate	µg/L	4 times a year	8	0	<0.2	<0.2	<0.2	FSS Health Support Qld
Total Dimethoate	µg/L	4 times a year	8	0	<0.3	<0.3	<0.3	FSS Health Support Qld
Disulfoton	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Ethion	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Ethoprophos	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fenamiphos	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fenchlorphos	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fenitrothion	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fenthion (methyl)	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Malathion (Maldison)	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Methidathion	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Mevinphos	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Monocrotophos	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Parathion (ethyl)	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Parathion-methyl	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Pirimiphos-methyl	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Profenofos	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Pyrazophos	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Sulprofos	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Temephos	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Terbufos	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Tetrachlorvinphos	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Ametryn	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Amitraz	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Atrazine	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Bromacil	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Diclofop-methyl	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fluometuron	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Haloxypop-2-etotyl	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Haloxypop-methyl	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld

Hexazinone	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Metolachlor	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Metribuzin	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Molinate	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Pendimethalin	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Propanil	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Propazine	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Simazine	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Terbutylazine	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Terbutryn	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Trifluralin	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Captan	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Carbaryl	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fipronil	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Piperonyl Butoxide	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Pirimicarb	µg/L	4 times a year	8	0	<0.2	<0.2	<0.2	FSS Health Support Qld
Propargite	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Propiconazole	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Triadimefon	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total Triadimefon	µg/L	4 times a year	8	0	<0.3	<0.3	<0.3	FSS Health Support Qld
Bioresmethrin	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Cyfluthrin	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Cypermethrin	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Deltamethrin	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fenvalerate	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Permethrin	µg/L	4 times a year	8	0	<0.1	<0.1	<0.1	FSS Health Support Qld
2,4-D	µg/L	4 times a year	8	0	<0.02	<0.02	<0.02	FSS Health Support Qld
2,4-DP (Dichlorprop)	µg/L	4 times a year	8	0	<0.05	<0.05	<0.05	FSS Health Support Qld
Ametryn	µg/L	4 times a year	8	0	<0.01	<0.01	<0.01	FSS Health Support Qld
Asulam	µg/L	4 times a year	8	0	<0.05	<0.1	0.075	FSS Health Support Qld
Bromacil	µg/L	4 times a year	8	0	<0.02	<0.02	<0.02	FSS Health Support Qld

Bromoxynil	µg/L	4 times a year	8	0	<0.02	<0.02	<0.02	FSS Health Support Qld
Dalapon (2,2-DPA)	µg/L	4 times a year	8	0	<0.02	<0.02	<0.02	FSS Health Support Qld
Diazinon	µg/L	4 times a year	8	0	<0.01	<0.01	<0.01	FSS Health Support Qld
Dicamba	µg/L	4 times a year	8	0	<0.2	<1	<0.6	FSS Health Support Qld
Diuron	µg/L	4 times a year	8	0	<0.02	<0.02	<0.02	FSS Health Support Qld
Fipronil	µg/L	4 times a year	8	0	<0.02	<0.02	<0.02	FSS Health Support Qld
Fipronil Desulfinyl	µg/L	4 times a year	8	0	<0.02	<0.02	<0.02	FSS Health Support Qld
Fipronil Sulfide	µg/L	4 times a year	8	0	<0.01	<0.01	<0.01	FSS Health Support Qld
Fipronil Sulfone	µg/L	4 times a year	8	0	<0.01	<0.01	<0.01	FSS Health Support Qld
Flamprop-methyl	µg/L	4 times a year	8	0	<0.01	<0.01	<0.01	FSS Health Support Qld
Haloxypop (acid)	µg/L	4 times a year	8	0	<0.02	<0.02	<0.02	FSS Health Support Qld
Hexazinone	µg/L	4 times a year	8	0	<0.01	<0.01	<0.01	FSS Health Support Qld
Imazapyr	µg/L	4 times a year	8	0	<0.02	<0.02	<0.02	FSS Health Support Qld
MCPA	µg/L	4 times a year	8	0	<0.01	<0.01	<0.01	FSS Health Support Qld
Metsulfuron methyl	µg/L	4 times a year	8	0	<0.02	<0.1	<0.05	FSS Health Support Qld
Napropamide	µg/L	4 times a year	8	0	<0.01	<0.01	<0.01	FSS Health Support Qld
Picloram	µg/L	4 times a year	8	0	<0.2	<0.2	<0.2	FSS Health Support Qld
Propachlor	µg/L	4 times a year	8	0	<0.02	<0.02	<0.02	FSS Health Support Qld
Total Diuron	µg/L	4 times a year	8	0	<0.06	<0.06	<0.06	FSS Health Support Qld
Triclopyr	µg/L	4 times a year	8	0	<0.05	<0.05	<0.05	FSS Health Support Qld

Table 4: Verification monitoring and operational results - Hughenden Reticulation

Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
Aluminium	mg/L	4 times a year	18	0	0.0030	0.0050	0.0031	FSS Health Support Qld
Antimony	mg/L	4 times a year	18	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Arsenic	mg/L	4 times a year	18	0	<0.0001	0.0005	0.0001	FSS Health Support Qld
Barium	mg/L	4 times a year	18	0	0.0460	0.0900	0.0527	FSS Health Support Qld
Beryllium	mg/L	4 times a year	18	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Bismuth	mg/L	4 times a year	18	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Boron	mg/L	4 times a year	18	0	0.0330	0.0790	0.0703	FSS Health Support Qld
Cadmium	mg/L	4 times a year	18	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Chromium	mg/L	4 times a year	18	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Cobalt	mg/L	4 times a year	18	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Copper	mg/L	4 times a year	18	0	0.0010	0.0480	0.0051	FSS Health Support Qld
Iron	mg/L	4 times a year	18	0	0.0050	0.0770	0.0248	FSS Health Support Qld
Lead	mg/L	4 times a year	18	0	<0.0001	0.0007	0.0002	FSS Health Support Qld
Mercury	mg/L	4 times a year	18	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Manganese	mg/L	4 times a year	18	0	<0.0001	0.0400	0.0102	FSS Health Support Qld
Molybdenum	mg/L	4 times a year	18	0	<0.0001	0.0012	0.0002	FSS Health Support Qld
Nickel	mg/L	4 times a year	18	0	<0.0001	0.0012	0.0002	FSS Health Support Qld & In-house
Selenium	mg/L	4 times a year	18	0	<0.0001	0.0001	0.0001	FSS Health Support Qld
Silver	mg/L	4 times a year	18	0	0.0010	0.0010	0.0010	FSS Health Support Qld
Strontium	mg/L	4 times a year	18	0	0.0870	0.2400	<0.1060	FSS Health Support Qld
Thallium	mg/L	4 times a year	18	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Tin	mg/L	4 times a year	18	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Titanium	mg/L	4 times a year	18	0	<0.0010	0.0010	0.0010	FSS Health Support Qld
Uranium	mg/L	4 times a year	18	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Vanadium	mg/L	4 times a year	18	0	0.0001	0.0038	0.0003	FSS Health Support Qld
Zinc	mg/L	4 times a year	18	0	0.0020	0.0400	0.0093	FSS Health Support Qld
Conductivity	mg/L	4 times a year	16	0	288.0000	969.0000	897.5625	FSS Health Support Qld
pH		4 times a year	16	0	7.2000	8.2200	7.9163	FSS Health Support Qld
Total Hardness	mg/L	4 times a year	16	0	13.0000	79.0000	17.8750	FSS Health Support Qld
Temporary Hardness	mg/L	4 times a year	16	0	13.0000	79.0000	17.8750	FSS Health Support Qld
Alkalinity	mg/L	4 times a year	16	0	98.0000	2013.0000	316.3750	FSS Health Support Qld
Residual Alkalinity	mg/L	4 times a year	16	0	0.4000	4.0000	3.7000	FSS Health Support Qld
Silica	mg/L	4 times a year	16	0	16.0000	28.0000	17.1875	FSS Health Support Qld

TDI	mg/L	4 times a year	16	0	222.0000	685.0000	632.5625	FSS Health Support Qld
TDS	mg/L	4 times a year	16	0	189.0000	571.0000	525.0625	FSS Health Support Qld
True Colour	Hazen	4 times a year	16	0	1.0000	3.0000	1.3125	FSS Health Support Qld
Turbidity	NTU	4 times a year	16	0	1.0000	1.0000	1.0000	FSS Health Support Qld
Sodium	mg/L	4 times a year	16	0	29.0000	210.0000	191.1875	FSS Health Support Qld
Potassium	mg/L	4 times a year	16	0	1.9000	2.3000	2.1813	FSS Health Support Qld
Calcium	mg/L	4 times a year	16	0	4.0000	21.0000	5.2563	FSS Health Support Qld
Magnesium	mg/L	4 times a year	16	0	0.7000	6.8000	1.2063	FSS Health Support Qld
Hydrogen	mg/L	4 times a year	16	0	0.0000	0.0000	0.0000	FSS Health Support Qld
Bicarbonate	mg/L	4 times a year	16	0	120.0000	258.0000	245.5625	FSS Health Support Qld
Carbonate	mg/L	4 times a year	16	0	<0.1000	12.0000	2.2438	FSS Health Support Qld
Hydroxide	mg/L	4 times a year	16	0	0.0000	0.0000	0.0000	FSS Health Support Qld
Chloride	mg/L	4 times a year	16	0	10.0000	100.0000	93.7500	FSS Health Support Qld
Fluoride	mg/L	4 times a year	16	0	<0.1000	0.3300	<0.1181	FSS Health Support Qld
Nitrate	mg/L	4 times a year	16	0	0.5000	0.9000	0.6875	FSS Health Support Qld
Sulphate	mg/L	4 times a year	16	0	33.0000	110.0000	91.3750	FSS Health Support Qld
Chlorine (operational)	mg/L	weekly	189		0	1.01	<0.10978836	In House

Table 5: Verification Monitoring Results - Prairie Source

Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
Aluminium	mg/L	4 times a year	8	0	0.0030	0.0100	0.0039	FSS Health Support Qld
Antimony	mg/L	4 times a year	8	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Arsenic	mg/L	4 times a year	8	0	<0.0001	0.0002	0.0001	FSS Health Support Qld
Barium	mg/L	4 times a year	8	0	0.0640	0.0780	0.0704	FSS Health Support Qld
Beryllium	mg/L	4 times a year	8	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Bismuth	mg/L	4 times a year	8	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld

Boron	mg/L	4 times a year	8	0	0.2100	0.2900	0.2400	FSS Health Support Qld
Cadmium	mg/L	4 times a year	8	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Chromium	mg/L	4 times a year	8	0	<0.0001	0.0019	0.0004	FSS Health Support Qld
Cobalt	mg/L	4 times a year	8	0	<0.0001	0.0005	0.0002	FSS Health Support Qld
Copper	mg/L	4 times a year	8	0	0.0010	0.0110	0.0035	FSS Health Support Qld
Iron	mg/L	4 times a year	8	0	0.0230	6.4000	1.1054	FSS Health Support Qld
Lead	mg/L	4 times a year	8	0	<0.0001	0.0012	0.0004	FSS Health Support Qld
Mercury	mg/L	4 times a year	8	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Manganese	mg/L	4 times a year	8	0	0.0270	<0.1400	0.0468	FSS Health Support Qld
Molybdenum	mg/L	4 times a year	8	0	0.0009	0.0010	0.0010	FSS Health Support Qld
Nickel	mg/L	4 times a year	8	0	0.0001	0.0021	0.0005	FSS Health Support Qld & In-house
Selenium	mg/L	4 times a year	8	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Silver	mg/L	4 times a year	8	0	<0.0010	0.0010	0.0010	FSS Health Support Qld
Strontium	mg/L	4 times a year	8	0	0.5200	0.7000	0.6313	FSS Health Support Qld
Thallium	mg/L	4 times a year	8	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Tin	mg/L	4 times a year	8	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Titanium	mg/L	4 times a year	8	0	<0.0010	<0.0010	<0.0010	FSS Health Support Qld
Uranium	mg/L	4 times a year	8	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Vanadium	mg/L	4 times a year	8	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Zinc	mg/L	4 times a year	8	6	0.0010	0.0460	0.0101	FSS Health Support Qld

Conductivity	mg/L	4 times a year	4	0	1200.0000	1390.0000	1285.0000	FSS Health Support Qld
pH		4 times a year	4	0	7.5500	8.1500	7.8700	FSS Health Support Qld
Total Hardness	mg/L	4 times a year	4	0	78.0000	91.0000	84.5000	FSS Health Support Qld
Temporary Hardness	mg/L	4 times a year	4	0	78.0000	91.0000	84.5000	FSS Health Support Qld
Alkalinity	mg/L	4 times a year	4	0	138.0000	146.0000	142.7500	FSS Health Support Qld
Residual Alkalinity	mg/L	4 times a year	4	0	1.1000	1.3000	1.1750	FSS Health Support Qld
Silica	mg/L	4 times a year	4	0	17.0000	19.0000	18.2500	FSS Health Support Qld
TDI	mg/L	4 times a year	4	0	725.0000	816.0000	767.7500	FSS Health Support Qld
TDS	mg/L	4 times a year	4	0	655.0000	750.0000	699.0000	FSS Health Support Qld
True Colour	Hazen	4 times a year	4	0	1.0000	2.0000	1.2500	FSS Health Support Qld
Turbidity	NTU	4 times a year	4	0	1.0000	1.0000	1.0000	FSS Health Support Qld
Sodium	mg/L	4 times a year	4	0	210.0000	250.0000	230.0000	FSS Health Support Qld
Potassium	mg/L	4 times a year	4	0	5.7000	5.9000	5.8250	FSS Health Support Qld
Calcium	mg/L	4 times a year	4	0	21.0000	24.0000	22.5000	FSS Health Support Qld
Magnesium	mg/L	4 times a year	4	0	6.1000	7.3000	6.7000	FSS Health Support Qld
Hydrogen	mg/L	4 times a year	4	0	0.0000	0.0000	0.0000	FSS Health Support Qld
Bicarbonate	mg/L	4 times a year	4	0	166.0000	177.0000	172.5000	FSS Health Support Qld
Carbonate	mg/L	4 times a year	4	0	0.3000	1.6000	0.8750	FSS Health Support Qld
Hydroxide	mg/L	4 times a year	4	0	0.0000	0.0000	0.0000	FSS Health Support Qld
Chloride	mg/L	4 times a year	4	0	230.0000	300.0000	262.5000	FSS Health Support Qld

Fluoride	mg/L	4 times a year	4	0	<0.1200	<0.1300	<0.1225	FSS Health Support Qld
Nitrate	mg/L	4 times a year	4	0	0.5000	1.0000	0.8750	FSS Health Support Qld
Sulphate	mg/L	4 times a year	4	0	7.0000	71.0000	53.2500	FSS Health Support Qld
Gross Alpha Activity	Bq/L	Twice a year	4	0	<0.04	<0.05	<0.045	FSS Health Support Qld
K40 Corrected Beta Activity	Bq/L	Twice a year	4	0	<0.07	<<0.1	<0.085	FSS Health Support Qld

Table 6: Verification Monitoring results Pesticides - Prairie Source

ParameterER	Units	Frequency of Sampling	Total No. Samples collected	No. of samples exceeding water quality criteria	Min	Max	Mean	Laboratory name
Aldrin	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Dieldrin	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total Aldrin & Dieldrin	µg/L	4 times a year	4	0	<0.2	<0.2	<0.2	FSS Health Support Qld
Chlordane cis	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Chlordane trans	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total Chlordane	µg/L	4 times a year	4	0	<0.2	<0.2	<0.2	FSS Health Support Qld
DDD (pp)	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
DDE (pp)	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
DDT (op)	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
DDT (pp)	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total DDT	µg/L	4 times a year	4	0	<0.4	<0.4	<0.4	FSS Health Support Qld
Total Dicofol	µg/L	4 times a year	4	0	<1.5	<1.5	<1.5	FSS Health Support Qld
a-Endosulfan	µg/L	4 times a year	4	0	<0.5	<0.5	<0.5	FSS Health Support Qld
b-Endosulfan	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Endosulfan Sulfate	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total Endosulfan	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Heptachlor	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Heptachlor Epoxide	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total Heptachlor	µg/L	4 times a year	4	0	<0.2	<0.2	<0.2	FSS Health Support Qld
Lindane (g-HCH)	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Methoxychlor	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Oxychlordane	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Azinphos-methyl	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Bromophos-ethyl	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Carbophenothion	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Chlorfenvinphos	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Chlorpyrifos	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Diazinon	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Dichlorvos	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld

Dimethoate	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Omethoate	µg/L	4 times a year	4	0	<0.2	<0.2	<0.2	FSS Health Support Qld
Total Dimethoate	µg/L	4 times a year	4	0	<0.3	<0.3	<0.3	FSS Health Support Qld
Disulfoton	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Ethion	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Ethoprophos	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fenamiphos	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fenclorophos	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fenitrothion	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fenthion (methyl)	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Malathion (Maldison)	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Methidathion	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Mevinphos	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Monocrotophos	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Parathion (ethyl)	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Parathion-methyl	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Pirimiphos-methyl	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Profenofos	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Pyrazophos	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Sulprofos	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Temephos	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Terbufos	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Tetrachlorvinphos	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Ametryn	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Amitraz	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Atrazine	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Bromacil	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Diclofop-methyl	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fluometuron	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Haloxfop-2-etotyl	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Haloxfop-methyl	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Hexazinone	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld

Metolachlor	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Metribuzin	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Molinate	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Pendimethalin	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Propanil	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Propazine	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Simazine	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Terbuthylazine	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Terbutryn	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Trifluralin	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Captan	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Carbaryl	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fipronil	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Piperonyl Butoxide	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Pirimicarb	µg/L	4 times a year	4	0	<0.2	<0.2	<0.2	FSS Health Support Qld
Propargite	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Propiconazole	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Triadimefon	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total Triadimefon	µg/L	4 times a year	4	0	<0.3	<0.3	<0.3	FSS Health Support Qld
Bioresmethrin	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Cyfluthrin	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Cypermethrin	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Deltamethrin	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fenvalerate	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Permethrin	µg/L	4 times a year	4	0	<0.1	<0.1	<0.1	FSS Health Support Qld
2,4-D	µg/L	4 times a year	4	0	<0.02	<0.02	<0.02	FSS Health Support Qld
2,4-DP (Dichlorprop)	µg/L	4 times a year	4	0	0.05	0.05	0.05	FSS Health Support Qld
Ametryn	µg/L	4 times a year	4	0	<0.01	<0.01	<0.01	FSS Health Support Qld
Asulam	µg/L	4 times a year	4	0	0.05	<0.1	0.075	FSS Health Support Qld
Bromacil	µg/L	4 times a year	4	0	<0.02	<0.02	<0.02	FSS Health Support Qld
Bromoxynil	µg/L	4 times a year	4	0	<0.02	<0.02	<0.02	FSS Health Support Qld

Dalapon (2,2-DPA)	µg/L	4 times a year	4	0	<0.02	<0.02	<0.02	FSS Health Support Qld
Diazinon	µg/L	4 times a year	4	0	<0.01	<0.01	<0.01	FSS Health Support Qld
Dicamba	µg/L	4 times a year	4	0	<0.2	<1	<0.6	FSS Health Support Qld
Diuron	µg/L	4 times a year	4	0	<0.02	<0.02	<0.02	FSS Health Support Qld
Fipronil	µg/L	4 times a year	4	0	<0.02	<0.02	<0.02	FSS Health Support Qld
Fipronil Desulfinyl	µg/L	4 times a year	4	0	<0.02	<0.02	<0.02	FSS Health Support Qld
Fipronil Sulfide	µg/L	4 times a year	4	0	<0.01	<0.01	<0.01	FSS Health Support Qld
Fipronil Sulfone	µg/L	4 times a year	4	0	<0.01	<0.01	<0.01	FSS Health Support Qld
Flamprop-methyl	µg/L	4 times a year	4	0	<0.01	<0.01	<0.01	FSS Health Support Qld
Haloxyfop (acid)	µg/L	4 times a year	4	0	<0.02	<0.02	<0.02	FSS Health Support Qld
Hexazinone	µg/L	4 times a year	4	0	<0.01	<0.01	<0.01	FSS Health Support Qld
Imazapyr	µg/L	4 times a year	4	0	<0.02	<0.02	<0.02	FSS Health Support Qld
MCPA	µg/L	4 times a year	4	0	<0.01	<0.01	<0.01	FSS Health Support Qld
Metsulfuron methyl	µg/L	4 times a year	4	0	<0.02	<0.1	<0.06	FSS Health Support Qld
Napropamide	µg/L	4 times a year	4	0	<0.01	<0.01	<0.01	FSS Health Support Qld
Picloram	µg/L	4 times a year	4	0	<0.2	<0.2	<0.2	FSS Health Support Qld
Propachlor	µg/L	4 times a year	4	0	<0.02	<0.02	<0.02	FSS Health Support Qld
Total Diuron	µg/L	4 times a year	4	0	<0.06	<0.06	<0.06	FSS Health Support Qld
Triclopyr	µg/L	4 times a year	4	0	<0.05	<0.05	<0.05	FSS Health Support Qld

Table 7: Verification and operational results - Prairie reticulation

Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
Aluminium	mg/L	4 times a year	13	0	0.0030	0.0530	0.0095	FSS Health Support Qld
Antimony	mg/L	4 times a year	13	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Arsenic	mg/L	4 times a year	13	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Barium	mg/L	4 times a year	13	0	0.0620	<0.1700	0.0768	FSS Health Support Qld
Beryllium	mg/L	4 times a year	13	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Bismuth	mg/L	4 times a year	13	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Boron	mg/L	4 times a year	13	0	0.0210	0.2400	0.2078	FSS Health Support Qld
Cadmium	mg/L	4 times a year	13	0	<.0001	0.0014	0.0002	FSS Health Support Qld
Chromium	mg/L	4 times a year	13	0	0.0001	0.0004	0.0002	FSS Health Support Qld
Cobalt	mg/L	4 times a year	13	0	0.0001	0.0005	0.0001	FSS Health Support Qld
Copper	mg/L	4 times a year	13	0	<0.0010	0.0760	0.0098	FSS Health Support Qld
Iron	mg/L	4 times a year	13	0	0.0350	9.2000	0.9750	FSS Health Support Qld
Lead	mg/L	4 times a year	13	3	0.0001	<0.1300	0.0166	FSS Health Support Qld
Mercury	mg/L	4 times a year	13	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Manganese	mg/L	4 times a year	13	1	0.0075	1.3000	<0.1826	FSS Health Support Qld
Molybdenum	mg/L	4 times a year	13	0	0.0001	0.0011	0.0009	FSS Health Support Qld
Nickel	mg/L	4 times a year	13	0	0.0001	0.0035	0.0005	FSS Health Support Qld
Selenium	mg/L	4 times a year	13	0	<0.0001	<0.0001	<0.0001	FSS Health

								Support Qld
Silver	mg/L	4 times a year	13	0	0.0010	0.0010	0.0010	FSS Health Support Qld
Strontium	mg/L	4 times a year	13	0	0.6500	0.7300	0.6815	FSS Health Support Qld
Thallium	mg/L	4 times a year	13	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Tin	mg/L	4 times a year	13		<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Titanium	mg/L	4 times a year	13	0	<0.0010	<0.0010	<0.0010	FSS Health Support Qld
Uranium	mg/L	4 times a year	13	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Vanadium	mg/L	4 times a year	13	0	<0.0001	<0.0001	<0.0001	FSS Health Support Qld
Zinc	mg/L	4 times a year	13	0	0.0010	1.9000	0.2529	FSS Health Support Qld
Conductivity	mg/L	4 times a year	5	0	1220.0000	1240.0000	1230.0000	FSS Health Support Qld
pH		4 times a year	5	0	7.9300	8.2000	8.0820	FSS Health Support Qld
Total Hardness	mg/L	4 times a year	5	0	87.0000	91.0000	89.0000	FSS Health Support Qld
Temporary Hardness	mg/L	4 times a year	5	0	87.0000	91.0000	89.0000	FSS Health Support Qld
Alkalinity	mg/L	4 times a year	5	0	144.0000	145.0000	144.6000	FSS Health Support Qld
Residual Alkalinity	mg/L	4 times a year	5	0	1.1000	1.1000	1.1000	FSS Health Support Qld
Silica	mg/L	4 times a year	5	0	19.0000	19.0000	19.0000	FSS Health Support Qld
TDI	mg/L	4 times a year	5	0	730.0000	749.0000	741.0000	FSS Health Support Qld
TDS	mg/L	4 times a year	5	0	661.0000	680.0000	671.8000	FSS Health Support Qld
True Colour	Hazen	4 times a year	5	0	1.0000	1.0000	1.0000	FSS Health Support Qld
Turbidity	NTU	4 times a year	5	0	1.0000	1.0000	1.0000	FSS Health Support Qld
Sodium	mg/L	4 times a year	5	0	210.0000	220.0000	216.0000	FSS Health

								Support Qld
Potassium	mg/L	4 times a year	5	0	5.8000	5.9000	5.8400	FSS Health Support Qld
Calcium	mg/L	4 times a year	5	0	24.0000	26.0000	24.4000	FSS Health Support Qld
Magnesium	mg/L	4 times a year	5	0	6.0000	7.2000	6.8400	FSS Health Support Qld
Hydrogen	mg/L	4 times a year	5	0	0.0000	0.0000	0.0000	FSS Health Support Qld
Bicarbonate	mg/L	4 times a year	5	0	173.0000	175.0000	173.6000	FSS Health Support Qld
Carbonate	mg/L	4 times a year	5	0	1.0000	1.9000	1.4400	FSS Health Support Qld
Hydroxide	mg/L	4 times a year	5	0	0.0000	0.0000	0.0000	FSS Health Support Qld
Chloride	mg/L	4 times a year	5	0	240.0000	250.0000	244.0000	FSS Health Support Qld
Fluoride	mg/L	4 times a year	5	0	<0.1200	<0.1300	<0.1220	FSS Health Support Qld
Nitrate	mg/L	4 times a year	5	0	0.5000	1.0000	0.8000	FSS Health Support Qld
Sulphate	mg/L	4 times a year	5	0	69.0000	72.0000	70.2000	FSS Health Support Qld
Chlorine (operational)	mg/L	3 times a week	161		0	2.2	<0.13695652	In House

Table 8: Verification Monitoring Results - Torrens Creek Source Water

Parameter	Units	Frequency of sampling	Total No. samples collected	Min	Max	Average (Mean)	Laboratory name
Aluminium	mg/L	4 times a year	5	0.0060	<0.1200	<0.1200	FSS Health Support Qld
Antimony	mg/L	4 times a year	5	0.0001	0.0001	0.0001	FSS Health Support Qld
Arsenic	mg/L	4 times a year	5	0.0001	0.0004	0.0004	FSS Health Support Qld
Barium	mg/L	4 times a year	5	0.1900	0.2300	0.2300	FSS Health Support Qld
Beryllium	mg/L	4 times a year	5	0.0003	0.0005	0.0005	FSS Health Support Qld
Bismuth	mg/L	4 times a year	3	0.0001	0.0001	0.0001	FSS Health Support Qld
Boron	mg/L	4 times a year	5	0.0400	0.0430	0.0430	FSS Health Support Qld
Cadmium	mg/L	4 times a year	5	0.0001	0.0001	0.0001	FSS Health Support Qld
Chromium	mg/L	4 times a year	5	0.0002	0.0006	0.0006	FSS Health Support Qld
Cobalt	mg/L	4 times a year	5	0.0005	0.0016	0.0016	FSS Health Support Qld
Copper	mg/L	4 times a year	5	0.0040	0.0370	0.0370	FSS Health Support Qld
Iron	mg/L	4 times a year	5	1.1000	4.4000	4.4000	FSS Health Support Qld
Lead	mg/L	4 times a year	5	0.0001	0.0012	0.0012	FSS Health Support Qld
Mercury	mg/L	4 times a year	5	0.0001	0.0001	0.0001	FSS Health Support Qld
Manganese	mg/L	4 times a year	5	0.0530	39.0000	39.0000	FSS Health Support Qld
Molybdenum	mg/L	4 times a year	5	0.0001	0.0001	0.0001	FSS Health Support Qld
Nickel	mg/L	4 times a year	5	0.0036	0.0049	0.0049	FSS Health Support Qld
Selenium	mg/L	4 times a year	5	0.0002	0.0003	0.0003	FSS Health Support Qld
Silver	mg/L	4 times a year	5	0.0010	0.0010	0.0010	FSS Health Support Qld
Strontium	mg/L	4 times a year	5	0.0210	0.0270	0.0270	FSS Health Support Qld
Thallium	mg/L	4 times a year	5	0.0002	0.0003	0.0003	FSS Health Support Qld
Tin	mg/L	4 times a year	5	0.0001	0.0001	0.0001	FSS Health Support Qld
Titanium	mg/L	4 times a year	5	0.0010	0.0030	0.0030	FSS Health Support Qld
Uranium	mg/L	4 times a year	5	0.0003	0.0008	0.0008	FSS Health Support Qld
Vanadium	mg/L	4 times a year	5	0.0002	0.0032	0.0032	FSS Health Support Qld
Zinc	mg/L	4 times a year	5	0.0130	0.0500	0.0500	FSS Health Support Qld
Conductivity	mg/L	4 times a year	2	193.0000	215.0000	215.0000	FSS Health Support Qld
pH		4 times a year	2	6.1400	6.4700	6.4700	FSS Health Support Qld
Total Hardness	mg/L	4 times a year	2	21.0000	24.0000	24.0000	FSS Health Support Qld
Temporary Hardness	mg/L	4 times a year	2	21.0000	24.0000	24.0000	FSS Health Support Qld
Alkalinity	mg/L	4 times a year	2	40.0000	42.0000	42.0000	FSS Health Support Qld
Residual Alkalinity	mg/L	4 times a year	2	0.4000	0.4000	0.4000	FSS Health Support Qld
Silica	mg/L	4 times a year	2	14.0000	15.0000	15.0000	FSS Health Support Qld
TDI	mg/L	4 times a year	2	124.0000	136.0000	136.0000	FSS Health Support Qld
TDS	mg/L	4 times a year	2	114.0000	124.0000	124.0000	FSS Health Support Qld
True Colour	Hazen	4 times a year	2	1.0000	1.0000	1.0000	FSS Health Support Qld

Turbidity	NTU	4 times a year	2	5.0000	29.0000	29.0000	FSS Health Support Qld
Sodium	mg/L	4 times a year	2	21.0000	22.0000	22.0000	FSS Health Support Qld
Potassium	mg/L	4 times a year	2	14.0000	16.0000	16.0000	FSS Health Support Qld
Calcium	mg/L	4 times a year	2	1.3000	1.5000	1.5000	FSS Health Support Qld
Magnesium	mg/L	4 times a year	2	4.2000	5.0000	5.0000	FSS Health Support Qld
Hydrogen	mg/L	4 times a year	2	0.0000	0.0000	0.0000	FSS Health Support Qld
Bicarbonate	mg/L	4 times a year	2	48.0000	52.0000	52.0000	FSS Health Support Qld
Carbonate	mg/L	4 times a year	2	0.0000	0.0000	0.0000	FSS Health Support Qld
Hydroxide	mg/L	4 times a year	2	0.0000	0.0000	0.0000	FSS Health Support Qld
Chloride	mg/L	4 times a year	2	29.0000	34.0000	34.0000	FSS Health Support Qld
Fluoride	mg/L	4 times a year	2	0.0700	0.0700	0.0700	FSS Health Support Qld
Nitrate	mg/L	4 times a year	2	1.2000	1.2000	1.2000	FSS Health Support Qld
Sulphate	mg/L	4 times a year	2	4.0000	0.0000	5.0000	FSS Health Support Qld
Turbidity		Once a week	46	1	10	6.586956522	In house
Gross Alpha Activity	Bq/L	Twice a year	2	<0.16±0.05	0.2±0.06	<0.18±0.055	FSS Health Support Qld
K40 Corrected Beta Activity	Bq/L	Twice a year	2	<0.08	0.2±<0.1	<0.14	FSS Health Support Qld

Table 9: Verification Monitoring pesticides results - Torrens Creek Source Water

ParameterER	Units	Frequency of Sampling	Total No. Samples collected	No. of samples exceeding water quality criteria	Min	Max	Mean	Laboratory name
Aldrin	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Dieldrin	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total Aldrin & Dieldrin	µg/L	4 times a year	2	0	<0.2	<0.2	<0.2	FSS Health Support Qld
Chlordane cis	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Chlordane trans	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total Chlordane	µg/L	4 times a year	2	0	<0.2	<0.2	<0.2	FSS Health Support Qld
DDD (pp)	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
DDE (pp)	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
DDT (op)	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
DDT (pp)	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total DDT	µg/L	4 times a year	2	0	<0.4	<0.4	<0.4	FSS Health Support Qld
Total Dicofol	µg/L	4 times a year	2	0	<1.5	<1.5	<1.5	FSS Health Support Qld
a-Endosulfan	µg/L	4 times a year	2	0	<0.5	<0.5	<0.5	FSS Health Support Qld
b-Endosulfan	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Endosulfan Sulfate	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total Endosulfan	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Heptachlor	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Heptachlor Epoxide	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total Heptachlor	µg/L	4 times a year	2	0	<0.2	<0.2	<0.2	FSS Health Support Qld
Lindane (g-HCH)	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Methoxychlor	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Oxychlordane	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Azinphos-methyl	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Bromophos-ethyl	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Carbophenothion	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Chlorfenvinphos	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Chlorpyrifos	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Diazinon	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Dichlorvos	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld

Dimethoate	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Omethoate	µg/L	4 times a year	2	0	<0.2	<0.2	<0.2	FSS Health Support Qld
Total Dimethoate	µg/L	4 times a year	2	0	<0.3	<0.3	<0.3	FSS Health Support Qld
Disulfoton	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Ethion	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Ethoprophos	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fenamiphos	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fenclorphanos	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fenitrothion	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fenthion (methyl)	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Malathion (Maldison)	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Methidathion	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Mevinphos	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Monocrotophos	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Parathion (ethyl)	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Parathion-methyl	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Pirimiphos-methyl	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Profenofos	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Pyrazophos	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Sulprofos	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Temephos	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Terbufos	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Tetrachlorvinphos	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Ametryn	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Amitraz	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Atrazine	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Bromacil	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Diclofop-methyl	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fluometuron	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Haloxypop-2-etotyl	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Haloxypop-methyl	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Hexazinone	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld

Metolachlor	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Metribuzin	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Molinate	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Pendimethalin	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Propanil	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Propazine	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Simazine	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Terbutylazine	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Terbutryn	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Trifluralin	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Captan	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Carbaryl	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fipronil	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Piperonyl Butoxide	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Pirimicarb	µg/L	4 times a year	2	0	<0.2	<0.2	<0.2	FSS Health Support Qld
Propargite	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Propiconazole	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Triadimefon	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Total Triadimefon	µg/L	4 times a year	2	0	<0.3	<0.3	<0.3	FSS Health Support Qld
Bioresmethrin	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Cyfluthrin	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Cypermethrin	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Deltamethrin	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Fenvalerate	µg/L	4 times a year	2	0	<0.1	<0.1	<0.1	FSS Health Support Qld
Permethrin	µg/L	4 times a year	2		<0.1	<0.1	<0.1	FSS Health Support Qld
2,4-D	µg/L	4 times a year	2		<0.02	<0.02	<0.02	FSS Health Support Qld
2,4-DP (Dichlorprop)	µg/L	4 times a year	2		<0.05	<0.05	<0.05	FSS Health Support Qld
Ametryn	µg/L	4 times a year	2		<0.01	<0.01	<0.01	FSS Health Support Qld
Asulam	µg/L	4 times a year	2		<0.05	<0.1	<0.075	FSS Health Support Qld
Bromacil	µg/L	4 times a year	2		<0.02	<0.02	<0.02	FSS Health Support Qld
Bromoxynil	µg/L	4 times a year	2		<0.02	<0.02	<0.02	FSS Health Support Qld

Dalapon (2,2-DPA)	µg/L	4 times a year	2		<0.02	<0.02	<0.02	FSS Health Support Qld
Diazinon	µg/L	4 times a year	2		<0.01	<0.01	<0.01	FSS Health Support Qld
Dicamba	µg/L	4 times a year	2		<0.2	<1	<0.6	FSS Health Support Qld
Diuron	µg/L	4 times a year	2		<0.02	<0.02	<0.02	FSS Health Support Qld
Fipronil	µg/L	4 times a year	2		<0.02	<0.02	<0.02	FSS Health Support Qld
Fipronil Desulfinyl	µg/L	4 times a year	2		<0.02	<0.02	<0.02	FSS Health Support Qld
Fipronil Sulfide	µg/L	4 times a year	2		<0.01	<0.01	<0.01	FSS Health Support Qld
Fipronil Sulfone	µg/L	4 times a year	2		<0.01	<0.01	<0.01	FSS Health Support Qld
Flamprop-methyl	µg/L	4 times a year	2		<0.01	<0.01	<0.01	FSS Health Support Qld
Haloxyfop (acid)	µg/L	4 times a year	2		<0.02	<0.02	<0.02	FSS Health Support Qld
Hexazinone	µg/L	4 times a year	2		<0.01	<0.01	<0.01	FSS Health Support Qld
Imazapyr	µg/L	4 times a year	2		<0.02	<0.02	<0.02	FSS Health Support Qld
MCPA	µg/L	4 times a year	2		<0.01	<0.01	<0.01	FSS Health Support Qld
Metsulfuron methyl	µg/L	4 times a year	2		<0.02	<0.1	0.06	FSS Health Support Qld
Napropamide	µg/L	4 times a year	2		<0.01	<0.01	<0.01	FSS Health Support Qld
Picloram	µg/L	4 times a year	2		<0.2	<0.2	<0.2	FSS Health Support Qld
Propachlor	µg/L	4 times a year	2		<0.02	<0.02	<0.02	FSS Health Support Qld
Total Diuron	µg/L	4 times a year	2		<0.06	<0.06	<0.06	FSS Health Support Qld
Triclopyr	µg/L	4 times a year	2		<0.05	<0.05	<0.05	FSS Health Support Qld

Table 10: Verification Monitoring and operational results Torrens Creek reticulation

Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
Aluminium	mg/L	4 times a year	7	0	0.0040	0.0620	0.0620	FSS Health Support Qld
Antimony	mg/L	4 times a year	1	0	0.0001	0.0002	0.0002	FSS Health Support Qld
Arsenic	mg/L	4 times a year	7	0	0.0001	0.0003	0.0003	FSS Health Support Qld
Barium	mg/L	4 times a year	7	0	<0.1000	0.2100	0.2100	FSS Health Support Qld
Beryllium	mg/L	4 times a year	7	0	0.0003	0.0005	0.0005	FSS Health Support Qld
Bismuth	mg/L	4 times a year	5	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Boron	mg/L	4 times a year	7	0	0.0400	0.0450	0.0450	FSS Health Support Qld
Cadmium	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Chromium	mg/L	4 times a year	7	0	0.0002	0.0005	0.0005	FSS Health Support Qld
Cobalt	mg/L	4 times a year	7	0	0.0003	0.0013	0.0013	FSS Health Support Qld
Copper	mg/L	4 times a year	7	0	0.0060	0.0650	0.0650	FSS Health Support Qld
Iron	mg/L	4 times a year	7	0	0.5600	5.2000	5.2000	FSS Health Support Qld
Lead	mg/L	4 times a year	7	0	0.0004	0.0031	0.0031	FSS Health Support Qld
Mercury	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Manganese	mg/L	4 times a year	7	0	0.0200	0.0640	0.0640	FSS Health Support Qld
Molybdenum	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Nickel	mg/L	4 times a year	7	0	0.0031	0.0049	0.0049	FSS Health Support Qld
Selenium	mg/L	4 times a year	7	0	0.0002	0.0003	0.0003	FSS Health Support Qld

Silver	mg/L	4 times a year	7	0	0.0010	0.0010	0.0010	FSS Health Support Qld
Strontium	mg/L	4 times a year	7	0	0.0210	0.0260	0.0260	FSS Health Support Qld
Thallium	mg/L	4 times a year	7	0	0.0001	0.0004	0.0004	FSS Health Support Qld
Tin	mg/L	4 times a year	7	0	0.0001	0.0120	0.0120	FSS Health Support Qld
Titanium	mg/L	4 times a year	7	0	0.0010	0.0020	0.0020	FSS Health Support Qld
Uranium	mg/L	4 times a year	7	0	0.0002	0.0007	0.0007	FSS Health Support Qld
Vanadium	mg/L	4 times a year	7	0	0.0001	0.0010	0.0010	FSS Health Support Qld
Zinc	mg/L	4 times a year	7	0	0.0200	0.0650	0.0650	FSS Health Support Qld
Conductivity	mg/L	4 times a year	4	0	199.0000	235.0000	235.0000	FSS Health Support Qld
pH		4 times a year	4	0	6.2900	6.4900	6.4900	FSS Health Support Qld
Total Hardness	mg/L	4 times a year	4	0	22.0000	30.0000	30.0000	FSS Health Support Qld
Temporary Hardness	mg/L	4 times a year	4	0	22.0000	30.0000	30.0000	FSS Health Support Qld
Alkalinity	mg/L	4 times a year	4	0	38.0000	41.0000	41.0000	FSS Health Support Qld
Residual Alkalinity	mg/L	4 times a year	4	0	0.2000	0.4000	0.4000	FSS Health Support Qld
Silica	mg/L	4 times a year	4	0	14.0000	14.0000	14.0000	FSS Health Support Qld
TDI	mg/L	4 times a year	4	0	127.0000	141.0000	141.0000	FSS Health Support Qld
TDS	mg/L	4 times a year	4	0	117.0000	132.0000	132.0000	FSS Health Support Qld
True Colour	Hazen	4 times a year	4	0	1.0000	1.0000	1.0000	FSS Health Support Qld
Turbidity	NTU	4 times a year	4	0	7.0000	10.0000	10.0000	FSS Health Support Qld
Sodium	mg/L	4 times a year	4	0	21.0000	25.0000	25.0000	FSS Health Support Qld

Potassium	mg/L	4 times a year	4	0	13.0000	14.0000	14.0000	FSS Health Support Qld
Calcium	mg/L	4 times a year	4	0	2.0000	2.9000	2.9000	FSS Health Support Qld
Magnesium	mg/L	4 times a year	4	0	4.1000	5.5000	5.5000	FSS Health Support Qld
Hydrogen	mg/L	4 times a year	4	0	0.0000	0.0000	0.0000	FSS Health Support Qld
Bicarbonate	mg/L	4 times a year	4	0	46.0000	50.0000	50.0000	FSS Health Support Qld
Carbonate	mg/L	4 times a year	4	0	0.0000	0.0000	0.0000	FSS Health Support Qld
Hydroxide	mg/L	4 times a year	4	0	0.0000	0.0000	0.0000	FSS Health Support Qld
Chloride	mg/L	4 times a year	4	0	31.0000	43.0000	43.0000	FSS Health Support Qld
Fluoride	mg/L	4 times a year	4	0	0.0600	0.0800	0.0800	FSS Health Support Qld
Nitrate	mg/L	4 times a year	4	0	1.3000	1.4000	1.4000	FSS Health Support Qld
Sulphate	mg/L	4 times a year	4	0	4.0000	5.0000	5.0000	FSS Health Support Qld
Chlorine (operational)	mg/L	3 times a week	179		0.04	0.86	0.248	In House
Turbidity Operational		Weekly	46		1	10	4.652173913	In House

Table 11 - Reticulation *E. coli* verification monitoring

Drinking water scheme: Hughenden

Year	2018 to 2019											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	19	31	14	17	19	11	5	4	5	28	18	19
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)	1	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	124	142	149	158	167	169	162	160	154	172	179	190
No. of failures for previous 12 month period	1	1	1	1	1	1	1	1	1	1	1	1
% of samples that comply	99.2%	99.3%	99.3%	99.4%	99.4%	99.4%	99.4%	99.4%	99.4%	99.4%	99.4%	99.5%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Drinking water scheme: Prairie

Year	2018 to 2019											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	5	12	7	8	4	3	4	4	4	6	4	4
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	23	33	39	45	47	49	51	53	56	60	62	65
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

Drinking water scheme: Torrens Creek

Year	2018 to 2019											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	5	7	4	5	2	3	3	2	2	5	3	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	23	28	31	34	34	36	37	37	38	41	42	44
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

Appendix B – Implementation of the DWQMP Risk Management Improvement Program

Please note that a new amended RMIP has been submitted to DEWS for review. The RMIP presented below does not reflect the amended version.

<i>IP item</i>	<i>Action</i>	<i>Description</i>	<i>Target date/s</i>	<i>Status as of December 2019</i>
<i>IP-1</i>	<i>Bore Head improvement program</i>	<p><i>Mounding of concrete around bore heads, replacement/Maintenance of slabs. Sealing of possible ingress sites.</i></p> <p><i>Short-term: Investigation of works required and cost estimates.</i></p> <p><i>Long-term: upgrade</i></p>	<p><i>Interim: Ongoing inspection and maintenance.</i></p> <p><i>Short-term: 30th December 2018</i></p> <p><i>Long-term: Finish unknown</i></p>	<i>In Progress</i>
<i>IP-2</i>	<i>Analysis of Torrens Creek River Well Water</i>	<i>Analysis of Torrens Creek River Well Water – uses as Emergency Back up</i>	<i>February 2018 – December 2018</i>	<i>Ongoing testing</i>

<i>IP item</i>	<i>Action</i>	<i>Description</i>	<i>Target date/s</i>	<i>Status as of December 2019</i>
<i>IP-3</i>	<i>Investigation of options for improving the integrity of bore casings</i>	<i>Inspection of selected bores with cameras in order to establish what work is required. Options can be explored once Council has up-to-date data.</i>	<i>Bores 5, 7 & 2 Completed in 2014 – due in 5 years. Bore 9, Prairie and Torrens Creek Bore will be put in 2018/2019 Budget</i>	<i>Moved to next budget as Torrens Creek WTP is being upgraded.</i>
<i>IP-4</i>	<i>Development of Monitoring Program for inspection of temporary foam Sealant and Slab Condition of all</i>	<i>Development of Monitoring Program for inspection of temporary foam Sealant and Slab Condition of all bores</i>	<i>Development of Monitoring Program for inspection of temporary foam Sealant and Slab Condition of all bores</i>	<i>In Progress</i>
<i>IP-5</i>	<i>Long-term replacement program for bore casements</i>	<i>Dependent on outcome from IP-3. Once options have been explored Council can develop a long-term replacement program.</i>	<i>Dependent on IP-3 (In progress).</i>	<i>Engineering Department are developing program.</i>

<i>IP item</i>	<i>Action</i>	<i>Description</i>	<i>Target date/s</i>	<i>Status as of December 2019</i>
IP-6	<i>Bore Replacement Program</i>	<i>Money is currently put aside each year in order to fund new bores. The need for a new bore/ conditioning of old bores is highly dependent upon the outcome of IP-3.</i>	<i>Ongoing</i>	<p><i>A concept design report has been prepared. Council to go to tender for provision and installation of equipment.</i></p> <p><i>GH&D have completed the final design and money has been put aside in the 2018/2019 Budget..</i></p>
<i>IP-7</i>	<i>Chlorination at Hughenden</i>	<i>Installation of Chlorination equipment. Equipment is able to be housed in same facility as Fluoridation equipment.</i>	<i>Installation of Chlorination equipment. Equipment is able to be housed in same facility as Fluoridation equipment.</i>	<i>Project is out for tender. Project includes building of new storage reservoir as well as treatment.</i>

<i>IP item</i>	<i>Action</i>	<i>Description</i>	<i>Target date/s</i>	<i>Status as of December 2019</i>
IP-8	<i>Water Mains replacement</i>	<i>High</i>	<i>Development of program to replace water mains in Hughenden, Torrens Creek and Prairie.</i>	<i>Ongoing</i>

<i>IP item</i>	<i>Action</i>	<i>Description</i>	<i>Target date/s</i>	<i>Status as of December 2019</i>
IP-9	Upgrade of ORP System at Torrens Creek	Upgrade of ORP system at Torrens Creek.	December 2018	<p><i>In Progress</i></p> <p><i>A new treatment system is going to be installed (filtration and disinfection).</i></p> <p><i>The tender has been awarded and work is to begin in early 2020.</i></p>

<i>IP item</i>	<i>Action</i>	<i>Description</i>	<i>Target date/s</i>	<i>Status as of December 2019</i>
<i>IP-10</i>	<i>Plumbers to inform EHO of Water Mains Breaks so that Water Sample can be taken</i>	<i>Plumbers to record details in diary/logbook</i>	<i>Plumbers to record details in diary/logbook</i>	<i>In Progress</i>

IP item	Action	Description	Target date/s	Status as of December 2019
IP-11	Investigation of Reticulation Network	<p>Investigation into condition of reticulation network and detailed assessment of water demands - Require reliable records for Mains Breaks.</p> <p>The following information is to be gathered each time there is a Mains Break: the pipe material, condition estimate, depth of the pipe and the type of soil. This information is then passed on to the DOE and QA/Asset Manager so that it can be entered into a graphical database (map info). Users will then be able to access a map of the reticulation network with various layers that will include; breaks, repairs, additions, type of pipe and condition.</p> <p>Interim: Ongoing data collection.</p> <p>Short-term: Record collection and set-up of GIS system</p> <p>Long-term: Ongoing data collection and updates of system</p> <p>Network analysis of Hughenden will be undertaken by GHD upon completion up changes to Hughenden's delivery system (Move from Demand-Supply to Supply-Demand).</p>	<p>Interim: Ongoing</p> <p>Short-term: 30th June 2014</p> <p>Long-term: Ongoing from 30th June 2014</p> <p>Network Analysis completed</p>	In Progress
IP-12	Air Scouring Program For Flinders.	<p>Investigation into the cost of hiring contractors to undertake work. A program will be developed once costs are established.</p> <p>Interim: Ongoing flushing of Mains.</p> <p>Short-term: Investigation and cost analysis</p> <p>Long-term: Development of program.</p>	<p>Interim: Ongoing</p> <p>Short-term: 30th June 2014</p> <p>Long-term: 30th June 2018 (Program implemented after this date).</p>	Engineering department developing program

<i>IP item</i>	<i>Action</i>	<i>Description</i>	<i>Target date/s</i>	<i>Status as of December 2019</i>
<i>IP-13</i>	<i>Long-term plan for the looping of Mains in Hughenden</i>	<p><i>Looping of mains in order to avoid dead-ends. Will utilise information gathered during investigation of the reticulation network.</i></p> <p><i>Interim: Ongoing flushing of mains.</i></p> <p><i>Short-term: Design and Cost analysis.</i></p> <p><i>Long-term: Implementation of program (starting from 15/16 financial year).</i></p>	<p><i>Interim: Ongoing.</i></p> <p><i>Short-term: Completed</i></p> <p><i>Long-term: 15/16 financial year (start date). Currently 90% complete.</i></p>	<i>In Progress</i>
<i>IP-14</i>	<i>Investigation of security at Prairie Stock Bore & investigate possibility of increasing volume of water from town bore.</i>	<p><i>Consult with Rural Lands Officer regarding ability of Council to fence the Stock Bore (currently on a stock route – non Council land).</i></p> <p><i>Interim: Investigate</i></p> <p><i>Short-term: Obtain approvals and develop cost estimates.</i></p> <p><i>Long-term: Installation.</i></p>	<p><i>Interim: Completed</i></p> <p><i>Short-term: Completed</i></p> <p><i>Long-term: 30th Dec 2018</i></p>	<i>In Progress</i>

<i>IP item</i>	<i>Action</i>	<i>Description</i>	<i>Target date/s</i>	<i>Status as of December 2019</i>
IP-15	Upgrade of Fencing at Torrens Creek Bore and Reservoir compound	A new fence will be installed at the Torrens Creek reservoir once the new compound is finished. The fencing of the old bore will also be upgraded. The upgrade is currently occurring.	Reservoir fence completed. Erection of new Bore fence dependent upon the determination of whether a new bore will be established in Torrens Creek in the next 2 years.	Completed

<i>IP item</i>	<i>Action</i>	<i>Description</i>	<i>Target date/s</i>	<i>Status as of December 2019</i>

<i>IP item</i>	<i>Action</i>	<i>Description</i>	<i>Target date/s</i>	<i>Status as of December 2019</i>
<i>IP-16</i>	<i>Turbidity monitoring in Torrens Creek</i>	<i>Weekly in-house turbidity monitoring of both Torrens Creek Source and Reticulation water.</i>	<i>ASAP Program to be in place by Dec 2017</i>	<i>Started March 2018</i>
<i>IP-17</i>	<i>Development of training program for Water officers</i>	<i>Investigation of training requirements for water officers.</i>	<i>Water & Sewerage foreman has contacted training suppliers to developed training.</i>	<i>In progress</i>

<i>IP item</i>	<i>Action</i>	<i>Description</i>	<i>Target date/s</i>	<i>Status as of December 2019</i>
<i>IP-18</i>	<i>Induction program for new water staff</i>	<i>Development of water specific induction training for water officers & 'Take 5's'.</i>	<i>31st Dec 2017 – updated version</i>	<i>In Progress</i>
<i>IP-19</i>	<i>Replacement of Lead-jointed concrete pipes</i>	<i>Ongoing replacement of Lead-jointed concrete pipes. Many pipes have been replaced over the past 4 years. Remaining pipes will be replaced.</i>	<i>Interim: Ongoing</i>	<i>In Progress</i>

<i>IP item</i>	<i>Action</i>	<i>Description</i>	<i>Target date/s</i>	<i>Status as of December 2019</i>
IP-20	<i>Investigation into connectivity of Torrens Creek bore to the River.</i>	<i>Interim: conduct monitoring of pesticides. Short-term: investigate trends of monitoring results and compare to flows in River. Long-term: dependent upon the results of the investigation. Pesticide monitoring has started however now waiting for river to run as have been in drought for 6 years.</i>	<i>Interim: Ongoing Short-term: 26th February 2018 (Over 100mm of rain in area so hoping River will run). Long-term: TBA</i>	<i>More River well tests are required to establish comparison.</i>
IP-21	<i>Water & Sewerage SOPs</i>	<i>Refinement, development and documentation of operational procedures for Council water and sewerage services – this will be done by a third party</i>	<i>June 2018</i>	<i>Project has been moved forward due to staffing issues.</i>

<i>IP item</i>	<i>Action</i>	<i>Description</i>	<i>Target date/s</i>	<i>Status as of December 2019</i>
IP 22	<i>Plumber's Logbook</i>	<i>Development and placement of logbook at each bore and treatment plant – designed so that Council staff and contractor's can detail in the logbook the technical/non-technical work they have undertaken.</i>	<i>January 2018</i>	<i>Plumbers are using their diaries.</i>