

Drinking Water Quality Management Plan Report

FLINDERS SHIRE COUNCIL

SPID: 51

2020/2021

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

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1 Introduction

This is the Drinking Water Quality Management Plan (DWQMP) report for Flinders Shire Council (FSC) for the financial year 2020 - 2021. 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>Water Source</i>	<i>Treatment processes</i>	<i>Towns supplied</i>
Hughenden	Bore	Chlorinated	Hughenden
Prairie	Bore	Chlorinated	Hughenden
Torrens Creek	Bore	Clarification, filtration & Chlorination	Torrens Creek
Torrens Creek – Emergency Supply	Bore	Clarification, filtration & Chlorination	Torrens Creek

3 DWQMP implementation

Implementation of the DWQMP carried on throughout the 2020/2021 financial year.

Progress in implementing the risk management improvement program

Flinders Shire Council's DWQMP includes a Risk Management 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	Investigation of options for improving the integrity of bore casings	Inspection of selected bores with cameras to establish what work is required. Options can be explored once Council has up-to-date data.	Ongoing
IP-3	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-4	Bore Replacement Program	Money is currently put aside each year 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-5	Chlorination at Hughenden	Installation of Chlorination equipment. Equipment can be housed in same facility as Fluoridation equipment.	Completed
IP-6	Development of Cyber Security Plan	IT Officer is currently developing Cyber Security Strategy and Plan	December 2022
IP-7	Water Mains replacement	Development of program to replace water mains in Hughenden, Torrens Creek and Prairie.	Program is ongoing, new main was installed along Gray Street Hughenden.
IP-8	Additional Chlorination to occur after a Mains Break	Plumbers to record details in diary/logbook	Ongoing
IP-9	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:	DOE will implement program now new reservoir and

IP Item	Improvement actions	Description	Status and revised target dates
		Ongoing flushing of Mains. Short-term: Investigation and cost analysis Long-term: Development of program.	disinfection system installed in Hughenden.
IP-10	Development of training and Induction program for Water officers	Investigation of training requirements for water officers.	Training provider to provide on-site training now new reservoir and chlorination system in Hughenden completed. 2022 - 2024
IP-11	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-12	Installation of new tanks in Prairie and Torrens Creek	New larger tanks have been purchased for Torrens Creek and Prairie	Completed
IP-13	Development of Asset Plan for Torrens Creek	Develop Asset plan for Torrens Creek, undertake risk assessment to inform what replacement parts are required for WTP.	In progress
IP-14	Analysis of Torrens Creek River well and investigation of interconnectivity of bore and river	Interim: conduct monitoring of River well and Bore Short-term: investigate trends of monitoring results Long-term: dependent upon the results of the investigation.	Ongoing
IP-15	Development of Monitoring Program for inspection of temporary foam sealant and slab condition of all bores	Development of Monitoring Program for inspection of temporary foam sealant and slab condition of all bores	In progress
IP-16	Turbidity Monitoring at Torrens Creek	Weekly in-house turbidity monitoring of Torrens Creek Reticulation	Ongoing

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 (Brisbane lab)

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	0.003	0.003	FSS Health Support Qld
Antimony	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Arsenic	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Barium	mg/L	4 times a year	7	0	0.058	0.077	0.065143	FSS Health Support Qld
Beryllium	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Bismuth	Mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Boron	mg/L	4 times a year	7	0	0.065	0.07	0.068143	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	0.0001	0.0025	0.000471	FSS Health Support Qld
Cobalt	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Copper	mg/L	4 times a year	7	0	0.001	0.081	0.013	FSS Health Support Qld
Iron	mg/L	4 times a year	7	0	0.011	1.8	0.324	FSS Health Support Qld
Lead	mg/L	4 times a year	7	0	0.0001	0.0019	0.000414	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	0.016	0.04	0.025	FSS Health Support Qld
Molybdenum	mg/L	4 times a year	7	0	0.0001	0.0004	0.000157	FSS Health Support Qld
Nickel	mg/L	4 times a year	7	0	0.0001	0.0015	0.000486	FSS Health Support Qld
Selenium	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health
Silver	mg/L	4 times a year	7	0	0.001	0.001	0.001	FSS Health Support Qld
Strontium	mg/L	4 times a year	7	0	0.097	0.13	0.112429	FSS Health Support Qld
Thallium	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Tin	mg/L	4 times a year	7	0	0.0001	0.0008	0.0002	FSS Health Support Qld
Titanium	mg/L	4 times a year	7	0	0.001	0.001	0.001	FSS Health Support Qld
Uranium	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Vanadium	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Zinc	mg/L	4 times a year	7	0	0.001	0.015	0.007143	FSS Health Support Qld
Conductivity	mg/L	4 times a year	8	0	829	1170	944.625	FSS Health Support Qld
pH		4 times a year	8	0	7.53	8.42	7.87125	FSS Health Support Qld
Total Hardness	mg/L	4 times a year	8	0	8.6	16	13.575	FSS Health Support Qld
Temporary Hardness	mg/L	4 times a year	8	0	8.6	16	13.575	FSS Health Support Qld
Alkalinity	mg/L	4 times a year	8	0	196	220	208.625	FSS Health Support Qld

Residual Alkalinity	mg/L	4 times a year	8	0	3.6	4	3.875	FSS Health Support Qld
Silica	mg/L	4 times a year	8	0	15	17	16.25	FSS Health Support Qld
TDI	mg/L	4 times a year	8	0	595	812	670.625	FSS Health Support Qld
TDS	mg/L	4 times a year	8	0	485	701	560	FSS Health Support Qld
True Colour	Hazen	4 times a year	8	0	7	8	7.5	FSS Health Support Qld
Turbidity	NTU	4 times a year	8	0	1	8	2.5	FSS Health Support Qld
Sodium	mg/L	4 times a year	8	0	180	260	205	FSS Health Support Qld
Potassium	mg/L	4 times a year	8	0	1.7	2.8	2.2125	FSS Health
Calcium	mg/L	4 times a year	8	0	2.6	4.7	4.0625	FSS Health Support Qld
Magnesium	mg/L	4 times a year	8	0	0.53	1	0.835	FSS Health Support Qld
Hydrogen	mg/L	4 times a year	8	0	0	0	0	FSS Health Support Qld
Bicarbonate	mg/L	4 times a year	8	0	237	262	250.5	FSS Health Support Qld
Carbonate	mg/L	4 times a year	8	0	0.5	4.1	1.425	FSS Health Support Qld
Hydroxide	mg/L	4 times a year	8	0	0	0	0	FSS Health Support Qld
Chloride	mg/L	4 times a year	8	0	92	130	104.125	FSS Health Support Qld
Fluoride	mg/L	4 times a year	8	0	0.08	0.13	0.1025	FSS Health Support Qld
Nitrate	mg/L	4 times a year	8	0	0.05	0.88	0.2125	FSS Health Support Qld
Sulphate	mg/L	4 times a year	8	0	64	170	102.25	FSS Health Support Qld

Gross Alpha Activity	Bq/L	Twice a year	12	0	0.07 +/- 0.05	0.1	0.08	FSS Health Support Qld
K40 Corrected Beta Activity	Bq/L	Twice a year	12	0	0.1	0.1	0.1	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	12	0	0.1	0.1	0.1	FSS Health Support Qld
Dieldrin	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Total Aldrin & Dieldrin	µg/L	4 times a year	12	0	0.1	0.2	0.2	FSS Health Support Qld
Chlordane cis	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Chlordane trans	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Total Chlordane	µg/L	4 times a year	12	0	0.1	0.2	0.2	FSS Health Support Qld
DDD (pp)	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
DDE (pp)	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
DDT (op)	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
DDT (pp)	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld

Total DDT	µg/L	4 times a year	12	0	0.1	0.4	0.4	FSS Health Support Qld
Total Dicoful	µg/L	4 times a year	0	0	NA	NA	NA	FSS Health Support Qld
α-Endosulfan	µg/L	4 times a year	12	0	0.5	0.5	0.5	FSS Health Support Qld
β - Endosulfan	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Endosulfan sulfate	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Total Endosulfan	µg/L	4 times a year	12	0	0.1	0.7	0.7	FSS Health Support Qld
Heptachlor	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Heptachlor epoxide	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Total Heptachlor	µg/L	4 times a year	12	0	0.1	0.2	0.2	FSS Health Support Qld
Lindane (γ-HCH)	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Methoxyychlor	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Oxychlorthane	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Azinphos-methyl	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Bromophos-ethyl	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Carbophenothion	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Chlorfenvinphos	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Chlororpyrifos	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld

Diazinon	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Dichlorvos	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Dimethoate	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Omethoate	µg/L	4 times a year	12	0	0.1	0.2	0.2	FSS Health Support Qld
Total Dimethoate	µg/L	4 times a year	12	0	0.2	0.3	0.3	FSS Health Support Qld
Disulfoton	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Ethion	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Ethoprophos	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Fenamiphos	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Fenclorphos	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Fenitrothion	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Fenthion (methyl)	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Malathion (Maldison)	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Methidathion	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Mevinphos	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Monocrotophos	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Parathion (ethyl)	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld

Parathion-methyl	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Pirimiphos-methyl	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Profenofos	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Pyrazophos	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Sulprofos	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Temephos	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Terbufos	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Tetrachlorvinphos	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Ametryn	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Atrazine	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Bromacil	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Diuron	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Fluometuron	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Hexazinone	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Metolachlor	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Simazine	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Terbutryn	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld

Amitraz	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Diclofop-methyl	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Haloxypop-2-etotyl	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Haloxypop-methyl	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Metribuzin	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Molinate	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Pendimethalin	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Propanil	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Propazine	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Terbutylazine	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Trifluralin	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Captan	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Carbaryl	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Fipronil	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Piperonyl Butoxide	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Pirimicarb	µg/L	4 times a year	12	0	0.1	0.2	0.2	FSS Health Support Qld
Propargite	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld

Propiconazole	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Triadimefon	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Total Triadimefon	µg/L	4 times a year	12	0	0.1	0.3	0.3	FSS Health Support Qld
Bioresmethrin	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Cyfluthrin	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Cypermethrin	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Deltamethrin	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Fenvalerate	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld
Permethrin	µg/L	4 times a year	12	0	0.1	0.1	0.1	FSS Health Support Qld

Table 5 – Drinking water quality performance - verification monitoring Hughenden Reticulation (Brisbane lab)

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	0.005	0.003428571	FSS Health Support Qld
Antimony	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Arsenic	mg/L	4 times a year	7	0	0.0001	0.0004	0.000142857	FSS Health Support Qld
Barium	mg/L	4 times a year	7	0	0.051	0.12	0.064428571	FSS Health Support Qld
Beryllium	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Bismuth	Mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Boron	mg/L	4 times a year	7	0	0.033	0.07	0.063857143	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	0.0001	0.0001	0.0001	FSS Health Support Qld
Cobalt	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Copper	mg/L	4 times a year	7	0	0.001	0.061	0.014428571	FSS Health Support Qld
Iron	mg/L	4 times a year	7	0	0.005	0.084	0.034714286	FSS Health Support Qld

Lead	mg/L	4 times a year	7	0	0.0001	0.0036	0.000671429	FSS Health Support Qld
Mercury	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	
Manganese	mg/L	4 times a year	7	0	0.001	0.1	0.032357143	FSS Health Support Qld
Molybdenum	mg/L	4 times a year	7	0	0.0001	0.0013	0.000271429	FSS Health Support Qld
Nickel	mg/L	4 times a year	7	0	0.0001	0.0036	0.000628571	FSS Health Support Qld
Selenium	mg/L	4 times a year	7	0	0.0001	0.0003	0.000128571	FSS Health
Silver	mg/L	4 times a year	7	0	0.001	0.001	0.001	FSS Health Support Qld
Strontium	mg/L	4 times a year	7	0	0.096	0.28	0.128	FSS Health Support Qld
Thallium	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Tin	mg/L	4 times a year	7	0	0.0001	0.0005	0.000157143	FSS Health Support Qld
Titanium	mg/L	4 times a year	7	0	0.001	0.001	0.001	FSS Health Support Qld
Uranium	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Vanadium	mg/L	4 times a year	7	0	0.0001	0.00038	0.00014	FSS Health Support Qld
Zinc	mg/L	4 times a year	7	0	0.0001	0.077	0.015014286	FSS Health Support Qld
Conductivity	mg/L	4 times a year	11	0	328	974	907.1818182	FSS Health Support Qld
pH		4 times a year	11	0	6.87	7.99	7.650909091	FSS Health Support Qld
Total Hardness	mg/L	4 times a year	11	0	13	96	22.27272727	FSS Health Support Qld

Temporary Hardness	mg/L	4 times a year	11	0	13	96	22.27272727	FSS Health Support Qld
Alkalinity	mg/L	4 times a year	11	0	104	210	198.7272727	FSS Health Support Qld
Residual Alkalinity	mg/L	4 times a year	11	0	0.2	3.9	3.518181818	FSS Health Support Qld
Silica	mg/L	4 times a year	11	0	16	28	17.09090909	FSS Health Support Qld
TDI	mg/L	4 times a year	11	0	249	687	640.2727273	FSS Health Support Qld
TDS	mg/L	4 times a year	11	0	214	577	535.4545455	FSS Health Support Qld
True Colour	Hazen	4 times a year	11	0	7	8	7.545454545	FSS Health Support Qld
Turbidity	NTU	4 times a year	11	0	1	4	1.272727273	FSS Health Support Qld
Sodium	mg/L	4 times a year	11	0	31	210	191	FSS Health Support Qld
Potassium	mg/L	4 times a year	11	0	2	2.3	2.2	FSS Health
Calcium	mg/L	4 times a year	11	0	4	25	6.372727273	FSS Health Support Qld
Magnesium	mg/L	4 times a year	11	0	0.77	8.1	1.509090909	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	126	254	239.9090909	FSS Health Support Qld
Carbonate	mg/L	4 times a year	11	0	0.1	1.6	0.836363636	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	14	110	101.2727273	FSS Health Support Qld

Fluoride	mg/L	4 times a year	11	0	0.1	0.31	0.12	FSS Health Support Qld
Nitrate	mg/L	4 times a year	11	0	0.05	0.82	0.306363636	FSS Health Support Qld
Sulphate	mg/L	4 times a year	11	0	41	110	98.27272727	FSS Health Support Qld
Chlorine	Mg/L	Varies	1121	0	0	4.11	0.468	In House

Table 6 – Drinking water quality performance - verification monitoring Hughenden Reticulation (Townsville lab)

Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
Arsenic	mg/L	4 times a year	7	0	0.003	0.005	0.003428571	Townsville lab
Cadmium	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	Townsville lab
Chromium	mg/L	4 times a year	7	0	0.0001	0.0004	0.000142857	Townsville lab
Lead	mg/L	4 times a year	7	0	0.051	0.12	0.064428571	Townsville lab
Mercury	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	Townsville lab
Nickel	Mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	Townsville lab
Trihalomethanes, Total	µ/L	4 times a year	26	0	<5	<5	<5	Townsville lab
Chlorate	µ/L	4 times a year	26	5	197	1088	436.692	Townsville lab

pH	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	Townsville lab
Electrical Conductivity	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	Townsville lab
Turbidity	mg/L	4 times a year	7	0	0.001	0.061	0.014428571	Townsville lab
Colour, True	mg/L	4 times a year	7	0	0.005	0.084	0.034714286	Townsville lab
Alkalinity	mg/L	4 times a year	7	0	0.0001	0.0036	0.000671429	Townsville lab
Calcium	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	Townsville lab
Calcium, soluble	mg/L	4 times a year	7	0	0.001	0.1	0.032357143	Townsville lab
Magnesium	mg/L	4 times a year	7	0	0.0001	0.0013	0.000271429	Townsville lab
Magnesium, soluble	mg/L	4 times a year	7	0	0.0001	0.0036	0.000628571	Townsville lab
Sodium	mg/L	4 times a year	7	0	0.0001	0.0003	0.000128571	Townsville lab
Sodium, soluble	mg/L	4 times a year	7	0	0.001	0.001	0.001	Townsville lab
Potassium	mg/L	4 times a year	7	0	0.096	0.28	0.128	Townsville lab
Potassium, soluble	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	Townsville lab
Aluminium	mg/L	4 times a year	7	0	0.0001	0.0005	0.000157143	Townsville lab
Aluminium, soluble	mg/L	4 times a year	7	0	0.001	0.001	0.001	Townsville lab
Boron	mg/L	4 times a year	7	0	0.0001	0.0001	0.0001	Townsville lab
Boron, soluble	mg/L	4 times a year	7	0	0.0001	0.00038	0.00014	Townsville lab

Iron	mg/L	4 times a year	7	0	0.0001	0.077	0.015014286	Townsville lab
Iron, soluble	mg/L	4 times a year	11	0	328	974	907.1818182	Townsville lab
Manganese		4 times a year	11	0	6.87	7.99	7.650909091	Townsville lab
Manganese, soluble	mg/L	4 times a year	11	0	13	96	22.27272727	Townsville lab
Copper	mg/L	4 times a year	11	0	13	96	22.27272727	Townsville lab
Copper, soluble	mg/L	4 times a year	11	0	104	210	198.7272727	Townsville lab
Zinc	mg/L	4 times a year	11	0	0.2	3.9	3.518181818	Townsville lab
Zinc, soluble	mg/L	4 times a year	11	0	16	28	17.09090909	Townsville lab
Ammonia as N	mg/L	4 times a year	11	0	249	687	640.2727273	Townsville lab
Oxidised Nitrogen as NOx-N	mg/L	4 times a year	11	0	214	577	535.4545455	Townsville lab
Nitrite as N	Hazen	4 times a year	11	0	7	8	7.545454545	Townsville lab
Nitrate as N, Calc	NTU	4 times a year	11	0	1	4	1.272727273	Townsville lab
Phosphate as P	mg/L	4 times a year	11	0	31	210	191	Townsville lab
Silica as SiO2	mg/L	4 times a year	11	0	2	2.3	2.2	Townsville lab
Chloride	mg/L	4 times a year	11	0	4	25	6.372727273	Townsville lab
Sulfate	mg/L	4 times a year	11	0	0.77	8.1	1.509090909	Townsville lab
Fluoride	mg/L	4 times a year	11	0	0	0	0	Townsville lab

Bicarbonate	mg/L	4 times a year	11	0	126	254	239.9090909	Townsville lab
Carbonate	mg/L	4 times a year	11	0	0.1	1.6	0.836363636	Townsville lab
Hydroxide	mg/L	4 times a year	11	0	0	0	0	Townsville lab
Hardness	mg/L	4 times a year	11	0	14	110	101.2727273	Townsville lab
Chlorine	Mg/L				0.003	0.005	0.003428571	In House

Table 7 – Drinking water quality performance - verification monitoring Prairie Source water (Brisbane lab)

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	2	0	0.003	0.005	0.003428571	FSS Health Support Qld
Antimony	mg/L	4 times a year	2	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Arsenic	mg/L	4 times a year	2	0	0.0001	0.0004	0.000142857	FSS Health Support Qld
Barium	mg/L	4 times a year	2	0	0.051	0.12	0.064428571	FSS Health Support Qld
Beryllium	mg/L	4 times a year	2	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Bismuth	Mg/L	4 times a year	2	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Boron	mg/L	4 times a year	2	0	0.033	0.07	0.063857143	FSS Health Support Qld

Cadmium	mg/L	4 times a year	2	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Chromium	mg/L	4 times a year	2	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Cobalt	mg/L	4 times a year	2	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Copper	mg/L	4 times a year	2	0	0.001	0.061	0.014428571	FSS Health Support Qld
Iron	mg/L	4 times a year	2	0	0.005	0.084	0.034714286	FSS Health Support Qld
Lead	mg/L	4 times a year	7	0	0.0001	0.0036	0.000671429	FSS Health Support Qld
Mercury	mg/L	4 times a year	2	0	0.0001	0.0001	0.0001	
Manganese	mg/L	4 times a year	2	0	0.001	0.1	0.032357143	FSS Health Support Qld
Molybdenum	mg/L	4 times a year	2	0	0.0001	0.0013	0.000271429	FSS Health Support Qld
Nickel	mg/L	4 times a year	2	0	0.0001	0.0036	0.000628571	FSS Health Support Qld
Selenium	mg/L	4 times a year	2	0	0.0001	0.0003	0.000128571	FSS Health
Silver	mg/L	4 times a year	2	0	0.001	0.001	0.001	FSS Health Support Qld
Strontium	mg/L	4 times a year	2	0	0.096	0.28	0.128	FSS Health Support Qld
Thallium	mg/L	4 times a year	2	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Tin	mg/L	4 times a year	2	0	0.0001	0.0005	0.000157143	FSS Health Support Qld
Titanium	mg/L	4 times a year	2	0	0.001	0.001	0.001	FSS Health Support Qld
Uranium	mg/L	4 times a year	2	0	0.0001	0.0001	0.0001	FSS Health Support Qld

Vanadium	mg/L	4 times a year	2	0	0.0001	0.00038	0.00014	FSS Health Support Qld
Zinc	mg/L	4 times a year	2	0	0.0001	0.077	0.015014286	FSS Health Support Qld
Conductivity	mg/L	4 times a year	2	0	328	974	907.1818182	FSS Health Support Qld
pH		4 times a year	2	0	6.87	7.99	7.650909091	FSS Health Support Qld
Total Hardness	mg/L	4 times a year	2	0	13	96	22.27272727	FSS Health Support Qld
Temporary Hardness	mg/L	4 times a year	2	0	13	96	22.27272727	FSS Health Support Qld
Alkalinity	mg/L	4 times a year	2	0	104	210	198.7272727	FSS Health Support Qld
Residual Alkalinity	mg/L	4 times a year	2	0	0.2	3.9	3.518181818	FSS Health Support Qld
Silica	mg/L	4 times a year	2	0	16	28	17.09090909	FSS Health Support Qld
TDI	mg/L	4 times a year	2	0	249	687	640.2727273	FSS Health Support Qld
TDS	mg/L	4 times a year	2	0	214	577	535.4545455	FSS Health Support Qld
True Colour	Hazen	4 times a year	2	0	7	8	7.545454545	FSS Health Support Qld
Turbidity	NTU	4 times a year	2	0	1	4	1.272727273	FSS Health Support Qld
Sodium	mg/L	4 times a year	2	0	31	210	191	FSS Health Support Qld
Potassium	mg/L	4 times a year	2	0	2	2.3	2.2	FSS Health
Calcium	mg/L	4 times a year	2	0	4	25	6.372727273	FSS Health Support Qld
Magnesium	mg/L	4 times a year	2	0	0.77	8.1	1.509090909	FSS Health Support Qld

Hydrogen	mg/L	4 times a year	2	0	0	0	0	FSS Health Support Qld
Bicarbonate	mg/L	4 times a year	2	0	126	254	239.9090909	FSS Health Support Qld
Carbonate	mg/L	4 times a year	2	0	0.1	1.6	0.836363636	FSS Health Support Qld
Hydroxide	mg/L	4 times a year	2	0	0	0	0	FSS Health Support Qld
Chloride	mg/L	4 times a year	2	0	14	110	101.2727273	FSS Health Support Qld
Fluoride	mg/L	4 times a year	2	0	0.1	0.31	0.12	FSS Health Support Qld
Nitrate	mg/L	4 times a year	2	0	0.05	0.82	0.306363636	FSS Health Support Qld
Sulphate	mg/L	4 times a year	2	0	41	110	98.27272727	FSS Health Support Qld
Chlorine	Mg/L	Once a week			0.003	0.005	0.003428571	In House
Gross Alpha Activity	Bq/L	Twice a year	4	0	0.1	0.1	0.08	FSS Health Support Qld
K40 Corrected Beta Activity	Bq/L	Twice a year	4	0	0.1	0.1	0.1	FSS Health Support Qld

Table 8 – Drinking water quality performance - verification monitoring Prairie Source water (Townsville lab)

Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
Arsenic	mg/L	4 times a year	1	0	0.0005	0.0005	0.0005	Townsville lab
Cadmium	mg/L	4 times a year	1	0	0.0004	0.0004	0.0004	Townsville lab
Chromium	mg/L	4 times a year	1	0	0.0003	0.0003	0.0003	Townsville lab
Lead	mg/L	4 times a year	1	0	0.0006	0.0006	0.0006	Townsville lab
Mercury	mg/L	4 times a year	1	0	0.0003	0.0003	0.0003	Townsville lab
Nickel	Mg/L	4 times a year	1	0	0.001	0.001	0.001	Townsville lab
Trihalomethanes, Total	mg/L	4 times a year	9	0	<5	<5	<5	Townsville lab
Chlorate	mg/L	4 times a year	9	0	<50	120	75	Townsville lab
pH	mg/L	4 times a year	1	0	7.94	7.94	7.94	Townsville lab

Electrical Conductivity	mg/L	4 times a year	1	0	1,188	1,188	1,188	Townsville lab
Turbidity	mg/L	4 times a year	1	0	0.2	0.2	0.2	Townsville lab
Colour, True	mg/L	4 times a year	1	0	1	1	1	Townsville lab
Alkalinity	mg/L	4 times a year	1	0	139.1	139.1	139.1	Townsville lab
Calcium	mg/L	4 times a year	1	0	20.9	20.9	20.9	Townsville lab
Calcium, soluble	mg/L	4 times a year	1	0	20	20	20	Townsville lab
Magnesium	mg/L	4 times a year	1	0	5.5	5.5	5.5	Townsville lab
Magnesium, soluble	mg/L	4 times a year	1	0	5.2	5.2	5.2	Townsville lab
Sodium	mg/L	4 times a year	1	0	145	145	145	Townsville lab
Sodium, soluble	mg/L	4 times a year	1	0	134	134	134	Townsville lab
Potassium	mg/L	4 times a year	1	0	4.7	4.7	4.7	Townsville lab
Potassium, soluble	mg/L	4 times a year	1	0	4.4	4.4	4.4	Townsville lab
Aluminium	mg/L	4 times a year	1	0	0.01	0.01	0.01	Townsville lab
Aluminium, soluble	mg/L	4 times a year	1	0	0.01	0.01	0.01	Townsville lab
Boron	mg/L	4 times a year	1	0	0.25	0.25	0.25	Townsville lab
Boron, soluble	mg/L	4 times a year	1	0	0.231	0.231	0.231	Townsville lab
Iron	mg/L	4 times a year	1	0	0.01	0.01	0.01	Townsville lab

Iron, soluble	mg/L	4 times a year	1	0	0.01	0.01	0.01	Townsville lab
Manganese		4 times a year	1	0	0.03	0.03	0.03	Townsville lab
Manganese, soluble	mg/L	4 times a year	1	0	0.02	0.02	0.02	Townsville lab
Copper	mg/L	4 times a year	1	0	0.002	0.002	0.002	Townsville lab
Copper, soluble	mg/L	4 times a year	1	0	0.002	0.002	0.002	Townsville lab
Zinc	mg/L	4 times a year	1	0	0.002	0.002	0.002	Townsville lab
Zinc, soluble	mg/L	4 times a year	1	0	0.001	0.001	0.001	Townsville lab
Ammonia as N	mg/L	4 times a year	1	0	0.11	0.11	0.11	Townsville lab
Oxidised Nitrogen as NOx-N	mg/L	4 times a year	1	0	0.01	0.01	0.01	Townsville lab
Nitrite as N	Hazen	4 times a year	1	0	0.01	0.01	0.01	Townsville lab
Nitrate as N, Calc	NTU	4 times a year	1	0	0.01	0.01	0.01	Townsville lab
Phosphate as P	mg/L	4 times a year	1	0	0.01	0.01	0.01	Townsville lab
Silica as SiO2	mg/L	4 times a year	1	0	18.5	18.5	18.5	Townsville lab
Chloride	mg/L	4 times a year	1	0	237	237	237	Townsville lab
Sulfate	mg/L	4 times a year	1	0	69	69	69	Townsville lab
Fluoride	mg/L	4 times a year	1	0	0.1	0.1	0.1	Townsville lab
Bicarbonate	mg/L	4 times a year	1	0				Townsville lab

Carbonate	mg/L	4 times a year	1	0				Townsville lab
Hydroxide	mg/L	4 times a year	1	0				Townsville lab
Hardness	mg/L	4 times a year	1	0				Townsville lab

Table 9 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	3	0	0.1	0.1	0.1	FSS Health Support Qld
Dieldrin	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Total Aldrin & Dieldrin	µg/L	4 times a year	3	0	0.2	0.2	0.2	FSS Health Support Qld
Chlordane cis	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Chlordane trans	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Total Chlordane	µg/L	4 times a year	3	0	0.2	0.2	0.2	FSS Health Support Qld
DDD (pp)	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld

DDE (pp)	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
DDT (op)	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
DDT (pp)	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Total DDT	µg/L	4 times a year	3	0	0.4	0.4	0.4	FSS Health Support Qld
Total Dicoful	µg/L	4 times a year	0	0	0	0	#DIV/0!	FSS Health Support Qld
α-Endosulfan	µg/L	4 times a year	3	0	0.5	0.5	0.5	FSS Health Support Qld
β - Endosulfan	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Endosulfan sulfate	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Total Endosulfan	µg/L	4 times a year	3	0	0.7	0.7	0.7	FSS Health Support Qld
Heptachlor	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Heptachlor epoxide	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Total Heptachlor	µg/L	4 times a year	3	0	0.2	0.2	0.2	FSS Health Support Qld
Lindane (γ-HCH)	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Methoxyychlor	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Oxychlordan	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Azinphos-methyl	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Bromophos-ethyl	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld

Carbophenothion	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Chlorfenvinphos	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Chlororpyrifos	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Diazinon	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Dichlorvos	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Dimethoate	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Omethoate	µg/L	4 times a year	3	0	0.2	0.2	0.2	FSS Health Support Qld
Total Dimethoate	µg/L	4 times a year	3	0	0.3	0.3	0.3	FSS Health Support Qld
Disulfoton	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Ethion	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Ethoprophos	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Fenamiphos	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Fenchlorphos	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Fenitrothion	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Fenthion (methyl)	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Malathion (Maldison)	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Methidathion	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld

Mevinphos	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Monocrotophos	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Parathion (ethyl)	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Parathion-methyl	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Pirimiphos-methyl	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Profenofos	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Pyrazophos	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Sulprofos	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Temephos	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Terbufos	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Tetrachlorvinphos	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Ametryn	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Atrazine	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Bromacil	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Diuron	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Fluometuron	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Hexazinone	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld

Metolachlor	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Simazine	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Terbutryn	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Amitraz	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Diclofop-methyl	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Haloxypop-2-etotyl	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Haloxypop-methyl	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Metribuzin	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Molinate	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Pendimethalin	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Propanil	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Propazine	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Terbuthylazine	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Trifluralin	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Captan	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Carbaryl	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Fipronil	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld

Piperonyl Butoxide	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Pirimicarb	µg/L	4 times a year	3	0	0.2	0.2	0.2	FSS Health Support Qld
Propargite	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Propiconazole	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Triadimefon	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Total Triadimefon	µg/L	4 times a year	3	0	0.3	0.3	0.3	FSS Health Support Qld
Bioresmethrin	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Cyfluthrin	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Cypermethrin	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Deltamethrin	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Fenvalerate	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld
Permethrin	µg/L	4 times a year	3	0	0.1	0.1	0.1	FSS Health Support Qld

Table 10 - Drinking water quality performance - verification monitoring Prairie Reticulation (Brisbane Lab)

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	0.003	0.003	0.003	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	0.071	0.076	0.0724	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	5	0	0.23	1.25	0.442	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	0.0001	0.0001	FSS Health Support Qld

Cobalt	mg/L	4 times a year	5	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Copper	mg/L	4 times a year	5	0	0.001	0.014	0.005	FSS Health Support Qld
Iron	mg/L	4 times a year	5	0	0.012	0.1	0.053	FSS Health Support Qld
Lead	mg/L	4 times a year	14	1	0.0001	0.015	0.001793	FSS Health Support Qld
Mercury	mg/L	4 times a year	5	0	0.0001	0.0001	0.0001	
Manganese	mg/L	4 times a year	5	0	0.01	0.11	0.0546	FSS Health Support Qld
Molybdenum	mg/L	4 times a year	5	0	0.001	0.0011	0.00102	FSS Health Support Qld
Nickel	mg/L	4 times a year	5	0	0.0001	0.0002	0.00016	FSS Health Support Qld
Selenium	mg/L	4 times a year	5	0	0.0001	0.0001	0.0001	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	0.64	0.69	0.662	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	0.0001	0.0001	0.0001	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	0.002	0.011	0.0054	FSS Health Support Qld

Conductivity	mg/L	4 times a year	5	0	1200	12230	3420	FSS Health Support Qld
pH		4 times a year	5	0	7.48	7.79	7.64	FSS Health Support Qld
Total Hardness	mg/L	4 times a year	5	0	88	91	89.4	FSS Health Support Qld
Temporary Hardness	mg/L	4 times a year	5	0	88	91	89.4	FSS Health Support Qld
Alkalinity	mg/L	4 times a year	5	0	145	150	147.4	FSS Health Support Qld
Residual Alkalinity	mg/L	4 times a year	5	0	1.1	1.1	1.1	FSS Health Support Qld
Silica	mg/L	4 times a year	5	0	19	19	19	FSS Health Support Qld
TDI	mg/L	4 times a year	5	0	733	755	745.4	FSS Health Support Qld
TDS	mg/L	4 times a year	5	0	660	685	673.4	FSS Health Support Qld
True Colour	Hazen	4 times a year	5	0	7	8	7.4	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	220	216	FSS Health Support Qld
Potassium	mg/L	4 times a year	5	0	5.7	539	112.44	FSS Health
Calcium	mg/L	4 times a year	5	0	24	25	24.2	FSS Health Support Qld
Magnesium	mg/L	4 times a year	5	0	6.9	7.3	7.12	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	176	181	178	FSS Health Support Qld

Carbonate	mg/L	4 times a year	5	0	0.4	0.7	0.5	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	250	246	FSS Health Support Qld
Fluoride	mg/L	4 times a year	5	0	0.12	0.12	0.12	FSS Health Support Qld
Nitrate	mg/L	4 times a year	5	0	0.1	0.44	0.188	FSS Health Support Qld
Sulphate	mg/L	4 times a year	5	0	70	71	70.4	FSS Health Support Qld
Chlorine	Mg/L	Once a week	157		0.04	2.47	0.263	In House

Table 11 - Drinking water quality performance - verification monitoring Prairie Reticulation (Townsville lab)

Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
Arsenic	mg/L	4 times a year	3	0	0.0005	0.0005	0.0005	Townsville lab
Cadmium	mg/L	4 times a year	3	0	0.0004	0.0004	0.0004	Townsville lab
Chromium	mg/L	4 times a year	3	0	0.0003	0.0003	0.0003	Townsville lab
Lead	mg/L	4 times a year	3	0	0.0006	0.0006	0.0006	Townsville lab
Mercury	mg/L	4 times a year	3	0	0.0003	0.0003	0.0003	Townsville lab

Nickel	Mg/L	4 times a year	3	0	0.001	0.001	0.001	Townsville lab
Trihalomethanes, Total	mg/L	4 times a year	3	0	5	5	5	Townsville lab
Chlorate	mg/L	4 times a year	3	0	50	105	68.33333333	Townsville lab
pH	mg/L	4 times a year	3	0	7.87	8.07	7.99	Townsville lab
Electrical Conductivity	mg/L	4 times a year	3	0	1186	1204	1198	Townsville lab
Turbidity	mg/L	4 times a year	3	0	0.4	0.6	0.5	Townsville lab
Colour, True	mg/L	4 times a year	3	0	1	1	1	Townsville lab
Alkalinity	mg/L	4 times a year	3	0	137.5	138.5	137.9666667	Townsville lab
Calcium	mg/L	4 times a year	3	0	19.2	21.4	20.36666667	Townsville lab
Calcium, soluble	mg/L	4 times a year	3	0	19.1	20	19.43333333	Townsville lab
Magnesium	mg/L	4 times a year	3	0	4.9	5.5	5.233333333	Townsville lab
Magnesium, soluble	mg/L	4 times a year	3	0	4.9	5	4.933333333	Townsville lab
Sodium	mg/L	4 times a year	3	0	129	146	138.3333333	Townsville lab
Sodium, soluble	mg/L	4 times a year	3	0	128	132	129.6666667	Townsville lab
Potassium	mg/L	4 times a year	3	0	4	4.7	4.3	Townsville lab
Potassium, soluble	mg/L	4 times a year	3	0	3.9	4.4	4.1	Townsville lab
Aluminium	mg/L	4 times a year	3	0	0.01	0.01	0.01	Townsville lab

Aluminium, soluble	mg/L	4 times a year	3	0	0.01	0.01	0.01	Townsville lab
Boron	mg/L	4 times a year	3	0	0.171	0.249	0.199333333	Townsville lab
Boron, soluble	mg/L	4 times a year	3	0	0.156	0.228	0.180666667	Townsville lab
Iron	mg/L	4 times a year	3	0	0.01	0.01	0.01	Townsville lab
Iron, soluble	mg/L	4 times a year	3	0	0.006	0.01	0.008666667	Townsville lab
Manganese		4 times a year	3	0	0.01	0.02	0.016666667	Townsville lab
Manganese, soluble	mg/L	4 times a year	3	0	0.01	0.02	0.016666667	Townsville lab
Copper	mg/L	4 times a year	3	0	0.002	0.005	0.003	Townsville lab
Copper, soluble	mg/L	4 times a year	3	0	0.002	0.005	0.003	Townsville lab
Zinc	mg/L	4 times a year	3	0	0.004	0.049	0.019	Townsville lab
Zinc, soluble	mg/L	4 times a year	3	0	0.003	0.049	0.018666667	Townsville lab
Ammonia as N	mg/L	4 times a year	3	0	0.02	0.09	0.066666667	Townsville lab
Oxidised Nitrogen as NOx-N	mg/L	4 times a year	3	0	0.01	0.02	0.013333333	Townsville lab
Nitrite as N	Hazen	4 times a year	3	0	0.01	0.01	0.01	Townsville lab
Nitrate as N, Calc	NTU	4 times a year	3	0	0.01	0.02	0.013333333	Townsville lab
Phosphate as P	mg/L	4 times a year	3	0	0.01	0.01	0.01	Townsville lab
Silica as SiO2	mg/L	4 times a year	3	0	18.3	21.7	20.53333333	Townsville lab

Chloride	mg/L	4 times a year	3	0	243	244	243.6666667	Townsville lab
Sulfate	mg/L	4 times a year	3	0	70.1	76.2	73.63333333	Townsville lab
Fluoride	mg/L	4 times a year	3	0	0.1	0.11	0.106666667	Townsville lab
Bicarbonate	mg/L	4 times a year	3	0	83.9	84.1	84	Townsville lab
Carbonate	mg/L	4 times a year	3	0	5	5	5	Townsville lab
Hydroxide	mg/L	4 times a year	3	0	5	5	5	Townsville lab
Hardness	mg/L	4 times a year	3	0	67.7	68	67.85	Townsville lab
Chlorine	Mg/L				0.003	0.005	0.003428571	In House

Table 12– Drinking water quality performance - verification monitoring Torrens Creek Source water (Brisbane lab)

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	2	0	0.006	0.019	0.0125	FSS Health Support Qld
Antimony	mg/L	4 times a year	2	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Arsenic	mg/L	4 times a year	2	0	0.0002	0.0003	0.00025	FSS Health Support Qld
Barium	mg/L	4 times a year	2	0	0.2	0.21	0.205	FSS Health Support Qld

Beryllium	mg/L	4 times a year	2	0	0.0004	0.0004	0.0004	FSS Health Support Qld
Bismuth	Mg/L	4 times a year	2	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Boron	mg/L	4 times a year	2	0	0.039	0.043	0.041	FSS Health Support Qld
Cadmium	mg/L	4 times a year	2	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Chromium	mg/L	4 times a year	2	0	0.0003	0.0003	0.0003	FSS Health Support Qld
Cobalt	mg/L	4 times a year	2	0	0.001	0.0011	0.00105	FSS Health Support Qld
Copper	mg/L	4 times a year	2	0	0.005	0.006	0.0055	FSS Health Support Qld
Iron	mg/L	4 times a year	2	0	1.6	1.8	1.7	FSS Health Support Qld
Lead	mg/L	4 times a year	2	0	0.0002	0.0004	0.0003	FSS Health Support Qld
Mercury	Mg/L	4 times a year	2	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Manganese	mg/L	4 times a year	2	0	0.048	0.048	0.048	FSS Health Support Qld
Molybdenum	mg/L	4 times a year	2	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Nickel	mg/L	4 times a year	2	0	0.0041	0.0046	0.00435	FSS Health Support Qld
Selenium	mg/L	4 times a year	2	0	0.0003	0.0003	0.0003	FSS Health
Silver	mg/L	4 times a year	2	0	0.001	0.001	0.001	FSS Health Support Qld
Strontium	mg/L	4 times a year	2	0	0.026	0.027	0.0265	FSS Health Support Qld
Thallium	mg/L	4 times a year	2	0	0.0003	0.0003	0.0003	FSS Health Support Qld

Tin	mg/L	4 times a year	2	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Titanium	mg/L	4 times a year	2	0	0.001	0.001	0.001	FSS Health Support Qld
Uranium	mg/L	4 times a year	2	0	0.0004	0.0005	0.00045	FSS Health Support Qld
Vanadium	mg/L	4 times a year	2	0	0.0003	0.0004	0.00035	FSS Health Support Qld
Zinc	mg/L	4 times a year	2	0	0.014	0.018	0.016	FSS Health Support Qld
Conductivity	mg/L	4 times a year	2	0	216	231	223.5	FSS Health Support Qld
pH		4 times a year	2	0	6.29	6.42	6.355	FSS Health Support Qld
Total Hardness	mg/L	4 times a year	2	0	25	28	26.5	FSS Health Support Qld
Temporary Hardness	mg/L	4 times a year	2	0	25	28	26.5	FSS Health Support Qld
Alkalinity	mg/L	4 times a year	2	0	35	39	37	FSS Health Support Qld
Residual Alkalinity	mg/L	4 times a year	2	0	0.1	0.3	0.2	FSS Health Support Qld
Silica	mg/L	4 times a year	2	0	15	15	15	FSS Health Support Qld
TDI	mg/L	4 times a year	2	0	135	139	137	FSS Health Support Qld
TDS	mg/L	4 times a year	2	0	126	132	129	FSS Health Support Qld
True Colour	Hazen	4 times a year	2	0	7	8	7.5	FSS Health Support Qld
Turbidity	NTU	4 times a year	2	0	1	6	3.5	FSS Health Support Qld
Sodium	mg/L	4 times a year	2	0	23	25	24	FSS Health Support Qld

Potassium	mg/L	4 times a year	2	0	13	14	13.5	FSS Health
Calcium	mg/L	4 times a year	2	0	1.4	1.5	1.45	FSS Health Support Qld
Magnesium	mg/L	4 times a year	2	0	5.3	6	5.65	FSS Health Support Qld
Hydrogen	mg/L	4 times a year	2	0	0	0	0	FSS Health Support Qld
Bicarbonate	mg/L	4 times a year	2	0	43	47	45	FSS Health Support Qld
Carbonate	mg/L	4 times a year	2	0	0	0	0	FSS Health Support Qld
Hydroxide	mg/L	4 times a year	2	0	0	0	0	FSS Health Support Qld
Chloride	mg/L	4 times a year	2	0	38	44	41	FSS Health Support Qld
Fluoride	mg/L	4 times a year	2	0	0.06	0.07	0.065	FSS Health Support Qld
Nitrate	mg/L	4 times a year	2	0	1.6	1.9	1.75	FSS Health Support Qld
Sulphate	mg/L	4 times a year	2	0	4.3	4.4	4.35	FSS Health Support Qld
Gross Alpha Activity	Bq/L	Twice a year	3	0	0.19 +/- 0.06	0.317+/-0.06	0.259+/0.06	FSS Health Support Qld
K40 Corrected Beta Activity	Bq/L	Twice a year	3	0	0.1	0.1	0.1	FSS Health Support Qld

Table 13 – 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	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 Dicoful	µg/L	4 times a year	2	0	NA	NA	NA	FSS Health Support Qld
α-Endosulfan	µg/L	4 times a year	2	0	0.5	0.5	0.5	FSS Health Support Qld
β - 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	0.7	0.7	0.7	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 (γ-HCH)	µg/L	4 times a year	2	0	0.1	0.1	0.1	FSS Health Support Qld
Methoxyychlor	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
Chlororpyrifos	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
Fenchlorphos	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
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
Diuron	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
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

Simazine	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
Amitraz	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
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
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
Terbuthylazine	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	0.1	0.1	0.1	FSS Health Support Qld

Table 14 – Drinking water quality performance - verification monitoring Torrens Creek reticulation Brisbane lab)

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	4	0	0.006	0.014	0.00925	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	0.0001	0.0001	FSS Health Support Qld
Barium	mg/L	4 times a year	4	0	0.19	0.2	0.195	FSS Health Support Qld
Beryllium	mg/L	4 times a year	4	0	0.0001	0.0001	0.0001	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	4	0	0.042	0.042	0.042	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	0.0001	0.0002	0.00015	FSS Health Support Qld
Cobalt	mg/L	4 times a year	4	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Copper	mg/L	4 times a year	4	0	0.01	0.015	0.0115	FSS Health Support Qld
Iron	mg/L	4 times a year	4	0	0.039	0.093	0.0635	FSS Health Support Qld
Lead	mg/L	4 times a year	4	0	0.0002	0.0004	0.000325	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	4	0	0.0011	0.0037	0.001925	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	0.0036	0.0037	0.003625	FSS Health Support Qld
Selenium	mg/L	4 times a year	4	0	0.0003	0.0003	0.0003	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	0.027	0.02575	FSS Health Support Qld
Thallium	mg/L	4 times a year	4	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Tin	mg/L	4 times a year	4	0	0.0001	0.0001	0.0001	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	0.0001	0.0001	0.0001	FSS Health Support Qld
Vanadium	mg/L	4 times a year	4	0	0.0001	0.0001	0.0001	FSS Health Support Qld
Zinc	mg/L	4 times a year	4	0	0.017	0.021	0.01925	FSS Health Support Qld
Conductivity	mg/L	4 times a year	4	0	249	270	260	FSS Health Support Qld
pH		4 times a year	4	0	6.32	6.41	6.3625	FSS Health Support Qld
Total Hardness	mg/L	4 times a year	4	0	27	27	27	FSS Health Support Qld
Temporary Hardness	mg/L	4 times a year	4	0	27	27	27	FSS Health Support Qld
Alkalinity	mg/L	4 times a year	4	0	37	38	37.5	FSS Health Support Qld

Residual Alkalinity	mg/L	4 times a year	4	0	0.2	0.2	0.2	FSS Health Support Qld
Silica	mg/L	4 times a year	4	0	15	15	15	FSS Health Support Qld
TDI	mg/L	4 times a year	4	0	150	160	155.25	FSS Health Support Qld
TDS	mg/L	4 times a year	4	0	142	151	146.5	FSS Health Support Qld
True Colour	Hazen	4 times a year	4	0	7	8	7.5	FSS Health Support Qld
Turbidity	NTU	4 times a year	4	0	1	1	1	FSS Health Support Qld
Sodium	mg/L	4 times a year	4	0	30	35	32.25	FSS Health Support Qld
Potassium	mg/L	4 times a year	4	0	13	13	13	FSS Health
Calcium	mg/L	4 times a year	4	0	1.4	1.6	1.525	FSS Health Support Qld
Magnesium	mg/L	4 times a year	4	0	5.5	5.6	5.55	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	46	47	46.25	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	48	52	50	FSS Health Support Qld
Fluoride	mg/L	4 times a year	4	0	0.06	0.07	0.0625	FSS Health Support Qld
Nitrate	mg/L	4 times a year	4	0	1.8	1.8	1.8	FSS Health Support Qld

Sulphate	mg/L	4 times a year	4	0	4.2	4.3	4.275	FSS Health Support Qld
Chlorine	Mg/L	3 times a week	156	0	0.03	2.7	0.664	In House
Turbidity	NTU	3 times a week	147		0.038	58.3	8.47	

Table 15 – Drinking water quality performance - verification monitoring Torrens Creek reticulation (Townsville lab)

Parameter	Units	Frequency of sampling	Total No. samples collected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
Arsenic	mg/L	4 times a year	2	0	0.0005	0.0005	0.0005	Townsville lab
Cadmium	mg/L	4 times a year	2	0	0.0004	0.0004	0.0004	Townsville lab
Chromium	mg/L	4 times a year	2	0	0.0003	0.0003	0.0003	Townsville lab
Lead	mg/L	4 times a year	2	0	0.0006	0.0006	0.0006	Townsville lab
Mercury	mg/L	4 times a year	2	0	0.0003	0.0003	0.0003	Townsville lab
Nickel	Mg/L	4 times a year	2	0	0.003	0.003	0.003	Townsville lab
Trihalomethanes, Total	mg/L	4 times a year	12	0	6	45	22.08	Townsville lab
Chlorate	µg/L	4 times a year	13	13	1966	5247	3138.692	Townsville lab
pH	mg/L	4 times a year	2	0	6.14	6.22	6.18	Townsville lab

Electrical Conductivity	mg/L	4 times a year	2	0	291	295	293	Townsville lab
Turbidity	mg/L	4 times a year	2	0	1.2	3.1	2.15	Townsville lab
Colour, True	mg/L	4 times a year	2	0	1	2	1.5	Townsville lab
Alkalinity	mg/L	4 times a year	2	0	31.5	31.9	31.7	Townsville lab
Calcium	mg/L	4 times a year	2	0	1.3	1.9	1.6	Townsville lab
Calcium, soluble	mg/L	4 times a year	2	0	1.2	1.8	1.5	Townsville lab
Magnesium	mg/L	4 times a year	2	0	4.3	4.3	4.3	Townsville lab
Magnesium, soluble	mg/L	4 times a year	2	0	4	4.2	4.1	Townsville lab
Sodium	mg/L	4 times a year	2	0	24.1	24.4	24.25	Townsville lab
Sodium, soluble	mg/L	4 times a year	2	0	22.6	23.3	22.95	Townsville lab
Potassium	mg/L	4 times a year	2	0	9.3	9.8	9.55	Townsville lab
Potassium, soluble	mg/L	4 times a year	2	0	9.1	9.1	9.1	Townsville lab
Aluminium	mg/L	4 times a year	2	0	3.2	5.92	4.56	Townsville lab
Aluminium, soluble	mg/L	4 times a year	2	0	0.456	3.32	1.888	Townsville lab
Boron	mg/L	4 times a year	2	0	0.031	0.032	0.0315	Townsville lab
Boron, soluble	mg/L	4 times a year	2	0	0.03	0.03	0.03	Townsville lab
Iron	mg/L	4 times a year	2	0	0.16	0.36	0.26	Townsville lab

Iron, soluble	mg/L	4 times a year	2	0	0.1	0.22	0.16	Townsville lab
Manganese		4 times a year	2	0	0.01	0.02	0.015	Townsville lab
Manganese, soluble	mg/L	4 times a year	2	0	0.01	0.02	0.015	Townsville lab
Copper	mg/L	4 times a year	2	0	0.018	0.022	0.02	Townsville lab
Copper, soluble	mg/L	4 times a year	2	0	0.017	0.021	0.019	Townsville lab
Zinc	mg/L	4 times a year	2	0	0.02	0.041	0.0305	Townsville lab
Zinc, soluble	mg/L	4 times a year	2	0	0.019	0.041	0.03	Townsville lab
Ammonia as N	mg/L	4 times a year	2	0	0.02	0.02	0.02	Townsville lab
Oxidised Nitrogen as NOx-N	mg/L	4 times a year	2	0	0.43	0.43	0.43	Townsville lab
Nitrite as N	Hazen	4 times a year	2	0	0.01	0.01	0.01	Townsville lab
Nitrate as N, Calc	NTU	4 times a year	2	0	0.43	0.43	0.43	Townsville lab
Phosphate as P	mg/L	4 times a year	2	0	0.01	0.01	0.01	Townsville lab
Silica as SiO2	mg/L	4 times a year	2	0	17	17.8	17.4	Townsville lab
Chloride	mg/L	4 times a year	2	0	63.1	63.4	63.25	Townsville lab
Sulfate	mg/L	4 times a year	2	0	3.9	3.9	3.9	Townsville lab
Fluoride	mg/L	4 times a year	2	0	0.046	0.059	0.0525	Townsville lab
Bicarbonate	mg/L	4 times a year	2	0	19.2	19.5	19.35	Townsville lab

Carbonate	mg/L	4 times a year	2	0	5	5	5	Townsville lab
Hydroxide	mg/L	4 times a year	2	0	5	5	5	Townsville lab
Hardness	mg/L	4 times a year	2	0	19.6	21.6	20.6	Townsville lab
Chlorine	Mg/L				0.003	0.005	0.003428571	In House

Table 16. *E. coli* compliance with annual value

Drinking water scheme: Hughenden

Year	2020– 2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	8	4	24	18	48	78	59	42	28	28	34	30
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)	0	1	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	200	181	183	172	196	270	311	329	333	353	379	401
No. of failures for previous 12 month period	0	1	1	1	1	1	1	1	1	1	1	1
% of samples that comply	100.0%	99.4%	99.5%	99.4%	99.5%	99.6%	99.7%	99.7%	99.7%	99.7%	99.7%	99.8%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

**Table 17. *E. coli*
compliance with annual
value**

Drinking water scheme: Prairie

Year	2020– 2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	3	2	2	2	2	2	2	2	2	2	2	2
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	28	28	28	28	28	27	26	26	26	26	26	25
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 18. *E. coli*
compliance with annual
value**

Drinking water scheme: Torrens Creek

Year	2020– 2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	2	2	2	2	2	2	2	2	2	2	2	2
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	27	27	27	27	27	26	25	25	25	25	25	24
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

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 5 – Incidents reported to the regulator

Incident date	Scheme / location	Parameter / issue	Preventive actions
20/07/2020	Prairie	Lead	Regular flushing of reticulation and a new tank to be installed.
02/09/2020	Hughenden	E. coli	Increase in chlorination, water samples and sewerage samples sent to lab in separate eskies.
21/07/2021	Hughenden	Chlorates	Council to use freshest chemical as possible. Receival dates to be included on Chemical when it arrives, ask supplier for the date of manufacture (if possible). Store chlorine in as cool as place as possible. Test hypo for chlorate concentrations
21/07/2021	Torrens Creek	Chlorates	Council to use freshest chemical as possible. Receival dates to be included on Chemical when it arrives, ask supplier for the date of manufacture (if possible). Store chlorine in as cool as place as possible. Test hypo for chlorate concentrations.
08/06/2021	Torrens Creek	River Well activation	Council to use freshest chemical as possible. Receival dates to be included on Chemical when it arrives, ask supplier for the date of manufacture (if possible). Store chlorine in as cool as place as possible. Test hypo for chlorate concentrations.

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 6 – Example: customer complaints about water quality

Scheme	Health concern	Dirty water	Taste and odour	Other
Hughenden		42	22	3

Dirty Water

The Dirty water complaints were a result of several burst water mains and the increase in chlorination in the township. Council continually flushed the reticulation mains during this time and daily chlorine sampling occurred. Disinfection levels were also increased and regularly monitored. Customers were advised of the reasons for the dirty water and were asked to report instances of dirty water to the plumber to enable a targeted flushing program. This request led to an increase in Customer complaints regarding this issue,

Taste and Odour

All taste and odour complaints resulted from the increase in chlorination levels required by the Regulators and Queensland Health. Daily chlorine samples were taken during this time and regular updates were provided to both Qld Health and the regulators.

Other

Complaints regarding excess water bills are included in this category.

7 DWQMP review outcomes

The next review will be completed by 31 May 2022..

8 DWQMP audit findings

The second regular audit of FSC's DWQMP was undertaken in April 2021 through the engagement of GHD Pty Ltd, who are Exemplar Global certified drinking water quality management system auditors. The auditor submitted the report to the regulator on 31 May 2021. The scope of the audit was as follows:

- Verify the accuracy of the data.
- Assess compliance with the plan and its conditions.
- Assess the relevance of the plan.

The audit findings and any recommendations and/or opportunities for improvement (OFI), including how these were actioned are discussed in the table on the next page.

The actions undertaken to address the audit recommendations are outlined in Table 8.

Table 8 – DWQMP audit findings and status

Element	Recommendation or OFI and Action	Status of actions	Responsible Officer / Position
2.1b Construct a flow diagram of the water supply system from catchment to consumer.	Recommendation – update Figure 4.2 to include new automatic chlorine dosing facility at Hughenden reservoir	Underway	Technical Officer/Engineering
2.1c Assemble pertinent information and document key characteristics of the water supply system to be considered	Recommendation – update the DWQMP to include: <ul style="list-style-type: none"> Upgraded Figure 4.2 of DWQMP to include new 4.3 ML reservoir and associated pipework at Hughenden. Also include details of new automatic chlorine dosing system in this figure. Recommend utilisation of As-Constructed drawings when available (noting project is being completed at time of Audit) Upgrade Figure 4.4 of DWQMP to include the addition of a third 27 kL storage tank at Prairie WTP 	Underway	Technical Officer/Engineering
2.3b Identify and document hazards, sources and hazardous events for each component of the water supply system.	Recommendation – update Table 6.7 to include consideration of new chlorination facility at Hughenden.	Underway	Technical Officer/Engineering
2.3c Estimate the level of risk for each identified hazard or hazardous event.	Recommendation – update Table 6.7 to include consideration of new chlorination facility at Hughenden.	Underway	Technical Officer/Engineering
2.3d Evaluate the major sources of uncertainty associated with each hazard and hazardous event and consider actions to reduce uncertainty.	Recommendation – update Table 6.7 to include consideration of new chlorination facility at Hughenden.	Underway	Technical Officer/Engineering
2.3e Determine significant risks and document priorities for risk management	Recommendation – update IP-5 Chlorination at Hughenden as this has been recently completed Update IP13 – this has been completed successfully by Council. There also seems to be two sets of IP-14 and IP-15s in Table 9.1. Recommended to align these improvement actions with those stated in the risk assessment register Table 6.7.	Underway	Technical Officer/Engineering
3.1a Identify existing preventive measures from catchment to consumer for each significant hazard or hazardous event and estimate the	Recommendation – update Table 6.7 to include new automatic chlorination facility at Hughenden. Mains break SWMS should include chlorine testing and reporting to EHO.	Underway	Technical Officer/Engineering

Element	Recommendation or OFI and Action	Status of actions	Responsible Officer / Position
residual risk	<p>Noting that Council indicated that a new chlorine residual analyser was being procured at Prairie, DWQMP Table 6.7 needs to be updated to reflect manual chlorine dosing. It was discussed at the audit that Council only manually dose to the primary tank at Prairie and the blending of water from the two support tanks by the primary tank on the way out of the site is relied upon for introduction of chlorine residual from these two support tanks. It was recommended that the equivalent number of chlorine tablets be distributed amongst all three tanks to provide disinfection in all storages. A change of this dosing regime will require increased monitoring of resultant chlorine residual to the network to optimize dosing configuration in this regard.</p> <p>It is recommended that Council consider an improved way of sealing the bore heads to the current practice of expanda foam, as the integrity of this seal approach cannot be confirmed.</p>		
3.1b Evaluate alternative or additional preventive measures where improvement is required.	Recommendation – update Table 6.7 and 9.1 to fix up discrepancies and update if actions are completed.	Underway	Technical Officer/Engineering
4.1b Document all procedures and compile into an operations manual.	Recommendation – Need to compile O&M Manual for new Torrens Creek WTP.	Underway	Technical Officer/Engineering
4.2a Develop monitoring protocols for operational performance of the water supply system, including the selection of operational parameters and criteria, and the routine analysis of results.	Recommendation – include in section 11.2 Council's method of data analysis and frequency.	Underway	Technical Officer/Engineering
4.5b Establish documented procedures for evaluating chemicals, materials and suppliers.	Recommendation – establish a procedure to ensure chemicals and materials from suppliers are fit for purpose and what was ordered.	Underway	Technical Officer/Engineering
5.1b Establish and document a sampling plan for each characteristic, including the location and frequency of sampling.	Recommendation – confirm documentation of sampling frequencies, including if correct Table references.	Underway	Technical Officer/Engineering

Element	Recommendation or OFI and Action	Status of actions	Responsible Officer / Position
6.2b Train employees and regularly test emergency response plans.	Recommendation – complete emergency response training as soon as practicable and resume training program to incorporate COVID disruptions.	Will occur in 2022	Technical Officer/Engineering
7.2a Ensure that employees, including contractors, maintain the appropriate experience and qualifications.	Recommendation – Council should ensure relevant training is completed now that the chlorine system at Hughenden is successfully completed.	Will occur in 2022	Technical Officer/Engineering