

# **Drinking Water Quality Management Plan Report**

**FLINDERS SHIRE COUNCIL**

SPID: 51

**2019/2020**

This report has been prepared in accordance with the Drinking Water Quality Management Plan Report Guidance Note.



## Table of contents

1	Introduction.....	2
2	Summary of scheme/s operated.....	2
3	DWQMP implementation.....	2
4	Verification monitoring - water quality information and summary .....	6
5	Incidents reported to the regulator .....	46
6	Customer complaints.....	47
7	DWQMP review outcomes .....	48
8	DWQMP audit findings.....	54

## Table of tables

Table 1 – Summary of schemes.....	2
Table 2 – Risk management improvement program implementation status .....	3
Table 3 – Drinking water quality performance - verification monitoring Hughenden Source water .....	6
Table 4 – Drinking water quality performance - verification monitoring Hughenden Source water - Pesticides.....	10
Table 5 – Drinking water quality performance - verification monitoring Hughenden Reticulation.....	16
Table 6 – Drinking water quality performance - verification monitoring Prairie Source water .....	19
Table 7 – Drinking water quality performance - verification monitoring Prairie Source water - Pesticides.....	22
Table 8 – Drinking water quality performance - verification monitoring Prairie Reticulation .....	28
Table 9 – Drinking water quality performance - verification monitoring Torrens Creek Source water ..	31
Table 10 – Drinking water quality performance - verification monitoring Torrens Creek Source water - Pesticides.....	34
Table 11 – Drinking water quality performance - verification monitoring Torrens Creek reticulation....	40
Table 12 E. coli compliance with annual value Hughenden .....	43
Table 13 E. coli compliance with annual value Prairie .....	44
Table 14 E. coli compliance with annual value Torrens Creek .....	45
Table 15 – Incidents reported to the regulator .....	46
Table 16 –customer complaints about water quality .....	47
Table 7 – DWQMP review outcomes .....	48

# 1 Introduction

This is the Drinking Water Quality Management Plan (DWQMP) report for Flinders Shire Council (FSC) for the financial year 2019 - 2020. FSC is a registered service provider with identification (SPID) number 51. FSC is operating under an approved DWQMP to ensure consistent supply of safe quality drinking water in order to protect public health. This is done through proactive identification and minimisation of public health related risks associated with drinking water. This DWQMP report includes:

- the activities undertaken over the financial year in operating our drinking water service
- drinking water quality summary
- summary of our performance in implementing our approved DWQMP

This report is submitted to the Regulator to fulfil our regulatory requirement, and is also made available to our customers through our website or for inspection upon request at council office.

## 2 Summary of scheme/s operated

*Table 1 – Summary of schemes*

<i>Scheme</i>	<i>Water Source</i>	<i>Treatment processes</i>	<i>Towns supplied</i>	<i>Comments</i>
<b>Hughenden</b>	Bore	Chlorinated	Hughenden	
<b>Prairie</b>	Bore	Chlorinated	Prairie	
<b>Torrens Creek</b>	Bore	Clarification, filtration and chlorination	Torrens Creek	
<b>Torrens Creek</b>	River well	Clarification, filtration and chlorination	Torrens Creek	Emergency Supply only

## 3 DWQMP implementation

Implementation of the DWQMP carried on throughout the 2019/2020 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.

The actions undertaken to implement the risk management improvement program are discussed in Table 2.

**Table 2 – Risk management improvement program implementation status**

IP Item	Improvement actions	Description	Status and revised target dates
IP-1	Bore Head improvement program	Mounding of concrete around bore heads, replacement/Maintenance of slabs. Sealing of possible ingress sites.	Ongoing
IP-2	Analysis of Torrens Creek River Well Water	Analysis of Torrens Creek River Well Water – uses as Emergency Back up	Ongoing
IP-3	Investigation of options for improving the integrity of bore casings	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.	Ongoing
IP-4	Development of Monitoring Program for inspection of temporary foam Sealant and Slab Condition of all DW bores	Development of Monitoring Program for inspection of temporary foam Sealant and Slab Condition of all bores	Completed
IP-5	Long-term replacement program for bore casements	Dependent on outcome from IP-3. Once options have been explored Council can develop a long-term replacement program.	DOE is developing program
IP-6	Bore Replacement Program	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.	Unknown
IP-7	Chlorination at Hughenden	Installation of Chlorination equipment. Equipment is able to be housed in same facility as Fluoridation equipment.	Commissioning expected to occur March 2021. New reservoir has also been built.
IP-8	Water Mains replacement	Development of program to replace water mains in Hughenden, Torrens Creek and Prairie.	Program is ongoing, new main was installed along

IP Item	Improvement actions	Description	Status and revised target dates
			Gray Street Hughenden.
IP-9	Upgrade of ORP System at Torrens Creek	Upgrade of ORP system at Torrens Creek.	New treatment plant installed.
IP-10	Plumbers to inform EHO of Water Mains Breaks so that Water Sample can be taken	Plumbers to record details in diary/logbook	Ongoing, will be removed from RMIP.
IP-11	Investigation of Reticulation Network	Investigation into condition of reticulation network and detailed assessment of water demands	Completed
IP-12	Air Scouring Program For Flinders.	Investigation into the cost of hiring contractors to undertake work. A program will be developed once costs are established. Interim: Ongoing flushing of Mains. Short-term: Investigation and cost analysis Long-term: Development of program.	DOE will implement program once new reservoir and disinfection system installed in Hughenden.
IP-13	Long-term plan for the looping of Mains in Hughenden	Looping of mains in order to avoid dead-ends. Will utilise information gathered during investigation of the reticulation network.	Not all mains will be looped, will be removed from RMIP.
IP-14	Investigation of security at Prairie Stock Bore & investigate possibility of increasing volume of water from town bore.	Consult with Rural Lands Officer regarding ability of Council to fence the Stock Bore (currently on a stock route – non Council land	DOE investigating
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.	Completed
IP-16	Turbidity monitoring in Torrens Creek	Weekly in-house turbidity monitoring of both Torrens Creek Source and Reticulation water.	Implemented
IP-17	Development of training program for Water officers	Investigation of training requirements for water officers.	Training provider to provide on-site training when new reservoir and chlorination system in

IP Item	Improvement actions	Description	Status and revised target dates
			Hughenden completed.
IP-18	Induction program for new water staff	Development of water specific induction training for water officers & 'Take 5's'.	As above
IP-19	Replacement of Lead-jointed concrete pipes	Ongoing replacement of Lead-jointed concrete pipes. Many pipes have been replaced over the past 4 years. Remaining pipes will be replaced.	In progress - ongoing
IP-20	Investigation into connectivity of Torrens Creek bore to the River.	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.	Additional River well data required – will recommence now that River well is safer to start.
IP-21	Water & Sewerage SOPs	Refinement, development and documentation of operational procedures for Council water and sewerage services – this will be done by a third party	Pushed back to 2021-2022 budget
IP-22	Plumber's Logbook	Development and placement of logbook at each bore and treatment plant – designed so that Council staff and contractors can detail in the logbook the technical/non-technical work they have undertaken.	Plumbers and Local Laws Officer are using their diaries instead of logbooks.

## 4 Verification monitoring - water quality information and summary

This section discusses the compliance with the water quality criteria.

**Table 3 – Drinking water quality performance - verification monitoring Hughenden Source 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	18	0	0.003	0.03	0.007555556	FSS Health Support Qld
Antimony	mg/L	4 times a year	15	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Arsenic	mg/L	4 times a year	15	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Barium	mg/L	4 times a year	15	0	0.035	0.19	0.076333333	FSS Health Support Qld
Beryllium	mg/L	4 times a year	15	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Bismuth	Mg/L	4 times a year	15	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Boron	mg/L	4 times a year	18	0	0.063	0.084	0.073555556	FSS Health Support Qld
Cadmium	mg/L	4 times a year	18	0	0.0001	0.005	0.000694444	FSS Health Support Qld
Chromium	mg/L	4 times a year	15	0	0.0001	0.0006	0.00014	FSS Health Support Qld
Cobalt	mg/L	4 times a year	15	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Copper	mg/L	4 times a year	15	0	0.001	0.035	0.006466667	FSS Health Support Qld
Iron	mg/L	4 times a year	18	0	0.01	4.2	0.582444444	FSS Health Support Qld
Lead	mg/L	4 times a year	15	0	0.0001	0.002	0.000586667	FSS Health Support Qld



Mercury	Mg/L	4 times a year	15	0	0.0001	0.0001	0.0001	
Manganese	mg/L	4 times a year	15	0	0.0009	0.12	0.031216667	FSS Health Support Qld
Molybdenum	mg/L	4 times a year	18	0	0.0001	0.0006	0.000213333	FSS Health Support Qld
Nickel	mg/L	4 times a year	15	0	0.0001	0.011	0.001493333	FSS Health Support Qld
Selenium	mg/L	4 times a year	15	0	0.0001	0.0001	0.0001	FSS Health
Silver	mg/L	4 times a year	15	0	0.001	0.001	0.001	FSS Health Support Qld
Strontium	mg/L	4 times a year	15	0	0.001	0.3	0.128466667	FSS Health Support Qld
Thallium	mg/L	4 times a year	15	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Tin	mg/L	4 times a year	15	0	0.0001	0.0005	0.000186667	FSS Health Support Qld
Titanium	mg/L	4 times a year	15	0	0.001	0.001	0.001	FSS Health Support Qld
Uranium	mg/L	4 times a year	15	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Vanadium	mg/L	4 times a year	15	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Zinc	mg/L	4 times a year	15	0	0.001	0.21	0.0465	FSS Health Support Qld
Conductivity	mg/L	4 times a year	18	0	801	1170	939.8	FSS Health Support Qld
pH		4 times a year	15	0	7.45	8.43	8.157333333	FSS Health Support Qld
Total Hardness	mg/L	4 times a year	15	0	8.5	77	24.24666667	FSS Health Support Qld
Temporary Hardness	mg/L	4 times a year	15	0	8.5	77	24.24666667	FSS Health Support Qld
Alkalinity	mg/L	4 times a year	15	0	197	259	214.9333333	FSS Health Support Qld

Residual Alkalinity	mg/L	4 times a year	15	0	3.2	4.1	3.8	FSS Health Support Qld
Silica	mg/L	4 times a year	15	0	12	17	15.86666667	FSS Health Support Qld
TDI	mg/L	4 times a year	15	0	8.3	813	617.2866667	FSS Health Support Qld
TDS	mg/L	4 times a year	15	0	476	701	555.8	FSS Health Support Qld
True Colour	Hazen	4 times a year	15	0	1	12	2.466666667	FSS Health Support Qld
Turbidity	NTU	4 times a year	15	0	1	31	4.533333333	FSS Health Support Qld
Sodium	mg/L	4 times a year	15	0	150	250	197.3333333	FSS Health Support Qld
Potassium	mg/L	4 times a year	15	0	1.7	5.7	2.666666667	FSS Health
Calcium	mg/L	4 times a year	15	0	2.6	18	6.386666667	FSS Health Support Qld
Magnesium	mg/L	4 times a year	15	0	0.52	8.8	2	FSS Health Support Qld
Hydrogen	mg/L	4 times a year	15	0	0	0	0	FSS Health Support Qld
Bicarbonate	mg/L	4 times a year	15	0	235	310	256.5333333	FSS Health Support Qld
Carbonate	mg/L	4 times a year	15	0	0.5	4.6	2.74	FSS Health Support Qld
Hydroxide	mg/L	4 times a year	15	0	0	0	0	FSS Health Support Qld
Chloride	mg/L	4 times a year	15	0	79	130	103.3333333	FSS Health Support Qld
Fluoride	mg/L	4 times a year	15	0	0.09	0.14	0.116	FSS Health Support Qld
Nitrate	mg/L	4 times a year	15	0	0.05	0.5	0.123333333	FSS Health Support Qld
Sulphate	mg/L	4 times a year	15	0	59	170	100	FSS Health Support Qld

Gross Alpha Activity	Bq/L	Twice a year	12	0	0.05+/-0.04	0.1	0.08583333 ± 0.048	FSS Health Support Qld
K40 Corrected Beta Activity	Bq/L	Twice a year	12	0	0.1	0.2	0.125	FSS Health Support Qld

**Table 4 – Drinking water quality performance - verification monitoring Hughenden Source water - Pesticides**

Parameter	Units	Frequency of Sampling	Total No. Samples collected	No. of samples exceeding water quality criteria	Min	Max	Average	Laboratory name
Aldrin	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Dieldrin	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Total Aldrin & Dieldrin	µg/L	4 times a year	18	0	0.2	0.2	0.2	FSS Health Support Qld
Chlordane cis	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Chlordane trans	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Total Chlordane	µg/L	4 times a year	18	0	0.2	0.2	0.2	FSS Health Support Qld
DDD (pp)	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
DDE (pp)	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
DDT (op)	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
DDT (pp)	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Total DDT	µg/L	4 times a year	18	0	0.4	0.4	0.4	FSS Health Support Qld
Total Dicoful	µg/L	4 times a year	18	0	1.5	1.5	1.5	FSS Health Support Qld
α-Endosulfan	µg/L	4 times a year	18	0	0.5	0.5	0.5	FSS Health Support Qld

$\beta$ - Endosulfan	$\mu\text{g/L}$	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Endosulfan sulfate	$\mu\text{g/L}$	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Total Endosulfan	$\mu\text{g/L}$	4 times a year	18	0	0.7	0.7	0.7	FSS Health Support Qld
Heptachlor	$\mu\text{g/L}$	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Heptachlor epoxide	$\mu\text{g/L}$	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Total Heptachlor	$\mu\text{g/L}$	4 times a year	18	0	0.2	0.2	0.2	FSS Health Support Qld
Lindane ( $\gamma$ -HCH)	$\mu\text{g/L}$	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Methoxychlor	$\mu\text{g/L}$	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Oxychlorane	$\mu\text{g/L}$	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Azinphos-methyl	$\mu\text{g/L}$	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Bromophos-ethyl	$\mu\text{g/L}$	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Carbophenothion	$\mu\text{g/L}$	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Chlorfenvinphos	$\mu\text{g/L}$	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Chlorpyrifos	$\mu\text{g/L}$	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Diazinon	$\mu\text{g/L}$	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Dichlorvos	$\mu\text{g/L}$	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Dimethoate	$\mu\text{g/L}$	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld

Omethoate	µg/L	4 times a year	18	0	0.2	0.2	0.2	FSS Health Support Qld
Total Dimethoate	µg/L	4 times a year	18	0	0.3	0.3	0.3	FSS Health Support Qld
Disulfoton	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Ethion	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Ethoprophos	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Fenamiphos	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Fenclorphos	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Fenitrothion	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Fenthion (methyl)	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Malathion (Maldison)	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Methidathion	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Mevinphos	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Monocrotophos	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Parathion (ethyl)	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Parathion-methyl	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Pirimiphos-methyl	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Profenofos	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld

Pyrazophos	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Sulprofos	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Temephos	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Terbufos	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Tetrachlorvinphos	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Ametryn	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Atrazine	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Bromacil	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Diuron	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Fluometuron	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Hexazinone	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Metolachlor	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Simazine	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Terbutryn	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Amitraz	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Diclofop-methyl	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Haloxypop-2-etotyl	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld

Haloxyfop-methyl	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Metribuzin	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Molinate	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Pendimethalin	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Propanil	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Propazine	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Terbuthylazine	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Trifluralin	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Captan	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Carbaryl	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Fipronil	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Piperonyl Butoxide	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Pirimicarb	µg/L	4 times a year	18	0	0.2	0.2	0.2	FSS Health Support Qld
Propargite	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Propiconazole	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Triadimefon	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Total Triadimefon	µg/L	4 times a year	18	0	0.3	0.3	0.3	FSS Health Support Qld



Bioresmethrin	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Cyfluthrin	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Cypermethrin	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Deltamethrin	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Fenvalerate	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld
Permethrin	µg/L	4 times a year	18	0	0.1	0.1	0.1	FSS Health Support Qld

**Table 5 – Drinking water quality performance - verification monitoring 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	12	0	0.0004	0.03	0.005283	FSS Health Support Qld
Antimony	mg/L	4 times a year	11	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Arsenic	mg/L	4 times a year	11	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Barium	mg/L	4 times a year	11	0	0.045	0.057	0.049909	FSS Health Support Qld
Beryllium	mg/L	4 times a year	11	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Bismuth	Mg/L	4 times a year	11	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Boron	mg/L	4 times a year	12	0	0.07	0.078	0.072417	FSS Health Support Qld
Cadmium	mg/L	4 times a year	11	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Chromium	mg/L	4 times a year	11	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Cobalt	mg/L	4 times a year	11	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Copper	mg/L	4 times a year	12	0	0.0001	0.028	0.005592	FSS Health Support Qld
Iron	mg/L	4 times a year	12	0	0.01	0.2	0.048917	FSS Health Support Qld

Lead	mg/L	4 times a year	11	0	0.0001	0.0059	0.000718	FSS Health Support Qld
Mercury	mg/L	4 times a year	11	0	0.0001	0.0001	0.0001	
Manganese	mg/L	4 times a year	11	0	0.0009	0.097	0.023866667	FSS Health Support Qld
Molybdenum	mg/L	4 times a year	12	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Nickel	mg/L	4 times a year	11	0	0.0001	0.0008	0.0003	FSS Health Support Qld
Selenium	mg/L	4 times a year	11	0	0.00001	0.0001	9.18182E-05	FSS Health
Silver	mg/L	4 times a year	11	0	0.0001	0.001	0.000918182	FSS Health Support Qld
Strontium	mg/L	4 times a year	11	0	0.084	0.099	0.093090909	FSS Health Support Qld
Thallium	mg/L	4 times a year	11	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Tin	mg/L	4 times a year	11	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Titanium	mg/L	4 times a year	11	0	0.001	0.001	0.001	FSS Health Support Qld
Uranium	mg/L	4 times a year	11	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Vanadium	mg/L	4 times a year	11	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Zinc	mg/L	4 times a year	11	0	0.003	0.064	0.020583333	FSS Health Support Qld
Conductivity	mg/L	4 times a year	12	0	973	1000	981.4545455	FSS Health Support Qld
pH		4 times a year	11	0	8.29	8.47	8.361818182	FSS Health Support Qld
Total Hardness	mg/L	4 times a year	11	0	11	13	12.63636364	FSS Health Support Qld
Temporary Hardness	mg/L	4 times a year	11	0	11	13	12.63636364	FSS Health Support Qld

Alkalinity	mg/L	4 times a year	11	0	202	210	205.0909091	FSS Health Support Qld
Residual Alkalinity	mg/L	4 times a year	11	0	3.8	4	3.836363636	FSS Health Support Qld
Silica	mg/L	4 times a year	11	0	16	16	16	FSS Health Support Qld
TDI	mg/L	4 times a year	11	0	679	702	685.8181818	FSS Health Support Qld
TDS	mg/L	4 times a year	11	0	573	590	578.3636364	FSS Health Support Qld
True Colour	Hazen	4 times a year	11	0	1	1	1	FSS Health Support Qld
Turbidity	NTU	4 times a year	11	0	1	1	1	FSS Health Support Qld
Sodium	mg/L	4 times a year	11	0	21	210	192.8181818	FSS Health Support Qld
Potassium	mg/L	4 times a year	11	0	1.9	2	1.981818182	FSS Health
Calcium	mg/L	4 times a year	11	0	3.5	4.1	3.836363636	FSS Health Support Qld
Magnesium	mg/L	4 times a year	11	0	0.61	0.78	0.707272727	FSS Health Support Qld
Hydrogen	mg/L	4 times a year	11	0	0	0	0	FSS Health Support Qld
Bicarbonate	mg/L	4 times a year	11	0	240	250	242.8181818	FSS Health Support Qld
Carbonate	mg/L	4 times a year	11	0	3.1	4.6	3.636363636	FSS Health Support Qld
Hydroxide	mg/L	4 times a year	11	0	0	0	0	FSS Health Support Qld
Chloride	mg/L	4 times a year	11	0	110	120	110.9090909	FSS Health Support Qld
Fluoride	mg/L	4 times a year	11	0	0.11	0.12	0.115454545	FSS Health Support Qld
Nitrate	mg/L	4 times a year	11	0	0.67	1.2	0.97	FSS Health Support Qld

Sulphate	mg/L	4 times a year	11	0	110	120	110.9090909	FSS Health Support Qld
Chlorine	Mg/L	Once a week	240		0	1.04	0.1395	In House

**Table 6 – Drinking water quality performance - verification monitoring Prairie Source 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	5	0	0.005	0.011	0.0074	FSS Health Support Qld
Antimony	mg/L	4 times a year	5	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Arsenic	mg/L	4 times a year	5	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Barium	mg/L	4 times a year	5	0	0.068	0.075	0.0714	FSS Health Support Qld
Beryllium	mg/L	4 times a year	5	0	0.0001	0.0001	0.0001	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	6	0	0.026	0.24	0.199333333	FSS Health Support Qld
Cadmium	mg/L	4 times a year	5	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Chromium	mg/L	4 times a year	5	0	0.0001	0.0013	0.00054	FSS Health Support Qld
Cobalt	mg/L	4 times a year	5	0	0.00001	0.0003	0.000122	FSS Health Support Qld
Copper	mg/L	4 times a year	6	0	0.002	0.005	0.003	FSS Health Support Qld

Iron	mg/L	4 times a year	6	0	0.01	3.8	1.0825	FSS Health Support Qld
Lead	mg/L	4 times a year	5	0	0.0002	0.0006	0.00036	FSS Health Support Qld
Mercury	Mg/L	4 times a year	5	0	0.00001	0.0001	0.000082	FSS Health Support Qld
Manganese	mg/L	4 times a year	5	0	0.019	0.073	0.044666667	FSS Health Support Qld
Molybdenum	mg/L	4 times a year	6	0	0.0009	0.011	0.00298	FSS Health Support Qld
Nickel	mg/L	4 times a year	5	0	0.00003	0.0011	0.000546	FSS Health Support Qld
Selenium	mg/L	4 times a year	5	0	0.00001	1	0.200062	FSS Health
Silver	mg/L	4 times a year	5	0	0.001	0.001	0.001	FSS Health Support Qld
Strontium	mg/L	4 times a year	5	0	0.061	0.68	0.5522	FSS Health Support Qld
Thallium	mg/L	4 times a year	5	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Tin	mg/L	4 times a year	5	0	0.00001	0.0001	0.000082	FSS Health Support Qld
Titanium	mg/L	4 times a year	5	0	0.001	0.001	0.001	FSS Health Support Qld
Uranium	mg/L	4 times a year	5	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Vanadium	mg/L	4 times a year	5	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Zinc	mg/L	4 times a year	5	0	0.003	0.076	0.032666667	FSS Health Support Qld
Conductivity	mg/L	4 times a year	6	0	1200	1390	1240	FSS Health Support Qld
pH		4 times a year	5	0	7.88	8.22	8.044	FSS Health Support Qld

Total Hardness	mg/L	4 times a year	5	0	78	93	88.6	FSS Health Support Qld
Temporary Hardness	mg/L	4 times a year	5	0	78	93	88.6	FSS Health Support Qld
Alkalinity	mg/L	4 times a year	5	0	133	151	144.4	FSS Health Support Qld
Residual Alkalinity	mg/L	4 times a year	5	0	1.1	1.2	1.12	FSS Health Support Qld
Silica	mg/L	4 times a year	5	0	18	20	19	FSS Health Support Qld
TDI	mg/L	4 times a year	5	0	735	814	753.4	FSS Health Support Qld
TDS	mg/L	4 times a year	5	0	666	751	684.4	FSS Health Support Qld
True Colour	Hazen	4 times a year	5	0	1	3	1.4	FSS Health Support Qld
Turbidity	NTU	4 times a year	5	0	1	1	1	FSS Health Support Qld
Sodium	mg/L	4 times a year	5	0	210	250	218	FSS Health Support Qld
Potassium	mg/L	4 times a year	5	0	5.8	6.1	5.92	FSS Health
Calcium	mg/L	4 times a year	5	0	21	25	23.6	FSS Health Support Qld
Magnesium	mg/L	4 times a year	5	0	5.9	7.5	7.08	FSS Health Support Qld
Hydrogen	mg/L	4 times a year	5	0	0	0	0	FSS Health Support Qld
Bicarbonate	mg/L	4 times a year	5	0	159	182	173.2	FSS Health Support Qld
Carbonate	mg/L	4 times a year	5	0	0.8	2	1.26	FSS Health Support Qld
Hydroxide	mg/L	4 times a year	5	0	0	0	0	FSS Health Support Qld

Chloride	mg/L	4 times a year	5	0	240	310	254	FSS Health Support Qld
Fluoride	mg/L	4 times a year	5	0	0.11	0.12	0.116	FSS Health Support Qld
Nitrate	mg/L	4 times a year	5	0	0.1	0.12	0.104	FSS Health Support Qld
Sulphate	mg/L	4 times a year	5	0	63	73	70.6	FSS Health Support Qld
Gross Alpha Activity	Bq/L	Twice a year	4	0	0.1	0.1	0.1	FSS Health Support Qld
K40 Corrected Beta Activity	Bq/L	Twice a year	4	0	0.1	0.2	0.15	FSS Health Support Qld

**Table 7 – Drinking water quality performance - verification monitoring Prairie Source water - Pesticides**

Parameter	Units	Frequency of Sampling	Total No. Samples collected	No. of samples exceeding water quality criteria	Min	Max	Average	Laboratory name
Aldrin	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Dieldrin	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Total Aldrin & Dieldrin	µg/L	4 times a year	7	0	0.2	0.2	0.2	FSS Health Support Qld
Chlordane cis	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Chlordane trans	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Total Chlordane	µg/L	4 times a year	7	0	0.2	0.2	0.2	FSS Health Support Qld



DDD (pp)	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
DDE (pp)	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
DDT (op)	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
DDT (pp)	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Total DDT	µg/L	4 times a year	7	0	0.4	0.4	0.4	FSS Health Support Qld
Total Dicoful	µg/L	4 times a year	7	0	1.5	1.5	1.5	FSS Health Support Qld
α-Endosulfan	µg/L	4 times a year	7	0	0.5	0.5	0.5	FSS Health Support Qld
β - Endosulfan	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Endosulfan sulfate	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Total Endosulfan	µg/L	4 times a year	7	0	0.7	0.7	0.7	FSS Health Support Qld
Heptachlor	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Heptachlor epoxide	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Total Heptachlor	µg/L	4 times a year	7	0	0.2	0.2	0.2	FSS Health Support Qld
Lindane (γ-HCH)	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Methoxychlor	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Oxychlorane	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Azinphos-methyl	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld

Bromophos-ethyl	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Carbophenothion	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Chlorfenvinphos	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Chlororpyrifos	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Diazinon	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Dichlorvos	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Dimethoate	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Omethoate	µg/L	4 times a year	7	0	0.2	0.2	0.2	FSS Health Support Qld
Total Dimethoate	µg/L	4 times a year	7	0	0.3	0.3	0.3	FSS Health Support Qld
Disulfoton	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Ethion	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Ethoprophos	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Fenamiphos	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Fenchlorphos	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Fenitrothion	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Fenthion (methyl)	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Malathion (Maldison)	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld

Methidathion	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Mevinphos	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Monocrotophos	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Parathion (ethyl)	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Parathion-methyl	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Pirimiphos-methyl	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Profenofos	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Pyrazophos	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Sulprofos	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Temephos	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Terbufos	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Tetrachlorvinphos	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Ametryn	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Atrazine	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Bromacil	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Diuron	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Fluometuron	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld

Hexazinone	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Metolachlor	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Simazine	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Terbutryn	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Amitraz	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Diclofop-methyl	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Haloxypop-2-etotyl	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Haloxypop-methyl	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Metribuzin	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Molinate	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Pendimethalin	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Propanil	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Propazine	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Terbuthylazine	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Trifluralin	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Captan	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Carbaryl	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld

Fipronil	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Piperonyl Butoxide	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Pirimicarb	µg/L	4 times a year	7	0	0.2	0.2	0.2	FSS Health Support Qld
Propargite	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Propiconazole	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Triadimefon	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Total Triadimefon	µg/L	4 times a year	7	0	0.3	0.3	0.3	FSS Health Support Qld
Bioresmethrin	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Cyfluthrin	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Cypermethrin	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Deltamethrin	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Fenvalerate	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld
Permethrin	µg/L	4 times a year	7	0	0.1	0.1	0.1	FSS Health Support Qld

**Table 8 – Drinking water quality performance - verification monitoring 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	7	0	0.003	0.03	0.007714286	FSS Health Support Qld
Antimony	mg/L	4 times a year	6	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Arsenic	mg/L	4 times a year	6	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Barium	mg/L	4 times a year	6	0	0.068	0.073	0.070333333	FSS Health Support Qld
Beryllium	mg/L	4 times a year	6	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Bismuth	Mg/L	4 times a year	6	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Boron	mg/L	4 times a year	7	0	0.22	0.26	0.24	FSS Health Support Qld
Cadmium	mg/L	4 times a year	6	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Chromium	mg/L	4 times a year	6	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Cobalt	mg/L	4 times a year	6	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Copper	mg/L	4 times a year	7	0	0.001	0.007	0.003857143	FSS Health Support Qld
Iron	mg/L	4 times a year	7	0	0.01	0.12	0.044714286	FSS Health Support Qld
Lead	mg/L	4 times a year	6	0	0.0001	0.014	0.003683333	FSS Health Support Qld
Mercury	Mg/L	4 times a year	6	0	0.0001	0.0001	0.0001	FSS Health Support Qld

Manganese	mg/L	4 times a year	7	0	0.004	0.039	0.020085714	FSS Health Support Qld
Molybdenum	mg/L	4 times a year	6	0	0.0009	0.0011	0.001033333	FSS Health Support Qld
Nickel	mg/L	4 times a year	6	0	0.0002	0.0026	0.000666667	FSS Health Support Qld
Selenium	mg/L	4 times a year	6	0	0.0001	0.0001	0.0001	FSS Health
Silver	mg/L	4 times a year	6	0	0.001	0.001	0.001	FSS Health Support Qld
Strontium	mg/L	4 times a year	6	0	0.64	0.69	0.665	FSS Health Support Qld
Thallium	mg/L	4 times a year	6	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Tin	mg/L	4 times a year	6	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Titanium	mg/L	4 times a year	6	0	0.001	0.001	0.001	FSS Health Support Qld
Uranium	mg/L	4 times a year	6	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Vanadium	mg/L	4 times a year	6	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Zinc	mg/L	4 times a year	7	0	0.002	0.4	0.091	FSS Health Support Qld
Conductivity	mg/L	4 times a year	6	0	1200	1280	1226.666667	FSS Health Support Qld
pH		4 times a year	6	0	8.09	8.3	8.223333333	FSS Health Support Qld
Total Hardness	mg/L	4 times a year	6	0	86	92	89.83333333	FSS Health Support Qld
Temporary Hardness	mg/L	4 times a year	6	0	86	92	89.83333333	FSS Health Support Qld
Alkalinity	mg/L	4 times a year	6	0	142	146	144.5	FSS Health Support Qld
Residual Alkalinity	mg/L	4 times a year	6	0	1.1	1.2	1.116666667	FSS Health Support Qld

Silica	mg/L	4 times a year	6	0	19	19	19	FSS Health Support Qld
TDI	mg/L	4 times a year	6	0	737	771	745.8333333	FSS Health Support Qld
TDS	mg/L	4 times a year	6	0	668	703	677.3333333	FSS Health Support Qld
True Colour	Hazen	4 times a year	6	0	1	10	2.833333333	FSS Health Support Qld
Turbidity	NTU	4 times a year	6	0	1	1	1	FSS Health Support Qld
Sodium	mg/L	4 times a year	6	0	210	230	215	FSS Health Support Qld
Potassium	mg/L	4 times a year	6	0	5.8	6.1	5.95	FSS Health
Calcium	mg/L	4 times a year	6	0	23	25	24.16666667	FSS Health Support Qld
Magnesium	mg/L	4 times a year	6	0	6.7	7.3	7.116666667	FSS Health Support Qld
Hydrogen	mg/L	4 times a year	6	0	0	0	0	FSS Health Support Qld
Bicarbonate	mg/L	4 times a year	6	0	170	175	172.1666667	FSS Health Support Qld
Carbonate	mg/L	4 times a year	6	0	1.4	2.3	1.85	FSS Health Support Qld
Hydroxide	mg/L	4 times a year	6	0	0	0	0	FSS Health Support Qld
Chloride	mg/L	4 times a year	6	0	240	270	246.6666667	FSS Health Support Qld
Fluoride	mg/L	4 times a year	6	0	0.12	0.13	0.123333333	FSS Health Support Qld
Nitrate	mg/L	4 times a year	6	0	0.1	0.1	0.1	FSS Health Support Qld
Sulphate	mg/L	4 times a year	6	0	68	73	70.83333333	FSS Health Support Qld
Chlorine	Mg/L	3 times a week	153	0	0	1.15	0.197908	In house



**Table 9 – Drinking water quality performance - verification monitoring Torrens Creek Source 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	5	0	0.013	5.8	1.1832	FSS Health Support Qld
Antimony	mg/L	4 times a year	4	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Arsenic	mg/L	4 times a year	4	0	0.0001	0.0004	0.0003	FSS Health Support Qld
Barium	mg/L	4 times a year	4	0	0.21	0.23	0.2225	FSS Health Support Qld
Beryllium	mg/L	4 times a year	4	0	0.0003	0.0004	0.000375	FSS Health Support Qld
Bismuth	Mg/L	4 times a year	4	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Boron	mg/L	4 times a year	5	0	0.04	0.045	0.0422	FSS Health Support Qld
Cadmium	mg/L	4 times a year	4	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Chromium	mg/L	4 times a year	4	0	0.0002	0.0007	0.000425	FSS Health Support Qld
Cobalt	mg/L	4 times a year	4	0	0.0009	0.0012	0.00105	FSS Health Support Qld
Copper	mg/L	4 times a year	5	0	0.003	0.028	0.0094	FSS Health Support Qld
Iron	mg/L	4 times a year	5	0	0.01	5.5	2.572	FSS Health Support Qld

Lead	mg/L	4 times a year	4	0	0.0003	0.0009	0.000575	FSS Health Support Qld
Mercury	Mg/L	4 times a year	4	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Manganese	mg/L	4 times a year	5	0	0.025	0.054	0.046	FSS Health Support Qld
Molybdenum	mg/L	4 times a year	4	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Nickel	mg/L	4 times a year	4	0	0.0042	0.0049	0.0045	FSS Health Support Qld
Selenium	mg/L	4 times a year	4	0	0.0002	0.0003	0.000275	FSS Health
Silver	mg/L	4 times a year	4	0	0.001	0.001	0.001	FSS Health Support Qld
Strontium	mg/L	4 times a year	4	0	0.025	0.029	0.0265	FSS Health Support Qld
Thallium	mg/L	4 times a year	4	0	0.0001	0.0003	0.000225	FSS Health Support Qld
Tin	mg/L	4 times a year	4	0	0.0001	0.0002	0.000125	FSS Health Support Qld
Titanium	mg/L	4 times a year	4	0	0.001	0.001	0.001	FSS Health Support Qld
Uranium	mg/L	4 times a year	4	0	0.0003	0.0008	0.00055	FSS Health Support Qld
Vanadium	mg/L	4 times a year	4	0	0.0003	0.0011	0.00075	FSS Health Support Qld
Zinc	mg/L	4 times a year	5	0	0.012	0.06	0.0254	FSS Health Support Qld
Conductivity	mg/L	4 times a year	4	0	218	235	227.25	FSS Health Support Qld
pH		4 times a year	4	0	6.15	6.69	6.365	FSS Health Support Qld
Total Hardness	mg/L	4 times a year	4	0	26	30	28	FSS Health Support Qld
Temporary Hardness	mg/L	4 times a year	4	0	26	30	28	FSS Health Support Qld

Alkalinity	mg/L	4 times a year	4	0	37	40	38.25	FSS Health Support Qld
Residual Alkalinity	mg/L	4 times a year	4	0	0.1	0.2	0.175	FSS Health Support Qld
Silica	mg/L	4 times a year	4	0	14	15	14.75	FSS Health Support Qld
TDI	mg/L	4 times a year	4	0	136	143	140	FSS Health Support Qld
TDS	mg/L	4 times a year	4	0	127	135	131	FSS Health Support Qld
True Colour	Hazen	4 times a year	4	0	1	1	1	FSS Health Support Qld
Turbidity	NTU	4 times a year	4	0	14	41	24.75	FSS Health Support Qld
Sodium	mg/L	4 times a year	4	0	23	25	24	FSS Health Support Qld
Potassium	mg/L	4 times a year	4	0	14	15	14.25	FSS Health
Calcium	mg/L	4 times a year	4	0	1.5	1.6	1.575	FSS Health Support Qld
Magnesium	mg/L	4 times a year	4	0	5.5	6.2	5.85	FSS Health Support Qld
Hydrogen	mg/L	4 times a year	4	0	0	0	0	FSS Health Support Qld
Bicarbonate	mg/L	4 times a year	4	0	45	49	47	FSS Health Support Qld
Carbonate	mg/L	4 times a year	4	0	0	0	0	FSS Health Support Qld
Hydroxide	mg/L	4 times a year	4	0	0	0	0	FSS Health Support Qld
Chloride	mg/L	4 times a year	4	0	40	45	41.5	FSS Health Support Qld
Fluoride	mg/L	4 times a year	4	0	0.07	0.07	0.07	FSS Health Support Qld
Nitrate	mg/L	4 times a year	4	0	1.6	1.9	1.7	FSS Health Support Qld

Sulphate	mg/L	4 times a year	4	0	4.2	4.6	4.45	FSS Health Support Qld
Gross Alpha Activity	Bq/L	Twice a year	4	0	0.2 +/-0.06	0.31+/-0.6	0.24+/-0.195	FSS Health Support Qld
K40 Corrected Beta Activity	Bq/L	Twice a year	4	0	0.1	0.2	0.15	FSS Health Support Qld

**Table 10 – Drinking water quality performance - verification monitoring Torrens Creek Source water - Pesticides**

Parameter	Units	Frequency of Sampling	Total No. Samples collected	No. of samples exceeding water quality criteria	Min	Max	Average	Laboratory name
Aldrin	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Dieldrin	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Total Aldrin & Dieldrin	µg/L	4 times a year	5	0	0.2	0.2	0.2	FSS Health Support Qld
Chlordane cis	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Chlordane trans	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Total Chlordane	µg/L	4 times a year	5	0	0.2	0.2	0.2	FSS Health Support Qld
DDD (pp)	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
DDE (pp)	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld

DDT (op)	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
DDT (pp)	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Total DDT	µg/L	4 times a year	5	0	0.4	0.4	0.4	FSS Health Support Qld
Total Dicoful	µg/L	4 times a year	5	0	1.5	1.5	1.5	FSS Health Support Qld
α-Endosulfan	µg/L	4 times a year	5	0	0.5	0.5	0.5	FSS Health Support Qld
β - Endosulfan	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Endosulfan sulfate	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Total Endosulfan	µg/L	4 times a year	5	0	0.7	0.7	0.7	FSS Health Support Qld
Heptachlor	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Heptachlor epoxide	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Total Heptachlor	µg/L	4 times a year	5	0	0.2	0.2	0.2	FSS Health Support Qld
Lindane (γ-HCH)	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Methoxyychlor	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Oxychlorane	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Azinphos-methyl	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Bromophos-ethyl	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Carbophenothion	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld

Chlorfenvinphos	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Chlororpyrifos	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Diazinon	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Dichlorvos	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Dimethoate	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Omethoate	µg/L	4 times a year	5	0	0.2	0.2	0.2	FSS Health Support Qld
Total Dimethoate	µg/L	4 times a year	5	0	0.3	0.3	0.3	FSS Health Support Qld
Disulfoton	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Ethion	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Ethoprophos	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Fenamiphos	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Fenchlorphos	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Fenitrothion	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Fenthion (methyl)	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Malathion (Maldison)	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Methidathion	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Mevinphos	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld

Monocrotophos	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Parathion (ethyl)	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Parathion-methyl	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Pirimiphos-methyl	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Profenofos	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Pyrazophos	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Sulprofos	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Temephos	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Terbufos	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Tetrachlorvinphos	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Ametryn	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Atrazine	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Bromacil	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Diuron	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Fluometuron	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Hexazinone	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Metolachlor	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld

Simazine	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Terbutryn	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Amitraz	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Diclofop-methyl	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Haloxypop-2-etotyl	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Haloxypop-methyl	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Metribuzin	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Molinate	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Pendimethalin	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Propanil	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Propazine	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Terbuthylazine	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Trifluralin	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Captan	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Carbaryl	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Fipronil	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Piperonyl Butoxide	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld



Pirimicarb	µg/L	4 times a year	5	0	0.2	0.2	0.2	FSS Health Support Qld
Propargite	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Propiconazole	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Triadimefon	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Total Triadimefon	µg/L	4 times a year	5	0	0.3	0.3	0.3	FSS Health Support Qld
Bioresmethrin	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Cyfluthrin	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Cypermethrin	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Deltamethrin	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Fenvalerate	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld
Permethrin	µg/L	4 times a year	5	0	0.1	0.1	0.1	FSS Health Support Qld

**Table 11 – Drinking water quality performance - verification monitoring 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	6	0	0.023	6.1	2.046333333	FSS Health Support Qld
Antimony	mg/L	4 times a year	5	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Arsenic	mg/L	4 times a year	5	0	0.0001	0.0002	0.00014	FSS Health Support Qld
Barium	mg/L	4 times a year	5	0	0.025	0.22	0.175	FSS Health Support Qld
Beryllium	mg/L	4 times a year	5	0	0.0002	0.0005	0.00032	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	6	0	0.04	0.045	0.042666667	FSS Health Support Qld
Cadmium	mg/L	4 times a year	5	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Chromium	mg/L	4 times a year	5	0	0.0002	0.0004	0.00026	FSS Health Support Qld
Cobalt	mg/L	4 times a year	5	0	0.0004	0.0016	0.0009	FSS Health Support Qld
Copper	mg/L	4 times a year	6	0	0.006	0.036	0.023	FSS Health Support Qld
Iron	mg/L	4 times a year	6	0	0.05	2.7	0.873333333	FSS Health Support Qld
Lead	mg/L	4 times a year	5	0	0.0004	0.0016	0.00094	FSS Health Support Qld
Mercury	Mg/L	4 times a year	5	0	0.0001	0.0001	0.0001	FSS Health Support Qld

Manganese	mg/L	4 times a year	6	0	0.013	0.045	0.025666667	FSS Health Support Qld
Molybdenum	mg/L	4 times a year	5	0	0.0001	0.0002	0.00012	FSS Health Support Qld
Nickel	mg/L	4 times a year	5	0	0.0043	0.0063	0.00524	FSS Health Support Qld
Selenium	mg/L	4 times a year	5	0	0.0003	0.0004	0.00036	FSS Health
Silver	mg/L	4 times a year	5	0	0.001	0.001	0.001	FSS Health Support Qld
Strontium	mg/L	4 times a year	5	0	0.026	0.033	0.0288	FSS Health Support Qld
Thallium	mg/L	4 times a year	5	0	0.0001	0.0002	0.00012	FSS Health Support Qld
Tin	mg/L	4 times a year	5	0	0.0001	0.0005	0.00022	FSS Health Support Qld
Titanium	mg/L	4 times a year	5	0	0.001	0.002	0.0012	FSS Health Support Qld
Uranium	mg/L	4 times a year	5	0	0.0002	0.0005	0.0003	FSS Health Support Qld
Vanadium	mg/L	4 times a year	5	0	0.0002	0.0006	0.00042	FSS Health Support Qld
Zinc	mg/L	4 times a year	6	0	0.016	0.06	0.038666667	FSS Health Support Qld
Conductivity	mg/L	4 times a year	5	0	241	320	283.8	FSS Health Support Qld
pH		4 times a year	5	0	6.34	6.67	6.498	FSS Health Support Qld
Total Hardness	mg/L	4 times a year	5	0	28	32	30.2	FSS Health Support Qld
Temporary Hardness	mg/L	4 times a year	5	0	28	32	30.2	FSS Health Support Qld
Alkalinity	mg/L	4 times a year	5	0	34	36	35.4	FSS Health Support Qld
Residual Alkalinity	mg/L	4 times a year	5	0	0.1	0.2	0.12	FSS Health Support Qld

Silica	mg/L	4 times a year	5	0	14	15	14.8	FSS Health Support Qld
TDI	mg/L	4 times a year	5	0	145	184	166.2	FSS Health Support Qld
TDS	mg/L	4 times a year	5	0	137	178	159	FSS Health Support Qld
True Colour	Hazen	4 times a year	5	0	1	2	1.4	FSS Health Support Qld
Turbidity	NTU	4 times a year	5	0	2	8	4.8	FSS Health Support Qld
Sodium	mg/L	4 times a year	5	0	26	43	35	FSS Health Support Qld
Potassium	mg/L	4 times a year	5	0	13	13	13	FSS Health
Calcium	mg/L	4 times a year	5	0	1.4	2.3	1.78	FSS Health Support Qld
Magnesium	mg/L	4 times a year	5	0	6	6.4	6.26	FSS Health Support Qld
Hydrogen	mg/L	4 times a year	5	0	0	0	0	FSS Health Support Qld
Bicarbonate	mg/L	4 times a year	5	0	41	44	43.2	FSS Health Support Qld
Carbonate	mg/L	4 times a year	5	0	0	0	0	FSS Health Support Qld
Hydroxide	mg/L	4 times a year	5	0	0	0	0	FSS Health Support Qld
Chloride	mg/L	4 times a year	5	0	47	74	60.8	FSS Health Support Qld
Fluoride	mg/L	4 times a year	5	0	0.03	0.06	0.042	FSS Health Support Qld
Nitrate	mg/L	4 times a year	5	0	1.8	2.1	1.9	FSS Health Support Qld
Sulphate	mg/L	4 times a year	5	0	3.5	4.6	3.94	FSS Health Support Qld
Chlorine	Mg/L	3 times a week	159	0	0	2.41	0.58566	In House

**Table 12 E. coli compliance with annual value Hughenden**

Drinking water scheme:     Hughenden    

Year	2019 – 2020											
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	24	23	22	29	24	4	18	24	24	8	8	8
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	195	187	195	207	212	205	218	238	257	237	227	216
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%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**Table 13 E. coli compliance with annual value Prairie**

Drinking water scheme: Prairie

Year	2019 – 2020											
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	2	2	2	2	2	3	3	2	2	2	2	3
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	62	52	47	41	39	39	38	36	34	30	28	27
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

**Table 14 E. coli compliance with annual value Torrens Creek**

**Drinking water scheme:** Torrens Creek

Year	2019– 2020											
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	2	2	2	2	2	3	3	2	2	2	2	3
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	41	36	34	31	31	31	31	31	31	28	27	27
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%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

## 5 Incidents reported to the regulator

The incidents reported to the regulator and management actions undertaken over the financial year are provided in this section.

**Table 15 – Incidents reported to the regulator**

Incident date	Scheme / location	Parameter / issue	Preventive actions & Comments
21/08/2019	Bores 2, 5, 7 & 9 - Hughenden	Carbophenothion	Samples were taken in June 2019, results received in August 2019. High interference in the form of sulphur in all samples, this affected the readings for Carbophenothion. Additional samples taken all returned <0.1.
21/08/2019	Torrens Creek	Carbophenothion	Samples were taken in June 2019, results received in August 2019. High interference in the form of sulphur in all samples, this affected the readings for Carbophenothion. Additional samples taken all returned <0.1.



## 6 Customer complaints

This section discusses details of any complaints received about the drinking water service

Refer to section 2.3.6 in the Guidance Note.

**Table 16 –customer complaints about water quality**

Scheme	Health concern	Dirty water	Taste and odour	Total
Hughenden	0	1	1	2
Prairie	0	0	0	0
Torrens Creek	0	0	0	0

### 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.

### Dirty Water

One complaint was received about dirty water at an internal tap.

## 7 DWQMP review outcomes

A summary of the outcomes of the review and how issues/changes raised in the review, were actioned is provided in this section.

**Table 7 – DWQMP review outcomes**

Review Date or Period	Yes or No	Type of change: Positive/Negative	Action required?
<b>Areas to consider</b> <b>Service Description</b> <ul style="list-style-type: none"> <li>Have any of the service provider contact details changed?</li> <li>Do the scheme details still apply?</li> <li>Have the number of communities service changed?</li> <li>Has the population size changed?</li> <li>Have the number of connections changed?</li> <li>Is the design capacity sufficient for population projections?</li> </ul>	Yes Yes No Yes Yes Yes	N/A N/A N/A N/A	Update contact details Update population numbers Update number of connections
<b>Details of Infrastructure used for providing the service</b> <ul style="list-style-type: none"> <li>Do the schematics accurately reflect all the components, processes and linkages, from catchment to consumer?</li> <li>Do any of the system description details require updating?</li> <li>Have new chemicals been introduced into the treatment process or the dosing points re-located?</li> <li>Have monitoring and telemetry systems been checked and/or changed?</li> <li>Have low pressure areas in the distribution system changed?</li> <li>Has a reservoir undergone refurbishment?</li> <li>Have there been changes in the key stakeholders</li> </ul>	No Yes Yes No Yes No Yes	Positive and Negative	Update Torrens Creek Scheme to reflect new system (Clarifier and Filtration plus update of chlorination). Reflect new telemetry system as well. Revision of Hughenden Scheme – Fluoride plant is non-operational, consider removed from plan. Prairie – ORP manifold is out of service, will be upgraded – removed

<p>or engagement process?</p> <ul style="list-style-type: none"> <li>Have there been any problems with infrastructure or equipment breakdown or deterioration?</li> </ul>			<p>from plan</p> <p>Key Stakeholders – Prominent and Trility removed as Fluoride plant non-operational.</p>
<p><b>Information gathering on water quality and catchment characteristics</b></p> <p>Water quality data should be collated, analysed and trended, including for source water, treatment process steps and distribution.</p> <ul style="list-style-type: none"> <li>Have there been changes to the source water quality or characteristics?</li> <li>Have there been any changes to the output quality?</li> <li>Does water quality data indicate that the level of risk has changed for certain hazards?</li> <li>Has operational monitoring data identified any poorly functioning treatment processes?</li> <li>Has there been any significant development or land use changes in the catchment?</li> <li>Has the nature or frequency of any water quality complaints changed?</li> <li>Has there been any occurrence of suspected illness following a customer complaint about water quality?</li> </ul>	<p>Yes</p> <p>No</p> <p>Yes</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p>	<p>Negative</p>	<p>Increase in Sulphur detection in Hughenden – has affected some pesticide results – added to risk matrix</p> <p>Include recent monitoring and Incident History and discussion.</p> <p>Charts removed.</p>
<p><b>Hazard identification</b></p> <ul style="list-style-type: none"> <li>Have the personnel (position) responsible for hazard identification and risk assessment changed?</li> <li>Have any new or emerging hazards or hazardous events been identified?</li> </ul>	<p>Yes</p> <p>Yes</p>	<p>N/A</p> <p>Negative</p>	<p>Update staff details</p> <p>Reflect changes in Torrens Creek Infrastructure and add increase in sulphur detection in Hughenden.</p>
<p><b>Assessment of risks</b></p>	<p>Yes</p>		<p>Update Risk Matrix to reflect changes</p>

<ul style="list-style-type: none"> <li>• Is the risk assessment methodology still considered appropriate?</li> <li>• Have new risk management strategies been implemented?</li> <li>• Do any new risk management strategies require new assessment of residual risk?</li> <li>• Has an acceptable, residual risk level been clearly defined?</li> </ul>	<p>Yes</p> <p>Yes</p> <p>No</p>	<p>Positive and Negative</p>	<p>in the systems.</p> <p>Sulphur detection in Hughenden added</p>
<p><b>Risk management measures</b></p> <ul style="list-style-type: none"> <li>• Have the existing risk management strategies achieved desired water quality outcomes?</li> <li>• Has the effectiveness of any new risk management strategies or infrastructure upgrades been evaluated?</li> </ul>	<p>Yes</p> <p>No</p>	<p>Positive</p>	<p>Update risk management measures associated with Infrastructure upgrade and increase in Sulphur.</p>
<p><b>Operation and maintenance procedures</b></p> <ul style="list-style-type: none"> <li>• Do the procedures and practices reflect current operations?</li> <li>• Is there a need to create new operation and maintenance procedures?</li> <li>• Have records related to associated procedures been kept?</li> <li>• Have training records been maintained?</li> <li>• Is training appropriate to the system, as it currently exists?</li> <li>• Is the process for managing drinking water incidents and emergencies still appropriate for the drinking water service?</li> <li>• Do internal and external communication process and protocols work effectively?</li> <li>• Is the list of people to be contacted during emergencies up to date?</li> <li>• Is staff training for incidents and emergencies up</li> </ul>	<p>No</p> <p>Yes</p> <p>Yes &amp; No</p> <p>Yes</p> <p>No</p> <p>Yes</p> <p>Yes</p> <p>No</p>	<p>Positive &amp; Negative</p>	<p>Update to reflect new infrastructure, improve reporting processes for plumbers</p>

<p>to date?</p> <ul style="list-style-type: none"> <li>Have incident and excursion records identified changes in risks and hazards?</li> </ul>	<p>No No</p>		
<p><b>Risk management improvement program (RMIP)</b> <b>Review status of actions in the improvement program.</b></p> <ul style="list-style-type: none"> <li>Were actions in the program completed in the timeframe outlined in the RMIP?</li> <li>Did the program outlined in the DWQMP achieve the intended outcomes?</li> <li>Does the program require updating to manage risks effectively, including measures for newly identified risks?</li> <li>Are all unacceptable risks included in the RMIP and do all of these risks have a remedial action item and completion date?</li> </ul>	<p>No Yes Yes No</p>	<p>Positive and Negative</p>	<p>Update RMIP to reflect changes in Torrens Creek, include new projects that are in the pipeline that will address risks associated with schemes (new reservoir and chlorination in Hughenden, new chlorination in Prairie, planned upgrade of distribution system in Prairie).</p> <p>Remove completed projects</p>
<p><b>Service-wide support information management</b></p> <ul style="list-style-type: none"> <li>Are staff using current versions of documents?</li> <li>Are the information management, record keeping and reporting processes being used appropriately?</li> </ul>	<p>Yes Yes and No</p>	<p>Negative</p>	<p>Simplify and improve recording keeping requirements for Plumbers.</p>
<p><b>Operational monitoring</b></p> <ul style="list-style-type: none"> <li>Have changes to the infrastructure or process resulted in a need to revise the monitoring program?</li> <li>Are the range and frequency of parameters being tested appropriate?</li> <li>Are the established corrective actions and controls actively applied as in the DWQMP and still appropriate?</li> <li>Have monitoring records been maintained?</li> <li>Are monitoring equipment being calibrated?</li> </ul>	<p>Yes No No Yes Yes</p>	<p>Positive</p>	<p>Update to reflect changes in TC (Turbidity and chlorination testing frequency).</p>

<p><b>Verification monitoring</b></p> <ul style="list-style-type: none"> <li>• Have changes to the infrastructure resulted in a need to revise the monitoring program?</li> <li>• Are the range and frequency of parameters being tested appropriate?</li> <li>• Are the established corrective actions and regulator notifications actively applied as described in the DWQMP?</li> <li>• Are the corrective actions and notifications still appropriate?</li> <li>• Have monitoring records been maintained?</li> <li>• Have ADWG health guideline values changed for any parameters?</li> <li>• Have the arrangements for monitoring, transport arrangement for off-site analysis, or testing laboratory changed?</li> </ul>	<p>Yes</p> <p>No</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>Positive and Negative</p>	<p>SWAM analysis in Hughenden bores increased to monthly for 2020/2021 financial year – ensures SO<sup>4</sup> levels are monitored. Update verification monitoring limits to include values for those parameters with no ADWG values – include guideline values supplied by Damien Farrington for Qld Health.</p> <p>Include transport info (no TOLL flights anymore, have to use road transport). Update that verification E.coli samples are now sent to Townsville Lab).</p>
<p><b>Other areas</b></p> <ul style="list-style-type: none"> <li>• Have there been any changes in regulations, legislation or formal requirements?</li> <li>• Have there been organisational structure changes that may impact on risk management?</li> <li>• Are critical personnel appropriately qualified or require additional training?</li> <li>• Do the audit outcomes recommend changes to the DWQMP or related processes?</li> </ul>	<p>Yes and No</p>	<p>N/A</p>	<p>Update legislation references as required.</p> <p>Emergency Contact details updated</p> <p>Removed Hughenden WTP Emergency response Procedure as the Fluoride plant is non-operational.</p>

***The following items were also addressed at the request of OWSR:***

- *Inclusion of additional risks associated with new WTP in Torrens Creek.*
- *Clarification of disinfection process in Prairie and Hughenden*
- *Inclusion of Vulnerable stakeholders*
- *Inclusion of additional parameters in verification monitoring (Disinfection by-products)*
- *Inclusion of Cyber-security information.*
- *Clarification of turbidity monitoring in Torrens Creek.*
- *Update processes for managing drinking water incidents and emergencies.*

## **8 DWQMP audit findings**

The next Audit will occur before May 2021.



