

Drinking Water Quality Management Plan (DWQMP) report

2014/2015

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 2014/2015 financial year. Projects listed in the Risk Management Improvement Program guided the Water Sewerage budget with money allocated for various projects such as the inspection of bores by camera, installation of a disinfection unit in Prairie and costing for the installation of a disinfection unit in Torrens Creek. Additional Standard Operating Procedures for the Plumbing department have also been developed as a result of the DWQMP.

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.

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

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.

The majority of water quality results met the recommended values in the Australian Drinking Water Guidelines and the E. coli and fluoride standards with the exception being the two incidents outlined below.

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 was one instance where the Regulator was notified under sections 102 or 102A of the Act. This notification was for non-compliance with water quality criteria caused by the detection of lead at one of the reticulation sample points in Hughenden. There was also an ongoing incident that originally occurred in the 2013/2014 financial year.

Non-compliances with the water quality criteria and corrective and preventive actions undertaken

There were two non-compliances for the 2014/2015 financial year. One was a detection of lead from a routine sample taken on 21/01/2015 at the Hughenden Treatment Plant while the other was the result of an ongoing detection of lead at a private tap in Torrens Creek.

Hughenden Incident

Incident Description: A reading of 0.12mg/L was detected.

Corrective and Preventative Actions: The tap and the reticulation mains were flushed. Further samples were taken. Other samples taken from different points in the reticulation were compared against the samples from the WTP. The other samples taken on the same day and the additional samples taken from the WTP reported below the Health limit. Council now regularly flushes the water mains in order to assist in the movement of sediment in the mains. Regularly testing of the reticulation network occurs.

Torrens Creek Incident:

Incident Description: Initial incident occurred at a Private (outside) tap in the Torrens Creek reticulation network. A reading of 0.031mg/L was recorded on the 26/02/2014. Additional tests at the bore and within the network revealed readings below the health limit.

Corrective and Preventative Actions: The lab informed Council that the sample was high in sediment and that it was highly possible that the exceedance may have resulted due to the high level of sediment. A flushing program was in place at the time however the frequency was increased. Additional samples from the same tap returned fluctuating results and after the tap, riser and elbow were replaced it was determined that the issue lay within the private reticulation. The tap is no longer used as a sample point and it is not used for drinking purposes (no drinking signs have been placed at the tap).

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	1	2	0	3
Prairie	0	0	0	0
Torrens Creek	0	0	0	0

Suspected Illness

Complaints are sometimes received from customers who suspect their water may be associated with an illness they are experiencing. Flinders Shire Council investigates each complaint relating to alleged illness from our water quality, typically by testing the customers tap and closest reticulation sampling point for the presence of *E. coli* or heavy metals.

During 2014/2015 there were no confirmed cases of illness arising from the water supply system.

Discoloured water

Two customer complaints were received from within Hughenden on the 9th & 10th of December 2014 related to dirty water. The dirty water complaints were a result of sediment entering the reticulation due to the reservoir running low. Staff rectified the issue while ensuring the water quality was protected at all times. The mains were flushed to remove the dirty water to achieve detectable chlorine residual results. The flushing targeted specific areas such as dead-end mains, where it was anticipated the dirty water would not be flushed through normal use. 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.

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 the following amendments to the DWQMP.

Table 2 – Amendments to the DWQMP

TABLE OF AMENDMENTS TO DWQMP.	
SECTION	DETAIL
Section 2.5.3	Updated to reflect Hughenden is sewered
Table 3.1	Updated number of connections and population served
Section 4.1	Updated Hughenden details to include Fluoride treatment process.
Figure 4.1	Updated Hughenden Reticulation map to include removal of STP sampling location and included Savage Ridge sampling location.
Figure 4.2	Added Fluoride Building to Hughenden Schematic.
Table 4.2	Added Fluoride treatment to Infrastructure details.
Section 4.2	Updated section to included addition of ORP and chlorine dosing in Prairie.
Figure 4.10	Updated Prairie Schematic to include ORP.
Table 4.4	Updated Prairie Infrastructure detail to include ORP.
Section 4.3	Updated Torrens Creek info to include 3rd storage tank.
Figure 4.11	Updated Torrens Creek Map to reflect removal of sample point at school and move of Pub sample point to van park.
Figure 4.12	Updated Torrens Schematic to include 3 rd storage tank.
Table 4.6	Updated Torrens Creek Infrastructure details to include 3 rd storage tank.
Section 5.0	Updated Key Stakeholders to included Prominent and Trility.
Table 7.7	Update to reflect Fluoridation in Hughenden and Chlorination with Sodium Hypo in Prairie.
Table 8.1	Updated Operation and Maintenance procedures so as to include: <ul style="list-style-type: none"> • new version of LDMP • Hughenden WTP SOPs • Hughenden WTP Emergency Response Plan • Environmental Incident Reports • CSS • Prairie WTP SOP.
Table 10.1	Updated in order to reflect current status of action items.
Table 12.1	Updated Operational monitoring to include daily Fluoride monitoring.
Table 12.2 & 12.4	Updated sample points in Hughenden and Torrens Creek.

The amended plan was sent to DEWS who in turn requested for the additional following amendments to be made:

Table 3 – Amendments to the DWQMP

ADDITIONAL AMENDMENTS TO THE DWQMP.	
SECTION	DETAIL
4.2	Clarify and update to accurately describe Prairie Scheme so that scheme description and schematics are the same.
Table 7.7	Amend Hazard identification and Risk assessment to separate chlorine under and over dosing. Also include a list of stakeholders who have been actively involved in the hazard identification and amendment of the risk assessment.
Table 8.1	Update Operation and Maintenance procedures.
RMIP	Update plan to reflect current status.
Table 11.1	Clarification on storage of operational and maintenance procedures.

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	15	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Barium	mg/L	Quarterly	15	15	0	0.0340	0.6400	0.0959	0.0001	FSS Health Support Qld
Beryllium	mg/L	Quarterly	15	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Boron	mg/L	Quarterly	15	15	0	0.0630	0.0850	0.0723	0.0001	FSS Health Support Qld
Cadmium	mg/L	Quarterly	15	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Chromium	mg/L	Quarterly	15	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Copper	mg/L	Quarterly	15	7	0	<0.0010	0.1000	0.0087	0.001	FSS Health Support Qld
Lead	mg/L	Quarterly	15	4	0	<0.0001	0.0005	0.0002	0.0001	FSS Health Support Qld
Mercury	mg/L	Quarterly	15	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Manganese	mg/L	Quarterly	15	15	0	0.0094	0.0420	0.0208	0.0001	FSS Health Support Qld
Molybdenum	mg/L	Quarterly	15	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Nickel	mg/L	Quarterly	15	3	0	<0.0001	0.0002	0.0001	0.0001	FSS Health Support Qld
Selenium	mg/L	Quarterly	15	0	0	<0.0010	<0.0010	<0.0010	0.0001	FSS Health Support Qld

Silver	mg/L	Quarterly	15	0	0	<0.0010	<0.0010	<0.0010	0.001	FSS Health Support Qld
Uranium	mg/L	Quarterly	15	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
pH		Quarterly	11	11	0	7.91	8.51	8.3464	-	FSS Health Support Qld
Fluoride (naturally occurring)	mg/L	Quarterly	11	11	0	0.0700	0.14	0.1082	-	FSS Health Support Qld & In-house
Nitrate	mg/L	Quarterly	11	11	0	<0.05	<5	<1.0545	-	FSS Health Support Qld
Gross Alpha Activity	Bq/L	Quarterly	7	5	0	<0.05	0.09	0.06	-	FSS Health Support Qld
K⁴⁰ Corrected Beta Activity	Bq/L	Quarterly	7	0	0	<0.1	<0.2	<0.13	-	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	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Dieldrin	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Total Aldrin & Dieldrin ²	µg/L	Quarterly	14	0	0	<0.4000	<0.4000	<0.4000	0.2	FSS Health Support Qld
Chlordane cis	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Chlordane trans	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Total Chlordane	µg/L	Quarterly	14	0	0	<0.4000	<0.4000	<0.4000	0.2	FSS Health Support Qld
DDD (pp)	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
DDE (pp)	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
DDT (pp)	µg/L	Quarterly	14	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 reproducibilities. 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 DDT	µg/L	Quarterly	14	0	0	<0.8000	<0.9000	<0.8071	0.4	FSS Health Support Qld
Dicofol	µg/L	Quarterly	14	0	0	<2.9000	<3.2000	<3.0357	1.5	FSS Health Support Qld
a-Endosulfan	µg/L	Quarterly	14	0	0	<0.4000	<0.4000	<0.4000	0.2	FSS Health Support Qld
b-Endosulfan	µg/L	Quarterly	14	0	0	<0.4000	<0.4000	<0.4000	0.2	FSS Health Support Qld
Endosulfan Sulfate	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Total Endosulfan	µg/L	Quarterly	14	0	0	<1.2000	<1.3000	<1.2286	0.6	FSS Health Support Qld
Heptachlor	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Heptachlor Epoxide	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Total Heptachlor³	µg/L	Quarterly	14	0	0	<0.4000	<0.4000	<0.4000	0.2	FSS Health Support Qld
Lindane (g-HCH)	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Methoxychlor	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Azinphos-methyl	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Bromophos-ethyl	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Carbophenothion	µg/L	Quarterly	14	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 reproducibilities. 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.

Chlorfenvinphos	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Chlorpyrifos	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Diazinon	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Dichlorvos	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Dimethoate	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Omethoate	µg/L	Quarterly	14	0	0	<0.4000	<0.4000	<0.4000	0.2	FSS Health Support Qld
Total Dimethoate	µg/L	Quarterly	14	0	0	<0.6000	<0.6000	<0.6000	0.3	FSS Health Support Qld
Disulfoton	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Ethion	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Ethoprophos	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Fenamiphos	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Fenchlorphos	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Fenitrothion	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Fenthion (methyl)	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Malathion (Maldison)	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Methidathion	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Mevinphos	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Monocrotophos	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Parathion (ethyl)	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Parathion-methyl	µg/L	Quarterly	14	0	0	<0.2000	<2.0000	<0.5857	0.1	FSS Health Support Qld
Pirimiphos-methyl	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld

Profenofos	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Pyrazophos	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Sulprofos	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Temephos	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Terbufos	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Tetrachlorvinphos	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Ametryn	µg/L	Quarterly	14	0	0	<0.0200	<0.0200	<0.0200	0.01	FSS Health Support Qld
Atrazine	µg/L	Quarterly	14	0	0	<0.0200	<0.0200	<0.0200	0.01	FSS Health Support Qld
Bromacil	µg/L	Quarterly	14	0	0	<0.0200	<0.0200	<0.0200	0.01	FSS Health Support Qld
Diuron	µg/L	Quarterly	14	0	0	<0.0200	<0.0200	<0.0200	0.01	FSS Health Support Qld
Fluometuron	µg/L	Quarterly	14	0	0	<0.0400	<0.0400	<0.0400	0.02	FSS Health Support Qld
Hexazinone	µg/L	Quarterly	14	0	0	<0.0200	<0.0200	<0.0200	0.01	FSS Health Support Qld
Metolachlor	µg/L	Quarterly	14	0	0	<0.0200	<0.0200	<0.0200	0.01	FSS Health Support Qld
Simazine	µg/L	Quarterly	14	0	0	<0.0200	<0.0200	<0.0200	0.01	FSS Health Support Qld
Terbutryn	µg/L	Quarterly	14	0	0	<0.0200	<0.0200	<0.0200	0.01	FSS Health Support Qld
Amitraz	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Diclofop-methyl	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Haloxypop-2-etotyl	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Haloxypop-methyl	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Metribuzin	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Molinate	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld

Pendimethalin	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Propanil	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Propazine	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Terbuthylazine	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Trifluralin	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Captan	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Carbaryl	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Fipronil	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Piperonyl Butoxide	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Pirimicarb	µg/L	Quarterly	14	0	0	<0.4000	<0.4000	<0.4000	0.2	FSS Health Support Qld
Propargite	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Propiconazole	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Triadimefon	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Total Triadimefon	µg/L	Quarterly	14	0	0	<0.6000	<0.6000	<0.6000	0.3	FSS Health Support Qld
Bioresmethrin	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Cyfluthrin	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Cypermethrin	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.5	FSS Health Support Qld
Deltamethrin	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Fenvalerate	µg/L	Quarterly	14	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Permethrin	µg/L	Quarterly	14	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	44	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Barium	mg/L	Quarterly	44	44	0	0.0480	0.5300	0.0679	0.0001	FSS Health Support Qld
Beryllium	mg/L	Quarterly	44	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Boron	mg/L	Quarterly	44	44	0	0.0630	0.0880	0.0707	0.0001	FSS Health Support Qld
Cadmium	mg/L	Quarterly	44	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Chromium	mg/L	Quarterly	44	1	0	<0.0001	0.0002	0.0001	0.0001	FSS Health Support Qld
Copper	mg/L	Quarterly	44	32	0	<0.0010	0.1100	0.0140	0.001	FSS Health Support Qld
Lead	mg/L	Quarterly	44	32	1	<0.0001	0.0120	0.0009	0.0001	FSS Health Support Qld
Mercury	mg/L	Quarterly	44	0	0	<0.0001	0.0001	0.0001	0.0001	FSS Health Support Qld
Manganese	mg/L	Quarterly	44	44	0	0.0005	0.2500	0.0346	0.0001	FSS Health Support Qld
Molybdenum	mg/L	Quarterly	44	4	0	<0.0001	0.0002	0.0001	0.0001	FSS Health Support Qld

Nickel	mg/L	Quarterly	44	6	0	<0.0001	0.0004	0.0003	0.0001	FSS Health Support Qld
Selenium	mg/L	Quarterly	44	0	0	<0.0010	<0.0010	<0.0010	0.0001	FSS Health Support Qld
Silver	mg/L	Quarterly	44	0	0	<0.0010	<0.0010	<0.0010	0.001	FSS Health Support Qld
Uranium	mg/L	Quarterly	44	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
pH		Quarterly	42	42	0	8.1100	8.5100	8.2761	-	FSS Health Support Qld
Fluoride	mg/L	Daily	621	621	0	0.3315	0.875	0.675	-	FSS Health Support Qld & In-house
Nitrate	mg/L	Quarterly	42	42	0	0.9366	0.0500	1.4000	-	FSS Health Support Qld
Chlorine (Operational)	mg/L	Weekly	174	174	0	0.000	0.7400	0.1201	-	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	7	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Barium	mg/L	Quarterly	7	7	0	0.0680	0.0800	0.0711	0.0001	FSS Health Support Qld
Beryllium	mg/L	Quarterly	7	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Boron	mg/L	Quarterly	7	7	0	0.1900	0.2500	0.2271	0.0001	FSS Health Support Qld
Cadmium	mg/L	Quarterly	7	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Chromium	mg/L	Quarterly	7	2	0	<0.0001	0.0002	0.0001	0.0001	FSS Health Support Qld
Copper	mg/L	Quarterly	7	3	0	<0.0010	0.0090	0.0023	0.001	FSS Health Support Qld
Lead	mg/L	Quarterly	7	3	0	<0.0001	0.0004	0.0002	0.0001	FSS Health Support Qld
Mercury	mg/L	Quarterly	6	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Manganese	mg/L	Quarterly	7	7	0	0.0250	0.1500	0.0500	0.0001	FSS Health Support Qld
Molybdenum	mg/L	Quarterly	7	7	0	0.0008	0.0014	0.0010	0.0001	FSS Health Support Qld
Nickel	mg/L	Quarterly	7	1	0	<0.0001	0.0002	0.0001	0.0001	FSS Health Support Qld
Selenium	mg/L	Quarterly	7	0	0	<0.0010	0.0010	0.0010	0.0001	FSS Health Support Qld
Silver	mg/L	Quarterly	7	0	0	<0.0010	<0.0010	<0.0010	0.001	FSS Health Support Qld
Uranium	mg/L	Quarterly	7	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
pH		Quarterly	8	8	-	8.0800	8.3600	8.1443	-	FSS Health Support Qld
Fluoride	mg/L	Quarterly	8	8	0	0.1000	0.1400	0.1171	-	FSS Health

										Support Qld & In-house
Nitrate	mg/L	Quarterly	8	0	0	<1.0000	<1.0000	<1.0000	-	FSS Health Support Qld
Gross Alpha Activity	Bq/L	Quarterly	4	1	0	<0.05	<0.06	<0.055	-	FSS Health Support Qld
K⁴⁰ Corrected Beta Activity	Bq/L	Quarterly		1	0	<0.1	0.3	0.15	-	FSS Health Support Qld

Table 8 - Verification monitoring results Pesticides – 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	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	<0.9000	<0.8250	0.4	FSS Health Support Qld
Dicofol	µg/L	Quarterly	8	0	0	<2.9000	<3.2000	<3.0375	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	<0.4000	<0.4000	<0.4000	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	<1.3000	<1.2500	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
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	<0.2000	<0.2000	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
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
Haloxypop-2-etotyl	µg/L	Quarterly	8	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Haloxypop-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
Terbuthylazine	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	13	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Barium	mg/L	Quarterly	13	13	0	0.0690	0.0880	0.0760	0.0001	FSS Health Support Qld
Beryllium	mg/L	Quarterly	13	0	0	<0.0001	<0.0010	<0.0002	0.0001	FSS Health Support Qld
Boron	mg/L	Quarterly	13	13	0	0.1900	0.2700	0.2269	0.0001	FSS Health Support Qld
Cadmium	mg/L	Quarterly	13	0	0	<0.0001	0.0010	0.0002	0.0001	FSS Health Support Qld
Chromium	mg/L	Quarterly	13	1	0	<0.0001	0.0004	0.0001	0.0001	FSS Health Support Qld
Copper	mg/L	Quarterly	13	13	0	0.0010	0.0180	0.0055	0.001	FSS Health Support Qld
Lead	mg/L	Quarterly	13	8	0	<0.0001	0.0014	0.0003	0.0001	FSS Health Support Qld
Mercury	mg/L	Quarterly	11	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Manganese	mg/L	Quarterly	13	13	0	0.0140	0.1500	0.0395	0.0001	FSS Health Support Qld
Molybdenum	mg/L	Quarterly	13	13	0	0.0008	0.0010	0.0009	0.0001	FSS Health Support Qld
Nickel	mg/L	Quarterly	13	3	0	<0.0001	0.0003	0.0001	0.0001	FSS Health Support Qld
Selenium	mg/L	Quarterly	13	0	0	<0.0010	<0.0010	<0.0010	0.0001	FSS Health Support Qld
Silver	mg/L	Quarterly	13	0	0	<0.0010	<0.0010	<0.0010	0.001	FSS Health Support Qld
Uranium	mg/L	Quarterly	13	1	0	<0.0001	0.0002	0.0001	0.0001	FSS Health Support Qld
pH		Quarterly	14	14	0	8.1700	8.3200	8.2493	-	FSS Health Support Qld
Fluoride	mg/L	Quarterly	14	14	0	0.1000	0.1800	0.1314	-	FSS Health

										Support Qld & In-house
Nitrate	mg/L	Quarterly	14	14	0	<1.0000	<1.0000	<1.0000	-	FSS Health Support Qld
Chlorine	mg/L	3 times a week	186	185	0	0	2.20	0.37	-	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	10	7	0	<0.0001	0.0003	0.0002	0.0001	FSS Health Support Qld
Barium	mg/L	Quarterly	10	10	0	0.2000	0.3100	0.2380	0.0001	FSS Health Support Qld
Beryllium	mg/L	Quarterly	10	10	0	0.0002	0.0006	0.0004	0.0001	FSS Health Support Qld
Boron	mg/L	Quarterly	10	10	0	0.0370	0.0460	0.0415	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	8	0	<0.0001	0.0009	0.0003	0.0001	FSS Health Support Qld
Copper	mg/L	Quarterly	10	9	0	<0.0010	0.0110	0.0046	0.001	FSS Health Support Qld
Lead	mg/L	Quarterly	10	6	0	<0.0001	0.0004	0.0002	0.0001	FSS Health Support Qld
Mercury	mg/L	Quarterly	9	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Manganese	mg/L	Quarterly	10	10	0	0.0400	0.0710	0.0510	0.0001	FSS Health Support Qld
Molybdenum	mg/L	Quarterly	10	1	0	<0.0001	0.0045	0.0005	0.0001	FSS Health Support Qld
Nickel	mg/L	Quarterly	10	10	0	0.0010	0.0100	0.0052	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	1	0	<0.0010	0.0270	0.0036	0.001	FSS Health Support Qld
Uranium	mg/L	Quarterly	10	8	0	<0.0001	0.0006	0.0004	0.0001	FSS Health Support Qld
pH		Quarterly	8	8	0	6.1000	6.9200	6.5350	-	FSS Health Support Qld
Fluoride	mg/L	Quarterly	8	8	0	0.0500	0.0600	0.0525	-	FSS Health Support Qld & In-house
Nitrate	mg/L	Quarterly	8	8	0	1.7000	5.1000	2.3625	-	FSS Health Support Qld
Gross Alpha Activity	Bq/L	Quarterly	2	2	0	0.24	0.3	0.27	-	FSS Health Support Qld
K⁴⁰ Corrected Beta Activity	Bq/L	Quarterly	2	2	0	0.1	0.3	0.2	-	FSS Health Support Qld

Table 11- Verification monitoring results for Pesticides– 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	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	<0.9000	<0.8333	0.4	FSS Health Support Qld
Dicofol	µg/L	Quarterly	4	0	0	<3.0000	<3.2000	<3.1000	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	<0.4000	<0.4000	<0.4000	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	<1.3000	<1.2667	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
Haloxypop-2-etotyl	µg/L	Quarterly	4	0	0	<0.2000	<0.2000	<0.2000	0.1	FSS Health Support Qld
Haloxypop-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
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	26	15	0	<0.0001	0.0023	0.0005	0.0001	FSS Health Support Qld
Barium	mg/L	Quarterly	26	26	0	0.1900	0.2400	0.2123	0.0001	FSS Health Support Qld
Beryllium	mg/L	Quarterly	26	25	0	<0.0001	0.0006	0.0003	0.0001	FSS Health Support Qld
Boron	mg/L	Quarterly	26	26	0	0.0370	0.0480	0.0414	0.0001	FSS Health Support Qld
Cadmium	mg/L	Quarterly	26	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Chromium	mg/L	Quarterly	26	18	0	<0.0001	0.0014	0.0003	0.0001	FSS Health Support Qld
Copper	mg/L	Quarterly	26	26	0	0.0060	0.3300	0.0474	0.001	FSS Health Support Qld
Lead	mg/L	Quarterly	26	26	3	0.0002	0.2400	0.0120	0.0001	FSS Health Support Qld
Mercury	mg/L	Quarterly	23	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld
Manganese	mg/L	Quarterly	26	26	0	0.0093	0.4200	0.0745	0.0001	FSS Health Support Qld
Molybdenum	mg/L	Quarterly	26	0	0	<0.0001	<0.0001	<0.0001	0.0001	FSS Health Support Qld

Nickel	mg/L	Quarterly	26	26	0	0.0029	0.0120	0.0049	0.0001	FSS Health Support Qld
Selenium	mg/L	Quarterly	26	0	0	<0.0010	<0.0010	<0.0010	0.0001	FSS Health Support Qld
Silver	mg/L	Quarterly	26	0	0	<0.0010	<0.0010	<0.0010	0.001	FSS Health Support Qld
Uranium	mg/L	Quarterly	26	21	0	<0.0001	0.0007	0.0003	0.0001	FSS Health Support Qld
pH		Quarterly	18	18	0	5.6000	7.2000	6.3167	-	FSS Health Support Qld
Fluoride	mg/L	Quarterly	18	18	0	0.0500	0.0700	0.0572	-	FSS Health Support Qld & In-house
Nitrate	mg/L	Quarterly	18	18	0	1.9000	2.3000	2.1000	-	FSS Health Support Qld
Chlorine	mg/L	3 times a week	140	139	0	0	2.02	0.55	-	In-house

Table 13 – Source & Reticulation *E. coli* verification monitoring

Drinking water scheme: Hughenden

Year	2014/2015											
Month	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	25	19	18	26	20	16	19	22	19	19	22	30
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	25	44	62	88	108	124	143	165	184	203	225	255
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 14 – Source & Reticulation *E. coli* verification monitoring

Drinking water scheme: Prairie

Year	2014/2015											
Month	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	9	1	2	6	6	4	6	6	4	2	4	5
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	9	10	12	18	24	28	34	40	44	46	50	55
No. of failures for previous 12 month period	0	0	1	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	91.7%	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	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 15 – Source & Reticulation *E. coli* verification monitoring

Drinking water scheme: Torrens Creek

Year	2014/2015											
Month	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	7	4	4	7	6	4	6	6	4	2	3	3
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	7	11	15	22	28	32	38	44	48	50	53	56
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Appendix B – Implementation of the DWQMP Risk Management Improvement Program

Table 16 - RMIP

IP item	Action	Description	Target date/s	Status as of December 2015	Details and update
IP-1	<i>Bore Head improvement program</i>	<p><i>Mounding of concrete around bore heads, replacement/Maintenance of slabs. Sealing of possible ingress sites.</i></p> <p><i>Short-term: Investigation of works required and cost estimates.</i></p> <p><i>Long-term: upgrade</i></p>	<p><i>Interim: Ongoing inspection and maintenance.</i></p> <p><i>Short-term: 30th April 2014</i></p> <p><i>Long-term: Commencing July 2014 – finish 2016.</i></p>	<i>In Progress</i>	<i>Inspection of the bores occurs on a weekly basis. Any ingress sites are sealed when discovered.</i>
IP-2	<i>Bunding for Fuel & Chlorine storage</i>	<i>Installation of Bunding for Chlorine storage in Torrens Creek. This will occur during the upgrades.</i>	<i>Completed</i>	<i>Completed</i>	
IP-3	<i>Investigation of options for improving the integrity of bore casings</i>	<i>Inspection of selected bores with cameras in order to establish what work is required. Options can be explored once Council has up-to-date data.</i>	<i>Completed</i>	<i>Completed</i>	

IP item	Action	Description	Target date/s	Status as of December 2015	Details and update
IP-4	<i>Long-term replacement program for bore casements</i>	<i>Dependent on outcome from IP-3. Once options have been explored Council can develop a long-term replacement program.</i>	<i>Dependent on IP-3</i>	<i>In Progress</i>	
IP-5	<i>Bore Replacement Program</i>	<i>Money is currently put aside each year in order to fund new bores. The need for a new bore/ conditioning of old bores is highly dependent upon the outcome of IP-3.</i>	<i>Ongoing</i>	<i>In Progress</i>	<i>Engineering Department are developing program.</i>
IP-6	<i>Chlorination at Hughenden</i>	<p><i>Installation of Chlorination equipment. Equipment is able to be housed in same facility as Fluoridation equipment.</i></p> <p><i>Short-term: Design Criteria and costing</i></p> <p><i>Long-term: Installation</i></p>	<p><i>Short-term: 30th June 2014</i></p> <p><i>Long-term: 30th June 2016 (fast-tracked if there are ongoing issues).</i></p>	<i>In Progress</i>	<i>A concept design report has been prepared. Council to go to tender for provision and installation of equipment.</i>

IP item	Action	Description	Target date/s	Status as of December 2015	Details and update
IP-7	<i>Chlorination at Torrens Creek</i>	<p><i>Installation of ORP system at Torrens Creek.</i></p> <p><i>Interim: Currently upgrading water storage and installing Infinity filter for Iron & Manganese.</i></p> <p><i>Short-term: Establish tank turn-over (will hand dose with chlorine during this time).</i></p> <p><i>Long-term: Chlorination system installed</i></p>	<p><i>Interim: 30th Sept 2013</i></p> <p><i>Short-term: 30th Feb 2014</i></p> <p><i>Long-term: 30th August 2015</i></p>	<i>In Progress</i>	<i>System is currently being set up.</i>
IP-8	<i>Installation of Chlorine dosing pumps in Prairie</i>	<i>Equipment has been purchased for installation of two dosing pumps and one analyser.</i>	<i>Completed</i>	<i>Completed</i>	

IP item	Action	Description	Target date/s	Status as of December 2015	Details and update
IP-9	Investigation of Reticulation Network	<p><i>Investigation into condition of reticulation network and detailed assessment of water demands - Require reliable records for Mains Breaks.</i></p> <p><i>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.</i></p> <p><i>Interim: Ongoing data collection.</i></p> <p><i>Short-term: Record collection and set-up of GIS system</i></p> <p><i>Long-term: Ongoing data collection and updates of system</i></p> <p><i>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).</i></p>	<p><i>Interim: Ongoing</i></p> <p><i>Short-term: 30th June 2014</i></p> <p><i>Long-term: Ongoing from 30th June 2014</i></p>	In Progress	

IP item	Action	Description	Target date/s	Status as of December 2015	Details and update
IP-10	<i>Air Scouring Program For Flinders.</i>	<p><i>Investigation into the cost of hiring contractors to undertake work. A program will be developed once costs are established.</i></p> <p><i>Interim: Ongoing flushing of Mains.</i></p> <p><i>Short-term: Investigation and cost analysis</i></p> <p><i>Long-term: Development of program.</i></p>	<p><i>Interim: Ongoing</i></p> <p><i>Short-term: 30th June 2014</i></p> <p><i>Long-term:30th June 2016 (Program implemented after this date).</i></p>	<i>In Progress</i>	<i>Engineering department has recently completed analysis of water and sewerage assets. This data will be utilised or the program.</i>

IP item	Action	Description	Target date/s	Status as of December 2015	Details and update
IP-11	<i>Long-term plan for the looping of Mains in Hughenden</i>	<p><i>Looping of mains in order to avoid dead-ends.</i></p> <p><i>Will utilise information gathered during investigation of the reticulation network.</i></p> <p><i>Interim: Ongoing flushing of mains.</i></p> <p><i>Short-term: Design and Cost analysis.</i></p> <p><i>Long-term: Implementation of program (starting from 15/16 financial year).</i></p>	<p><i>Interim: Ongoing.</i></p> <p><i>Short-term: 30th December 2014</i></p> <p><i>Long-term: 15/16 financial year (start date).</i></p>	<i>In Progress</i>	
IP-12	<i>Register of Chemical Validation</i>	<i>Develop chemical validation process.</i>	<i>Completed</i>	<i>Completed</i>	

IP item	Action	Description	Target date/s	Status as of December 2015	Details and update
IP-13	<i>Investigation of security at Prairie Stock Bore & investigate possibility of increasing volume of water from town bore.</i>	<p><i>Consult with Rural Lands Officer regarding ability of Council to fence the Stock Bore (currently on a stock route – non Council land).</i></p> <p><i>Interim: Investigate</i></p> <p><i>Short-term: Obtain approvals and develop cost estimates.</i></p> <p><i>Long-term: Installation.</i></p>	<p><i>Interim:30th December 2013</i></p> <p><i>Short-term:30th June 2014</i></p> <p><i>Long-term:30th June 2017</i></p>	<i>In Progress</i>	<i>Council's Rural lands Officer is investigating different fencing options. Project may be pushed back to future budget.</i>
IP-14	<i>Upgrade of Fencing at Torrens Creek Bore and Reservoir compound</i>	<i>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.</i>	<p><i>Reservoir fence completed.</i></p> <p><i>Bore fence added to 2016/2017 budget with the aim to complete June 2017.</i></p>	<i>In Progress</i>	

IP item	Action	Description	Target date/s	Status as of December 2015	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 • 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 2015	Details and update
		<p><i>Develop, obtain approval and implement the following procedures:</i></p> <ul style="list-style-type: none"> • <i>Hydrant Maintenance</i> • <i>Valve Maintenance</i> • <i>Valve repairs</i> • <i>Maintenance of switchboards</i> • <i>Locating water services</i> 	<p><i>Developed by 30th November 2014</i></p> <p><i>Approved by 31st December 2014</i></p> <p><i>Completed</i></p>		

IP item	Action	Description	Target date/s	Status as of December 2015	Details and update
IP-16	<i>Development of training program for Water officers</i>	<p><i>Investigation of training requirements for water officers.</i></p> <p><i>Develop program and implement program. Fluoridation training provided by supplier of Fluoridation equipment.</i></p> <p><i>Interim: Investigation into training required, courses offered and cost.</i></p> <p><i>Short-term: Provision of Fluoridation training.</i></p> <p><i>Long-term: Cert training for Water Officers.</i></p>	<p><i>Interim: Ongoing</i></p> <p><i>Short-term: 30th June 2014</i></p> <p><i>Fluoride training: Completed</i></p> <p><i>Cert training: Long-term: 30th June 2017</i></p>	<i>In Progress</i>	<i>Plumbers have recently finished Fluoride course.</i>
IP-17	<i>Induction program for new water staff</i>	<i>Development of water specific induction training for water officers & 'Take 5's'.</i>	<i>30th June 2016 – needs to be updated to include new STP.</i>	<i>In Progress</i>	

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