

Drinking Water Quality Management Plan (DWQMP) report

2015/2016

FLINDERS SHIRE COUNCIL

SPID: 51

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Glossary of terms

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

1. Introduction

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

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

This report has been prepared using the *Department of Energy and Water Supply* Drinking Water Quality Management Plan report Template published by the Department of Energy and Water Supply, Queensland, accessible at www.dews.qld.gov.au.

2. Actions taken to implement the DWQMP

Implementation of the DWQMP was included as one of Council's strategic objectives for the 2015/2016 financial year. Projects listed in the Risk Management Improvement Program guided the Water and Sewerage budget with money allocated for various projects such as the installation of a disinfection unit in Torrens Creek and costing for the installation of a disinfection unit in Hughenden.

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 identified 19 areas where Council could implement changes to manage hazards/risks and uncertainties. The program outlines interim, short-term and long-term actions for Council to implement in order to manage the identified hazards/risks and uncertainties.

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

Revisions made to the operational monitoring program to assist in maintaining the compliance with water quality criteria¹ in verification monitoring.

No revisions have been made to the operational monitoring program.

3. Compliance with water quality criteria for drinking water

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

Flinders Shire tests for numerous parameters within each drinking scheme however for the purpose of this report only those parameters that have a health guideline have been included.

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

All of the water quality results met the recommended values in the Australian Drinking Water Guidelines and the E. coli standards. The Fluoride dosing system was non-operational during the 2015/2016 financial year.

The Water Quality criteria is summarised in Appendix A.

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

This financial year there were no instances where the Regulator was notified under sections 102 or 102A of the Act.

5. Customer complaints related to water quality

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

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

Table 1 - complaints about water quality.

| | Suspected Illness | Discoloured water | Taste and odour | Total |
|---------------|-------------------|-------------------|-----------------|-------|
| Hughenden | 0 | 2 | 5 | 7 |
| Prairie | 0 | 0 | 0 | 0 |
| Torrens Creek | 0 | 0 | 0 | 0 |

Suspected Illness

During 2015/2016 there were no complaints regarding illness arising from the water supply system.

Discoloured water

Two customer complaints were received from within Hughenden in regards to discoloured water. The dirty water complaints were a result of the sediment present in the reticulation pipework. Additional flushing of the mains occurred as a result of the complaints. All customers who reported a complaint were advised of the reasons for the dirty water and were requested to allow the main a short period of time to settle after flushing.

Taste and Odour

Five complaints were received in relation to the water smelling and tasting of chlorine. Tests within the reticulation network returned well under the health guideline values and the customers were advised of the reasons Council chlorinates the water supply.

6. Findings and recommendations of the DWQMP auditor

Pursuant to section 99(2)C of the Act, regular audits of the approved DWQMP are required at specific intervals. The first regular audit of Flinders Shire's DWQMP must be completed by **9th May 2017**. Further audits are required to be completed every four (4) years from that date.

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

The first review of the DWQMP was conducted before 9th May 2015 and covered the time period from 9th May 2014 – 8th May 2015. The purpose of the review was to ensure that the DWQMP remains relevant, having regard to the operation of the drinking water service. The review was conducted by Council's Environmental Health Officer Melissa Keating.

The review resulted in amendments to the DWQMP (covered in the 2014/2015 report). The next review is due in 2017.

Appendix A – Summary of compliance with water quality criteria

The results from the verification monitoring program have been compared against the levels of the water quality criteria specified by the Regulator in the Water Quality and Reporting Guideline for a Drinking Water Service.

Table 4 - Verification monitoring results – Hughenden Source water (raw water)

| Parameter | Units | Frequency of sampling | Total No. samples collected | No. of samples in which parameter was detected | No. of samples exceeding water quality criteria | Min | Max | Average (Mean) | Limit of reporting | Laboratory name |
|------------|-------|-----------------------|-----------------------------|--|---|---------|---------|----------------|--------------------|------------------------|
| Arsenic | mg/L | Quarterly | 16 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Barium | mg/L | Quarterly | 16 | 16 | 0 | 0.0340 | 0.1200 | 0.0660 | 0.0001 | FSS Health Support Qld |
| Beryllium | mg/L | Quarterly | 16 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Boron | mg/L | Quarterly | 16 | 16 | 0 | 0.0560 | 0.0790 | 0.0688 | 0.0001 | FSS Health Support Qld |
| Cadmium | mg/L | Quarterly | 16 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Chromium | mg/L | Quarterly | 16 | 2 | 0 | <0.0001 | 0.0010 | 0.0002 | 0.0001 | FSS Health Support Qld |
| Copper | mg/L | Quarterly | 16 | 5 | 0 | <0.0010 | 0.0060 | 0.0018 | 0.001 | FSS Health Support Qld |
| Lead | mg/L | Quarterly | 16 | 3 | 0 | <0.0001 | 0.0002 | 0.0001 | 0.0001 | FSS Health Support Qld |
| Mercury | mg/L | Quarterly | 16 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Manganese | mg/L | Quarterly | 16 | 16 | 0 | 0.0026 | 0.0630 | 0.0248 | 0.0001 | FSS Health Support Qld |
| Molybdenum | mg/L | Quarterly | 16 | 4 | 0 | <0.0001 | 0.0002 | 0.0001 | 0.0001 | FSS Health Support Qld |
| Nickel | mg/L | Quarterly | 16 | 2 | 0 | <0.0001 | 0.0010 | 0.0002 | 0.0001 | FSS Health Support Qld |
| Selenium | mg/L | Quarterly | 16 | 0 | 0 | <0.0010 | <0.0010 | <0.0010 | 0.0001 | FSS Health Support Qld |
| Silver | mg/L | Quarterly | 16 | 0 | 0 | <0.0010 | <0.0010 | <0.0010 | 0.001 | FSS Health Support Qld |
| Uranium | mg/L | Quarterly | 16 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| pH | | Quarterly | 16 | 16 | 0 | 7.71 | 8.46 | 8.26 | - | FSS Health |

| | | | | | | | | | | |
|-----------------------------------|------|-----------|----|----|---|--------|-----------------|--------------------|---|---|
| | | | | | | | | | | Support Qld |
| Fluoride (naturally occurring) | mg/L | Quarterly | 16 | 16 | 0 | 0.0800 | 0.2400 | 0.1244 | - | FSS Health Support Qld & In-house |
| Nitrate | mg/L | Quarterly | 16 | 16 | 0 | 0.500 | 1.00 | 0.6625 | - | FSS Health Support Qld |
| Gross Alpha Activity | Bq/L | Quarterly | 15 | 5 | 0 | <0.06 | 0.14+/- 0.07 | 0.068 +/- 0.070 | - | FSS Health Support Qld |
| K40 Corrected Beta Activity | Bq/L | Quarterly | 15 | 3 | 0 | <0.1 | 0.2 +/- 0.1 | 0.133 +/- 0.10 | - | FSS Health Support Qld |

Table 5 - Verification monitoring results for Pesticides – Hughenden Source water (raw water)

| Parameter | Units | Frequency of Sampling | Total No. Samples collected | No. of samples in which parameter was detected | No. of samples exceeding water quality criteria | Min | Max | Mean | Limit of reporting | Laboratory name |
|--------------------------------------|-------|-----------------------|-----------------------------|--|---|---------|---------|---------|--------------------|------------------------|
| Aldrin | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Dieldrin | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Total Aldrin & Dieldrin ² | µg/L | Quarterly | 16 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |
| Chlordane cis | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Chlordane trans | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Total Chlordane | µg/L | Quarterly | 16 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |
| DDD (pp) | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| DDE (pp) | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| DDT (pp) | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Total DDT | µg/L | Quarterly | 16 | 0 | 0 | <0.8000 | <0.8000 | <0.8000 | 0.4 | FSS Health Support Qld |
| Dicofol | µg/L | Quarterly | 16 | 0 | 0 | <2.9000 | <3.0000 | <2.9563 | 1.5 | FSS Health Support Qld |
| a-Endosulfan | µg/L | Quarterly | 16 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |
| b-Endosulfan | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.4000 | <0.3000 | 0.2 | FSS Health Support Qld |
| Endosulfan Sulfate | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |

² Reporting limits are based not on instrument sensitivities, but on sample reproducibility. In the presence of potential interferences etc. which occur in natural waters we set reporting limits where we are confident in the reproducibility of the reported value - the instrument detection limit is often a factor of 10 or more lower.

For the organochlorine pesticides, they have been banned for a number of decades and we do not often see any such residues in the environment. If any such residues were detected we would confirm their presence and quantification via an alternative detection method. Whilst we are reporting a value of < 0.4 µg/L for Total Aldrin & Dieldrin and for Total Heptachlor, the individual components are reported at a lower level, and we can detect their presence well below the guideline values.

If any residues were detected we can confirm down to 0.06 µg/L for each of these total values.

| | | | | | | | | | | |
|--------------------|------|-----------|----|---|---|---------|---------|---------|-----|------------------------|
| Total Endosulfan | µg/L | Quarterly | 16 | 0 | 0 | <1.2000 | <1.4000 | <1.3000 | 0.6 | FSS Health Support Qld |
| Heptachlor | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Heptachlor Epoxide | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Total Heptachlor3 | µg/L | Quarterly | 16 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |
| Lindane (g-HCH) | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Methoxychlor | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Azinphos-methyl | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Bromophos-ethyl | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Carbophenothion | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Chlorfenvinphos | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Chlorpyrifos | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Diazinon | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Dichlorvos | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Dimethoate | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Omethoate | µg/L | Quarterly | 16 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |
| Total Dimethoate | µg/L | Quarterly | 16 | 0 | 0 | <0.6000 | <0.6000 | <0.6000 | 0.3 | FSS Health Support Qld |
| Disulfoton | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Ethion | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Ethoprophos | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Fenamiphos | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Fenchlorphos | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |

³ Reporting limits are based not on instrument sensitivities, but on sample reproducibility. In the presence of potential interferences etc. which occur in natural waters we set reporting limits where we are confident in the reproducibility of the reported value - the instrument detection limit is often a factor of 10 or more lower.

For the organochlorine pesticides, they have been banned for a number of decades and we do not often see any such residues in the environment. If any such residues were detected we would confirm their presence and quantification via an alternative detection method. Whilst we are reporting a value of < 0.4 µg/L for Total Aldrin & Dieldrin and for Total Heptachlor, the individual components are reported at a lower level, and we can detect their presence well below the guideline values.

If any residues were detected we can confirm down to 0.06 µg/L for each of these total values.

| | | | | | | | | | | |
|----------------------|------|-----------|----|---|---|---------|---------|---------|------|------------------------|
| Fenitrothion | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Fenthion (methyl) | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Malathion (Maldison) | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Methidathion | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Mevinphos | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Monocrotophos | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Parathion (ethyl) | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Parathion-methyl | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <2.0000 | <0.5857 | 0.1 | FSS Health Support Qld |
| Pirimiphos-methyl | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Profenofos | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Pyrazophos | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Sulprofos | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Temephos | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.4000 | <0.2500 | 0.1 | FSS Health Support Qld |
| Terbufos | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Tetrachlorvinphos | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Ametryn | µg/L | Quarterly | 16 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Atrazine | µg/L | Quarterly | 16 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Bromacil | µg/L | Quarterly | 16 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Diuron | µg/L | Quarterly | 16 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Fluometuron | µg/L | Quarterly | 16 | 0 | 0 | <0.0400 | <0.0400 | <0.0400 | 0.02 | FSS Health Support Qld |
| Hexazinone | µg/L | Quarterly | 16 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Metolachlor | µg/L | Quarterly | 16 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Simazine | µg/L | Quarterly | 16 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Terbutryn | µg/L | Quarterly | 16 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Amitraz | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Diclofop-methyl | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Haloxypop-2-etotyl | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Haloxypop-methyl | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Metribuzin | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Molinate | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Pendimethalin | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Propanil | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |

| | | | | | | | | | | |
|--------------------|------|-----------|----|---|---|---------|---------|---------|-----|------------------------|
| Propazine | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Terbutylazine | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Trifluralin | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Captan | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Carbaryl | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Fipronil | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Piperonyl Butoxide | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Pirimicarb | µg/L | Quarterly | 16 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |
| Propargite | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Propiconazole | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Triadimefon | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Total Triadimefon | µg/L | Quarterly | 16 | 0 | 0 | <0.6000 | <0.6000 | <0.6000 | 0.3 | FSS Health Support Qld |
| Bioresmethrin | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Cyfluthrin | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Cypermethrin | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.5 | FSS Health Support Qld |
| Deltamethrin | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Fenvalerate | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Permethrin | µg/L | Quarterly | 16 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |

Table 6 - Verification monitoring & Operational results – Hughenden Reticulation

| Parameter | Units | Frequency of sampling | Total No. samples collected | No. of samples in which parameter was detected | No. of samples exceeding water quality criteria | Min | Max | Average (Mean) | Limit of reporting | Laboratory name |
|------------|-------|-----------------------|-----------------------------|--|---|---------|---------|----------------|--------------------|------------------------|
| Arsenic | mg/L | Quarterly | 36 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Barium | mg/L | Quarterly | 36 | 36 | 0 | 0.0450 | 0.0820 | 0.0543 | 0.0001 | FSS Health Support Qld |
| Beryllium | mg/L | Quarterly | 36 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Boron | mg/L | Quarterly | 36 | 36 | 0 | 0.0580 | 0.6700 | 0.0869 | 0.0001 | FSS Health Support Qld |
| Cadmium | mg/L | Quarterly | 36 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Chromium | mg/L | Quarterly | 36 | 1 | 0 | <0.0001 | 0.0004 | 0.0001 | 0.0001 | FSS Health Support Qld |
| Copper | mg/L | Quarterly | 36 | 26 | 0 | <0.0010 | 0.1800 | 0.0134 | 0.001 | FSS Health Support Qld |
| Lead | mg/L | Quarterly | 36 | 22 | 0 | <0.0001 | 0.0100 | 0.0009 | 0.0001 | FSS Health Support Qld |
| Mercury | mg/L | Quarterly | 36 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Manganese | mg/L | Quarterly | 36 | 36 | 0 | 0.0003 | 0.3700 | 0.0460 | 0.0001 | FSS Health Support Qld |
| Molybdenum | mg/L | Quarterly | 36 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Nickel | mg/L | Quarterly | 36 | 4 | 0 | <0.0001 | 0.0050 | 0.0002 | 0.0001 | FSS Health Support Qld |
| Selenium | mg/L | Quarterly | 36 | 0 | 0 | <0.0010 | <0.0010 | <0.0010 | 0.0001 | FSS Health Support Qld |
| Silver | mg/L | Quarterly | 36 | 0 | 0 | <0.0010 | <0.0010 | <0.0010 | 0.001 | FSS Health Support Qld |
| Uranium | mg/L | Quarterly | 36 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| pH | | Quarterly | 36 | 36 | 0 | 7.72 | 8.33 | 8.22 | - | FSS Health Support Qld |

| | | | | | | | | | | |
|------------------------|------|-----------|-----|-----|---|-------|-------|-------|---|-----------------------------------|
| Fluoride | mg/L | Daily | 36 | 36 | 0 | 0.100 | 0.16 | 0.121 | - | FSS Health Support Qld & In-house |
| Nitrate | mg/L | Quarterly | 36 | 36 | 0 | 0.500 | 1.300 | 0.86 | - | FSS Health Support Qld |
| Chlorine (Operational) | mg/L | Weekly | 267 | 267 | 0 | 0.000 | 0.66 | 0.15 | - | In-house |

Table 7 - Verification monitoring results – Prairie Source

| Parameter | Units | Frequency of sampling | Total No. samples collected | No. of samples in which parameter was detected | No. of samples exceeding water quality criteria | Min | Max | Average (Mean) | Limit of reporting | Laboratory name |
|------------|-------|-----------------------|-----------------------------|--|---|---------|---------|----------------|--------------------|------------------------------|
| Arsenic | mg/L | Quarterly | 8 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Barium | mg/L | Quarterly | 8 | 8 | 0 | 0.0640 | 0.0810 | 0.0710 | 0.0001 | FSS Health Support Qld |
| Beryllium | mg/L | Quarterly | 8 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Boron | mg/L | Quarterly | 8 | 8 | 0 | 0.1800 | 0.3000 | 0.2475 | 0.0001 | FSS Health Support Qld |
| Cadmium | mg/L | Quarterly | 8 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Chromium | mg/L | Quarterly | 8 | | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Copper | mg/L | Quarterly | 8 | 3 | 0 | <0.0010 | <0.0010 | <0.0010 | 0.001 | FSS Health Support Qld |
| Lead | mg/L | Quarterly | 8 | 3 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Mercury | mg/L | Quarterly | 8 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Manganese | mg/L | Quarterly | 8 | 8 | 0 | 0.0170 | 0.0380 | 0.0308 | 0.0001 | FSS Health Support Qld |
| Molybdenum | mg/L | Quarterly | 8 | 8 | 0 | 0.0010 | 0.0011 | 0.0010 | 0.0010 | FSS Health Support Qld |
| Nickel | mg/L | Quarterly | 8 | 1 | 0 | <0.0001 | 0.0002 | 0.0001 | 0.0001 | FSS Health Support Qld |
| Selenium | mg/L | Quarterly | 8 | 0 | 0 | <0.0010 | <0.0010 | <0.0010 | 0.0001 | FSS Health Support Qld |
| Silver | mg/L | Quarterly | 8 | 0 | 0 | <0.0010 | <0.0010 | <0.0010 | 0.001 | FSS Health Support Qld |
| Uranium | mg/L | Quarterly | 8 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| pH | | Quarterly | 8 | 8 | - | 8.0100 | 8.3400 | 8.1388 | - | FSS Health Support Qld |
| Fluoride | mg/L | Quarterly | 8 | 8 | 0 | 0.100 | 0.1800 | 0.1200 | - | FSS Health Support Qld & In- |

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|-----------------------------|------|-----------|---|---|---|---------|---------|---------|---|------------------------|
| | | | | | | | | | | house |
| Nitrate | mg/L | Quarterly | 8 | 0 | 0 | <1.0000 | <1.0000 | <1.0000 | - | FSS Health Support Qld |
| Gross Alpha Activity | Bq/L | Quarterly | 8 | 0 | 0 | <0.06 | <0.06 | <0.06 | - | FSS Health Support Qld |
| K40 Corrected Beta Activity | Bq/L | Quarterly | 8 | 0 | 0 | <0.1 | <0.1 | <0.1 | - | FSS Health Support Qld |

Table 8 - Verification monitoring results Pesticides – Prairie Source

| ParameterER | Units | Frequency of Sampling | Total No. Samples collected | No. of samples in which parameter was detected | No. of samples exceeding water quality criteria | Min | Max | Mean | Limit of reporting | Laboratory name |
|-------------------------|-------|-----------------------|-----------------------------|--|---|---------|---------|---------|--------------------|------------------------|
| Aldrin | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Dieldrin | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Total Aldrin & Dieldrin | µg/L | Quarterly | 8 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |
| Chlordane cis | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Chlordane trans | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Total Chlordane | µg/L | Quarterly | 8 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |
| DDD (pp) | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| DDE (pp) | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| DDT (pp) | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Total DDT | µg/L | Quarterly | 8 | 0 | 0 | <0.8000 | <0.8000 | <0.8000 | 0.4 | FSS Health Support Qld |
| Dicofol | µg/L | Quarterly | 8 | 0 | 0 | <2.9000 | <3.000 | <2.9125 | 1.5 | FSS Health Support Qld |
| a-Endosulfan | µg/L | Quarterly | 8 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |
| b-Endosulfan | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.4000 | <0.3000 | 0.2 | FSS Health Support Qld |
| Endosulfan Sulfate | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Total Endosulfan | µg/L | Quarterly | 8 | 0 | 0 | <1.2000 | <1.4000 | <1.3000 | 0.6 | FSS Health Support Qld |
| Heptachlor | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Heptachlor Epoxide | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Total Heptachlor | µg/L | Quarterly | 8 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |
| Lindane (g-HCH) | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Methoxychlor | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Azinphos-methyl | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |

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|----------------------|------|-----------|---|---|---|---------|---------|---------|------|------------------------|
| Bromophos-ethyl | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Carbophenothion | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Chlorfenvinphos | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Chlorpyrifos | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Diazinon | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Dichlorvos | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Dimethoate | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Omethoate | µg/L | Quarterly | 8 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |
| Total Dimethoate | µg/L | Quarterly | 8 | 0 | 0 | <0.6000 | <0.6000 | <0.6000 | 0.3 | FSS Health Support Qld |
| Disulfoton | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Ethion | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Ethoprophos | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Fenamiphos | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Fenchlorphos | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Fenitrothion | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Fenthion (methyl) | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Malathion (Maldison) | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Methidathion | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Mevinphos | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Monocrotophos | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Parathion (ethyl) | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Parathion-methyl | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <2.0000 | <0.6500 | 0.1 | FSS Health Support Qld |
| Pirimiphos-methyl | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Profenofos | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Pyrazophos | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Sulprofos | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Temephos | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.4000 | <0.2500 | 0.1 | FSS Health Support Qld |
| Terbufos | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Tetrachlorvinphos | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Ametryn | µg/L | Quarterly | 8 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Atrazine | µg/L | Quarterly | 8 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Bromacil | µg/L | Quarterly | 8 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |

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|--------------------|------|-----------|---|---|---|---------|---------|---------|------|------------------------|
| Diuron | µg/L | Quarterly | 8 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Fluometuron | µg/L | Quarterly | 8 | 0 | 0 | <0.0400 | <0.0400 | <0.0400 | 0.02 | FSS Health Support Qld |
| Hexazinone | µg/L | Quarterly | 8 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Metolachlor | µg/L | Quarterly | 8 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Simazine | µg/L | Quarterly | 8 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Terbutryn | µg/L | Quarterly | 8 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Amitraz | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Diclofop-methyl | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Haloxyfop-2-etotyl | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Haloxyfop-methyl | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Metribuzin | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Molinate | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Pendimethalin | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Propanil | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Propazine | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Terbutylazine | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Trifluralin | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Captan | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Carbaryl | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Fipronil | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Piperonyl Butoxide | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Pirimicarb | µg/L | Quarterly | 8 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |
| Propargite | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Propiconazole | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Triadimefon | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Total Triadimefon | µg/L | Quarterly | 8 | 0 | 0 | <0.6000 | <0.6000 | <0.6000 | 0.3 | FSS Health Support Qld |
| Bioresmethrin | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Cyfluthrin | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Cypermethrin | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.5 | FSS Health Support Qld |
| Deltamethrin | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Fenvalerate | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Permethrin | µg/L | Quarterly | 8 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |

Table 9- Verification monitoring & operational results – Prairie Reticulation

| Parameter | Units | Frequency of sampling | Total No. samples collected | No. of samples in which parameter was detected | No. of samples exceeding water quality criteria | Min | Max | Average (Mean) | Limit of reporting | Laboratory name |
|------------|-------|-----------------------|-----------------------------|--|---|---------|---------|----------------|--------------------|------------------------|
| Arsenic | mg/L | Quarterly | 12 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Barium | mg/L | Quarterly | 12 | 12 | 0 | 0.0590 | 0.0860 | 0.0701 | 0.0001 | FSS Health Support Qld |
| Beryllium | mg/L | Quarterly | 12 | 0 | 0 | <0.0001 | <0.0010 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Boron | mg/L | Quarterly | 12 | 12 | 0 | 0.2000 | 0.2900 | 0.2367 | 0.0001 | FSS Health Support Qld |
| Cadmium | mg/L | Quarterly | 12 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Chromium | mg/L | Quarterly | 12 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Copper | mg/L | Quarterly | 12 | 8 | 0 | <0.0010 | 0.0190 | 0.0059 | 0.001 | FSS Health Support Qld |
| Lead | mg/L | Quarterly | 12 | 7 | 0 | <0.0001 | 0.0019 | 0.0005 | 0.0001 | FSS Health Support Qld |
| Mercury | mg/L | Quarterly | 12 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Manganese | mg/L | Quarterly | 12 | 12 | 0 | 0.0130 | 0.2100 | 0.0599 | 0.0001 | FSS Health Support Qld |
| Molybdenum | mg/L | Quarterly | 12 | 11 | 0 | <0.0001 | 0.0011 | 0.0009 | 0.0001 | FSS Health Support Qld |
| Nickel | mg/L | Quarterly | 12 | 3 | 0 | <0.0001 | 0.0002 | 0.0001 | 0.0001 | FSS Health Support Qld |
| Selenium | mg/L | Quarterly | 12 | 0 | 0 | <0.0010 | <0.0010 | <0.0010 | 0.0001 | FSS Health Support Qld |
| Silver | mg/L | Quarterly | 12 | 0 | 0 | <0.0010 | <0.0010 | <0.0010 | 0.001 | FSS Health Support Qld |
| Uranium | mg/L | Quarterly | 12 | 0 | 0 | <0.0001 | 0.0001 | 0.0001 | 0.0001 | FSS Health Support Qld |
| pH | | Quarterly | 12 | 12 | 0 | 8.0800 | 8.3200 | 8.2050 | - | FSS Health |

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|----------|------|----------------|-----|-----|---|---------|---------|---------|---|-----------------------------------|
| | | | | | | | | | | Support Qld |
| Fluoride | mg/L | Quarterly | 12 | 12 | 0 | 0.1000 | 0.2600 | 0.1383 | - | FSS Health Support Qld & In-house |
| Nitrate | mg/L | Quarterly | 12 | 14 | 0 | <1.0000 | <1.0000 | <1.0000 | - | FSS Health Support Qld |
| Chlorine | mg/L | 3 times a week | 170 | 170 | 0 | 0.06 | 1.07 | 0.43 | - | In-house |

Table 10 - Verification monitoring results – Torrens Creek Source Water

| Parameter | Units | Frequency of sampling | Total No. samples collected | No. of samples in which parameter was detected | No. of samples exceeding water quality criteria | Min | Max | Average (Mean) | Limit of reporting | Laboratory name |
|------------|-------|-----------------------|-----------------------------|--|---|---------|---------|----------------|--------------------|------------------------|
| Arsenic | mg/L | Quarterly | 4 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Barium | mg/L | Quarterly | 4 | 14 | 0 | 0.1900 | 0.2100 | 0.1950 | 0.0001 | FSS Health Support Qld |
| Beryllium | mg/L | Quarterly | 4 | 2 | 0 | <0.0001 | 0.0003 | 0.0002 | 0.0001 | FSS Health Support Qld |
| Boron | mg/L | Quarterly | 4 | 4 | 0 | 0.0360 | 0.0410 | 0.0380 | 0.0001 | FSS Health Support Qld |
| Cadmium | mg/L | Quarterly | 4 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Chromium | mg/L | Quarterly | 4 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Copper | mg/L | Quarterly | 4 | 4 | 0 | 0.0010 | 0.0020 | 0.0018 | 0.001 | FSS Health Support Qld |
| Lead | mg/L | Quarterly | 4 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Mercury | mg/L | Quarterly | 4 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Manganese | mg/L | Quarterly | 4 | 4 | 0 | 0.0300 | 0.0370 | 0.0348 | 0.0001 | FSS Health Support Qld |
| Molybdenum | mg/L | Quarterly | 4 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Nickel | mg/L | Quarterly | 4 | 4 | 0 | 0.0039 | 0.0050 | 0.0043 | 0.0001 | FSS Health Support Qld |
| Selenium | mg/L | Quarterly | 4 | 0 | 0 | <0.0010 | <0.0010 | <0.0010 | 0.0001 | FSS Health Support Qld |
| Silver | mg/L | Quarterly | 4 | 0 | 0 | <0.0010 | <0.0010 | <0.0010 | 0.001 | FSS Health Support Qld |
| Uranium | mg/L | Quarterly | 4 | 2 | 0 | <0.0001 | 0.0002 | 0.0002 | 0.0001 | FSS Health Support Qld |
| pH | | Quarterly | 4 | 4 | 0 | 6.3500 | 6.7300 | 6.4750 | - | FSS Health Support Qld |
| Fluoride | mg/L | Quarterly | 4 | 4 | 0 | 0.0500 | 0.0900 | 0.0600 | - | FSS Health |

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|-----------------------------|------|-----------|---|---|---|---------------|---------------|----------------|---|------------------------|
| | | | | | | | | | | Support Qld & In-house |
| Nitrate | mg/L | Quarterly | 4 | 4 | 0 | 1.7000 | 2.1000 | 1.8500 | - | FSS Health Support Qld |
| Gross Alpha Activity | Bq/L | Quarterly | 4 | 4 | 0 | 0.24 +/- 0.08 | 0.37 +/- 0.08 | 0.31 +/- 0.078 | - | FSS Health Support Qld |
| K40 Corrected Beta Activity | Bq/L | Quarterly | 4 | 4 | 0 | 0.2 +/- 0.2 | 0.4 +/- 0.2 | 0.3 +/- 0.2 | - | FSS Health Support Qld |

Table 11- Verification monitoring results for Pesticides– Torrens Creek Source Water

| ParameterER | Units | Frequency of Sampling | Total No. Samples collected | No. of samples in which parameter was detected | No. of samples exceeding water quality criteria | Min | Max | Mean | Limit of reporting | Laboratory name |
|-------------------------|-------|-----------------------|-----------------------------|--|---|---------|---------|---------|--------------------|------------------------|
| Aldrin | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Dieldrin | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Total Aldrin & Dieldrin | µg/L | Quarterly | 4 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |
| Chlordane cis | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Chlordane trans | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Total Chlordane | µg/L | Quarterly | 4 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |
| DDD (pp) | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| DDE (pp) | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| DDT (pp) | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Total DDT | µg/L | Quarterly | 4 | 0 | 0 | <0.8000 | <0.8000 | <0.8000 | 0.4 | FSS Health Support Qld |
| Dicofol | µg/L | Quarterly | 4 | 0 | 0 | <2.9750 | <2.9000 | <3.0000 | 1.5 | FSS Health Support Qld |
| a-Endosulfan | µg/L | Quarterly | 4 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |
| b-Endosulfan | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.4000 | <0.3000 | 0.2 | FSS Health Support Qld |
| Endosulfan Sulfate | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Total Endosulfan | µg/L | Quarterly | 4 | 0 | 0 | <1.2000 | <1.4000 | <1.3000 | 0.6 | FSS Health Support Qld |
| Heptachlor | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Heptachlor Epoxide | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Total Heptachlor | µg/L | Quarterly | 4 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |

| | | | | | | | | | | |
|----------------------|------|-----------|---|---|---|---------|---------|---------|-----|------------------------|
| Lindane (g-HCH) | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Methoxychlor | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Azinphos-methyl | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Bromophos-ethyl | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Carbophenothion | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Chlorfenvinphos | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Chlorpyrifos | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Diazinon | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Dichlorvos | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Dimethoate | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Omethoate | µg/L | Quarterly | 4 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |
| Total Dimethoate | µg/L | Quarterly | 4 | 0 | 0 | <0.6000 | <0.6000 | <0.6000 | 0.3 | FSS Health Support Qld |
| Disulfoton | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Ethion | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Ethoprophos | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Fenamiphos | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Fenchlorphos | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Fenitrothion | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Fenthion (methyl) | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Malathion (Maldison) | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Methidathion | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Mevinphos | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Monocrotophos | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Parathion (ethyl) | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Parathion-methyl | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <2.0000 | <0.8000 | 0.1 | FSS Health Support Qld |
| Pirimiphos-methyl | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Profenofos | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Pyrazophos | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Sulprofos | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Temephos | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Terbufos | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Tetrachlorvinphos | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |

| | | | | | | | | | | |
|--------------------|------|-----------|---|---|---|---------|---------|---------|------|------------------------|
| Ametryn | µg/L | Quarterly | 4 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Atrazine | µg/L | Quarterly | 4 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Bromacil | µg/L | Quarterly | 4 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Diuron | µg/L | Quarterly | 4 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Fluometuron | µg/L | Quarterly | 4 | 0 | 0 | <0.0400 | <0.0400 | <0.0400 | 0.02 | FSS Health Support Qld |
| Hexazinone | µg/L | Quarterly | 4 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Metolachlor | µg/L | Quarterly | 4 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Simazine | µg/L | Quarterly | 4 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Terbutryn | µg/L | Quarterly | 4 | 0 | 0 | <0.0200 | <0.0200 | <0.0200 | 0.01 | FSS Health Support Qld |
| Amitraz | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Diclofop-methyl | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Haloxyfop-2-etotyl | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Haloxyfop-methyl | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Metribuzin | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Molinate | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Pendimethalin | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Propanil | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Propazine | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Terbuthylazine | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Trifluralin | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Captan | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Carbaryl | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Fipronil | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Piperonyl Butoxide | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Pirimicarb | µg/L | Quarterly | 4 | 0 | 0 | <0.4000 | <0.4000 | <0.4000 | 0.2 | FSS Health Support Qld |
| Propargite | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Propiconazole | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Triadimefon | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Total Triadimefon | µg/L | Quarterly | 4 | 0 | 0 | <0.6000 | <0.6000 | <0.6000 | 0.3 | FSS Health Support Qld |
| Bioresmethrin | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Cyfluthrin | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Cypermethrin | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.5 | FSS Health Support Qld |

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|--------------|------|-----------|---|---|---|---------|---------|---------|-----|------------------------|
| Deltamethrin | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Fenvalerate | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |
| Permethrin | µg/L | Quarterly | 4 | 0 | 0 | <0.2000 | <0.2000 | <0.2000 | 0.1 | FSS Health Support Qld |

Table 12 - Verification monitoring results – Torrens Creek Reticulation

| Parameter | Units | Frequency of sampling | Total No. samples collected | No. of samples in which parameter was detected | No. of samples exceeding water quality criteria | Min | Max | Average (Mean) | Limit of reporting | Laboratory name |
|------------|-------|-----------------------|-----------------------------|--|---|---------|---------|----------------|--------------------|------------------------|
| Arsenic | mg/L | Quarterly | 10 | 1 | 0 | <0.0001 | 0.0003 | 0.0001 | 0.0001 | FSS Health Support Qld |
| Barium | mg/L | Quarterly | 10 | 10 | 0 | 0.1800 | 0.2200 | 0.2010 | 0.0001 | FSS Health Support Qld |
| Beryllium | mg/L | Quarterly | 10 | 5 | 0 | <0.0001 | 0.0004 | 0.0002 | 0.0001 | FSS Health Support Qld |
| Boron | mg/L | Quarterly | 10 | 10 | 0 | 0.0360 | 0.0410 | 0.0382 | 0.0001 | FSS Health Support Qld |
| Cadmium | mg/L | Quarterly | 10 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Chromium | mg/L | Quarterly | 10 | 4 | 0 | <0.0001 | 0.0010 | 0.0002 | 0.0001 | FSS Health Support Qld |
| Copper | mg/L | Quarterly | 10 | 10 | 0 | 0.0010 | 0.0450 | 0.0221 | 0.001 | FSS Health Support Qld |
| Lead | mg/L | Quarterly | 10 | 8 | 0 | <0.0001 | 0.0023 | 0.0010 | 0.0001 | FSS Health Support Qld |
| Mercury | mg/L | Quarterly | 10 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Manganese | mg/L | Quarterly | 10 | 10 | 0 | 0.0160 | 0.0300 | 0.0223 | 0.0001 | FSS Health Support Qld |
| Molybdenum | mg/L | Quarterly | 10 | 0 | 0 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | FSS Health Support Qld |
| Nickel | mg/L | Quarterly | 10 | 10 | 0 | 0.0030 | 0.0053 | 0.0044 | 0.0001 | FSS Health Support Qld |
| Selenium | mg/L | Quarterly | 10 | 0 | 0 | <0.0010 | <0.0010 | <0.0010 | 0.0001 | FSS Health Support Qld |
| Silver | mg/L | Quarterly | 10 | 0 | 0 | <0.0010 | <0.0010 | <0.0010 | 0.001 | FSS Health Support Qld |

| | | | | | | | | | | |
|----------|------|----------------|-----|-----|---|---------|--------|--------|--------|-----------------------------------|
| Uranium | mg/L | Quarterly | 10 | 5 | 0 | <0.0001 | 0.0003 | 0.0002 | 0.0001 | FSS Health Support Qld |
| pH | | Quarterly | 10 | 10 | 0 | 6.3500 | 7.0200 | 6.6340 | - | FSS Health Support Qld |
| Fluoride | mg/L | Quarterly | 10 | 10 | 0 | 0.0500 | 0.1000 | 0.0630 | - | FSS Health Support Qld & In-house |
| Nitrate | mg/L | Quarterly | 10 | 10 | 0 | 1.7000 | 2.2000 | 1.9000 | - | FSS Health Support Qld |
| Chlorine | mg/L | 3 times a week | 174 | 174 | 0 | 0.04 | 1.24 | 0.41 | - | In-house |

Table 13 – Source & Reticulation E. coli verification monitoring 2015/2016

| HUGHENDEN | | | | | | | | | | | | |
|---|-------------|---------------|------------------|----------------|-----------------|-----------------|----------------|-----------------|--------------|--------------|------------|-------------|
| MONTH | July | August | September | October | November | December | January | February | March | April | May | June |
| No. Samples collected | 38 | 26 | 31 | 20 | 27 | 35 | 28 | 28 | 35 | 28 | 28 | 32 |
| No. Samples collected in which E.coli is detected. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No. samples collected in previous 12 month period | 268 | 275 | 288 | 282 | 289 | 308 | 317 | 323 | 339 | 348 | 354 | 356 |
| No. of failures for previous 12 month period | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % 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 14 – Source & Reticulation E. coli verification monitoring 2015/2016

| Prairie | | | | | | | | | | | | |
|---|-------------|---------------|------------------|----------------|-----------------|-----------------|----------------|-----------------|--------------|--------------|------------|-------------|
| MONTH | July | August | September | October | November | December | January | February | March | April | May | June |
| No. Samples collected | 3 | 5 | 4 | 5 | 3 | 6 | 3 | 3 | 3 | 3 | 3 | 3 |
| No. Samples collected in which E.coli is detected. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No. samples collected in previous 12 month period | 49 | 53 | 55 | 54 | 51 | 53 | 50 | 47 | 46 | 47 | 44 | 41 |
| No. of failures for previous 12 month period | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % 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 15 – Source & Reticulation E. coli verification monitoring 2015/2016

| Torrens Creek | | | | | | | | | | | | |
|---|-------------|---------------|------------------|----------------|-----------------|-----------------|----------------|-----------------|--------------|--------------|------------|-------------|
| MONTH | July | August | September | October | November | December | January | February | March | April | May | June |
| No. Samples collected | 3 | 3 | 3 | 3 | 3 | 6 | 3 | 3 | 3 | 3 | 3 | 3 |
| No. Samples collected in which E.coli is detected. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No. samples collected in previous 12 month period | 52 | 51 | 50 | 46 | 43 | 45 | 342 | 39 | 38 | 39 | 39 | 39 |
| No. of failures for previous 12 month period | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % 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 |

Appendix B – Implementation of the DWQMP Risk Management Improvement Program

Table 16 - RMIP

| IP item | Action | Description | Target date/s | Status as of December 2016 | Details and update |
|---------|--|--|---|----------------------------|---|
| IP-1 | Bore Head improvement program | <p>Mounding of concrete around bore heads, replacement/Maintenance of slabs. Sealing of possible ingress sites.</p> <p>Short-term: Investigation of works required and cost estimates.</p> <p>Long-term: upgrade</p> | <p>Interim: Ongoing inspection and maintenance.</p> <p>Short-term: 30thApril 2014</p> <p>Long-term: Commencing July 2014 – finish 2017.</p> | In Progress | Inspection of the bores occurs on a weekly basis. Any ingress sites are sealed when discovered. This is an ongoing project. |
| IP-2 | Bunding for Fuel & Chlorine storage | Installation of Bunding for Chlorine storage in Torrens Creek. This will occur during the upgrades. | Completed | Completed | |
| 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. | Completed | Completed | |

| IP item | Action | Description | Target date/s | Status as of December 2016 | Details and update |
|---------|--|---|--|----------------------------|--|
| IP-4 | 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. | Dependent on IP-3 | In Progress | |
| IP-5 | 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. | Ongoing | In Progress | Engineering Department are developing program. |
| IP-6 | Chlorination at Hughenden | <p>Installation of Chlorination equipment. Equipment is able to be housed in same facility as Fluoridation equipment.</p> <p>Short-term: Design Criteria and costing</p> <p>Long-term: Installation</p> | <p>Short-term: 30th June 2014</p> <p>Long-term: 30th June 2017 (fast-tracked if there are ongoing issues).</p> | In Progress | <p>A concept design report has been prepared. Council to go to tender for provision and installation of equipment.</p> <p>GH&D are in the process of completing design with a view to have installation completed by the end of the next financial year.</p> |

| IP item | Action | Description | Target date/s | Status as of December 2016 | Details and update |
|---------|--|---|---------------|----------------------------|--------------------|
| IP-7 | Chlorination at Torrens Creek | <p>Installation of ORP system at Torrens Creek.</p> <p>Interim: Currently upgrading water storage and installing Infinity filter for Iron & Manganese.</p> <p>Short-term: Establish tank turn-over (will hand dose with chlorine during this time).</p> <p>Long-term: Chlorination system installed</p> | Completed | Completed | Completed |
| IP-8 | Installation of Chlorine dosing pumps in Prairie | Equipment has been purchased for installation of two dosing pumps and one analyser. | Completed | Completed | |

| IP item | Action | Description | Target date/s | Status as of December 2016 | Details and update |
|---------|---------------------------------------|---|---|----------------------------|--------------------|
| IP-9 | Investigation of Reticulation Network | <p>Investigation into condition of reticulation network and detailed assessment of water demands - Require reliable records for Mains Breaks.</p> <p>The following information is to be gathered each time there is a Mains Break: the pipe material, condition estimate, depth of the pipe and the type of soil. This information is then passed on to the DOE and QA/Asset Manager so that it can be entered into a graphical database (map info). Users will then be able to access a map of the reticulation network with various layers that will include; breaks, repairs, additions, type of pipe and condition.</p> <p>Interim: Ongoing data collection.</p> <p>Short-term: Record collection and set-up of GIS system</p> <p>Long-term: Ongoing data collection and updates of system</p> <p>Network analysis of Hughenden will be undertaken by GHD upon completion up changes to Hughenden's delivery system (Move from Demand-Supply to Supply-Demand).</p> | <p>Interim: Ongoing</p> <p>Short-term: 30th June 2014</p> <p>Long-term: Ongoing from 30th June 2014</p> | In Progress | |

| IP item | Action | Description | Target date/s | Status as of December 2016 | Details and update |
|---------|------------------------------------|---|--|----------------------------|---|
| IP-10 | Air Scouring Program For Flinders. | <p>Investigation into the cost of hiring contractors to undertake work. A program will be developed once costs are established.</p> <p>Interim: Ongoing flushing of Mains.</p> <p>Short-term: Investigation and cost analysis</p> <p>Long-term: Development of program.</p> | <p>Interim: Ongoing</p> <p>Short-term: 30th June 2014</p> <p>Long-term:30th June 2016 (Program implemented after this date).</p> | In Progress | Engineering department has recently completed analysis of water and sewerage assets. This data will be utilised or the program. |

| IP item | Action | Description | Target date/s | Status as of December 2016 | Details and update |
|---------|--|---|--|----------------------------|--------------------|
| IP-11 | Long-term plan for the looping of Mains in Hughenden | <p>Looping of mains in order to avoid dead-ends.</p> <p>Will utilise information gathered during investigation of the reticulation network.</p> <p>Interim: Ongoing flushing of mains.</p> <p>Short-term: Design and Cost analysis.</p> <p>Long-term: Implementation of program (starting from 15/16 financial year).</p> | <p>Interim: Ongoing.</p> <p>Short-term:30th December 2014</p> <p>Long-term: 15/16 financial year (start date).</p> | In Progress | |
| IP-12 | Register of Chemical Validation | Develop chemical validation process. | Completed | Completed | |

| IP item | Action | Description | Target date/s | Status as of December 2016 | Details and update |
|---------|---|---|--|----------------------------|--|
| IP-13 | Investigation of security at Prairie Stock Bore & investigate possibility of increasing volume of water from town bore. | <p>Consult with Rural Lands Officer regarding ability of Council to fence the Stock Bore (currently on a stock route – non Council land).</p> <p>Interim: Investigate</p> <p>Short-term: Obtain approvals and develop cost estimates.</p> <p>Long-term: Installation.</p> | <p>Interim:30th December 2013</p> <p>Short-term:30th June 2014</p> <p>Long-term:30th June 2017</p> | In Progress | Council's Rural lands Officer is investigating different fencing options. Project may be pushed back to future budget. |
| IP-14 | 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. | <p>Reservoir fence completed.</p> <p>Bore fence to bed added to 2017/2018 budget with the aim to complete June 2018.</p> | In Progress | |

| IP item | Action | Description | Target date/s | Status as of December 2016 | Details and update |
|---------|--|---|---|----------------------------|--------------------|
| IP-15 | Operational and Maintenance Procedures | <p>Update, obtain approval and implement the following procedures:</p> <ul style="list-style-type: none"> Water & Sewerage quality monitoring (procedures & calibration of equipment) Response to poor bacteriological results Response to customer complaints Imposing water restrictions Equipment/asset failure Mains breaks procedures <p>Develop, obtain approval and implement the following procedures:</p> <ul style="list-style-type: none"> Drinking Water Quality Incident Response Manual Environmental Incident Plan Operation and Maintenance of pumps Mains flushing and scouring Disconnection and restoration of water supply After hours calls <ul style="list-style-type: none"> Flow/pressure test Contingency plan – failure of source or Retic Contingency plan – power failure Contingency plan – failure of trunk Mains | <p>Updated by 31st March 2014</p> <p>Approved by 30th April 2014</p> <p>Completed</p> <p>Developed by 30th April 2014</p> <p>Approved by 31st May 2014</p> <p>Completed</p> | Completed | |

| IP item | Action | Description | Target date/s | Status as of December 2016 | Details and update |
|---------|--------|---|--|----------------------------|--------------------|
| | | Develop, obtain approval and implement the following procedures: Hydrant Maintenance Valve Maintenance Valve repairs Maintenance of switchboards Locating water services | Developed by 30th November 2014 Approved by 31st December 2014 Completed | | |

| IP item | Action | Description | Target date/s | Status as of December 2016 | Details and update |
|---------|--|---|---|----------------------------|--|
| IP-16 | Development of training program for Water officers | <p>Investigation of training requirements for water officers. Develop program and implement program. Fluoridation training provided by supplier of Fluoridation equipment.</p> <p>Interim: Investigation into training required, courses offered and cost.</p> <p>Short-term: Provision of Fluoridation training.</p> <p>Long-term: Cert training for Water Officers.</p> | <p>Interim: Ongoing</p> <p>Short-term: 30th June 2014</p> <p>Fluoride training: Completed</p> <p>Cert training: Long-term: 30th June 2017</p> | In Progress | Plumbers have recently finished Fluoride course. |
| IP-17 | Induction program for new water staff | Development of water specific induction training for water officers & 'Take 5's'. | 30th June 2016 – needs to be updated to include new STP. | In Progress | |

| IP item | Action | Description | Target date/s | Status as of December 2016 | Details and update |
|---------|---|--|--|----------------------------|--------------------|
| IP-18 | Replacement of Lead-jointed concrete pipes | <p>Ongoing replacement of Lead-jointed concrete pipes. Many pipes have been replaced over the past 4 years. Remaining pipes will be replaced.</p> <p>Interim: Ongoing monitoring of water, collection of data for GIS system.</p> <p>Short-term: Identification of pipes as per GIS system/design and costing for replacement of pipes.</p> <p>Long-term: Replacement of pipes in conjunction with road upgrade program.</p> | <p>Interim: Ongoing</p> <p>Short-term: 30th June 2015</p> <p>Long-term: Ongoing from 30th June 2015.</p> | In Progress | |
| IP-19 | Investigation into connectivity of Torrens Creek bore to the River. | <p>Interim: conduct monitoring of pesticides.</p> <p>Short-term: investigate trends of monitoring results and compare to flows in River.</p> <p>Long-term: dependent upon the results of the investigation.</p> | <p>Interim: Ongoing</p> <p>Short-term: 30th June 2014.</p> <p>Long-term: TBA</p> | In Progress | |