QUILPIE SHIRE COUNCIL
DRINKING WATER QUALITY MANAGEMENT PLAN

Service Provider ID 108

GBA CONSULTING ENGINEERS

Document Control

Date	Description	Author
19/11/2012	for Council Approval	Alvin Feeney
22/08/2013	Approved	Alvin Feeney
5/12/2016	Issue	William Green
23/12/2016	Approved	William Green
20/10/2017	Issue	William Green
23/02/2018	Approved	William Green
17/04/2020	Amend and Release to Client	William Green
23/04/2020	Updated with client comments and Released	William Green
21/08/2020	Updated with Regulator's comments for review	William Green
10/11/2021	Amended and Released to Client	William Green
04/10/2022	Amended and Released to Client	Isabeau Gavel
6/01/2026	Amended in Response to DWQMP Review	Isabeau Gavel
14/01/2026	Reviewed	Eng Lim
23/09/2026	Amended in Response to Regulator IRN	Isabeau Gavel & Eng Lim

GBA Project/Doc ID no. **200004 / 527576**

Contact for enquiries and proposed changes.

If you have any questions regarding this document or if you have a suggestion for improvements, please contact GBA Consulting Engineers.

Phone 07 4651 5177
Email admin@gbaengineers.com.au

WWW.JAS-ANZ.ORG/REGISTER

TABLE OF CONTENTS

GLOSSARY ..... **iv**

1.0 INTRODUCTION **1**

1.1 Drinking Water Quality Management Plan Overview 1

1.2 Registered Service Details 1

1.3 Chief Executive Officer Endorsement 2

1.4 Quilpie Shire Council 2

1.5 Quilpie Shire Council Stakeholders and Sensitive Users 4

2.0 CATCHMENT CHARACTERISTICS **6**

2.1 The Great Artesian Basin 6

2.2 Eromanga Sub-Artesian Supply 7

3.0 QUILPIE DRINKING WATER SCHEME **8**

3.1 Infrastructure 8

3.2 Quilpie Drinking Water Treatment 12

3.3 Quilpie Sudden Population Increases 12

4.0 EROMANGA DRINKING WATER SCHEME **13**

4.1 Infrastructure 14

4.2 Eromanga Sudden Population Increases 20

4.3 Eromanga Artesian Water Supply 20

5.0 QUILPIE AND EROMANGA DRINKING WATER QUALITY **21**

5.1 Quilpie Drinking Water Quality Summary 2021- 2025 22

5.1.1 Quilpie Water Quality ADWG Exceedances 26

5.1.2 Quilpie Elevated Fluoride 26

5.2 Eromanga Drinking Water Quality Summary 2020-2025 27

5.2.1 Eromanga Water Quality ADWG Value Exceedances 32

5.3 Drinking Water Complaints 32

6.0 HAZARD IDENTIFICATION AND RISK ASSESSMENT **33**

6.1 Risk Assessment Methodology 33

6.2 Quilpie Risk Assessment 36

6.3 Eromanga Risk Assessment 43

7.0 RISK MANAGEMENT IMPROVEMENT PROGRAMME **52**

8.0 OPERATION AND MAINTENANCE PROCEDURES **55**

9.0 OPERATIONAL AND VERIFICATION MONITORING **56**

9.1 Quilpie and Eromanga Operational Monitoring 56

9.2 Quilpie and Eromanga Verification Monitoring 59

10.0 INCIDENTS AND EMERGENCIES **64**

10.1 QSC Incident and Emergency Action Plan 66
11.0 INFORMATION MANAGEMENT 71
11.1 Document Control Procedures 72

TABLES

Table 1: QSC drinking water services. 3
Table 2: Quilpie Shire Council stakeholders and sensitive users. 4
Table 3: Quilpie Drinking Water Scheme infrastructure details. 8
Table 4: Eromanga drinking water scheme infrastructure details. 14
Table 5: Quilpie drinking water verification monitoring – source water. 22
Table 6: Quilpie drinking water verification monitoring – distribution system. 24
Table 7: Eromanga drinking water verification monitoring – source water. 27
Table 8: Eromanga drinking water verification monitoring – distribution system. 29
Table 9: 2025 risk assessment workshop participants. 33
Table 10: Consequence descriptors. 33
Table 11: Likelihood Descriptors. 34
Table 12: Risk Matrix used for the risk assessments. 34
Table 13: Uncertainty definitions. 34
Table 14: Quilpie and Eromanga Risk Management Improvement Programme. 53
Table 15: Quilpie and Eromanga Operation and Maintenance Procedures. 55
Table 16: Quilpie operational monitoring programme. 57
Table 17: Eromanga operational monitoring programme. 58
Table 18: Quilpie verification monitoring programme. 60
Table 19: Eromanga verification monitoring programme. 62
Table 20: QSC incident and emergency framework. 64
Table 21: QSC drinking water Incident and emergency action plan. 66
Table 22: QSC information management staff responsibilities. 71

APPENDICES

APPENDIX A BORE REPORT CARDS

APPENDIX B QUILPIE DRINKING WATER QUALITY TRENDED DATA

APPENDIX C EROMANGA DRINKING WATER QUALITY TRENDED DATA

APPENDIX D QUILPIE FLUORIDE FACT SHEET

APPENDIX E QUILPIE TEMPERATURE STUDY & FACT SHEET

APPENDIX F EROMANGA OCPS & CCPS

GLOSSARY

ADWG	Australian Drinking Water Guidelines
CCP	Critical Control Point
QSC	Quilpie Shire Council
DWQMP	Drinking Water Quality Management Plan
E. coli	*Escherichia coli*
GAB	Great Artesian Basin
mg/L	Milligrams per Litre
NTU	Nephelometric Turbidity Unit
OCP	Operational Control Point
O & M	Operation and Maintenance
PFAS	Per- and Polyfluoroalkyl Substances
QWSR	Queensland Water Supply Regulator
RA	Risk Assessment
Regulator, DLGWV	Department of Local Government, Water and Volunteers
RMIP	Risk Management Improvement Programme
RO	Reverse Osmosis
SCADA	Supervisory Control and Data Acquisition
SPID	Service Provide Identification Number
WSP	Water Service Provider

1.0 INTRODUCTION

1.1 Drinking Water Quality Management Plan Overview

This document describes how Quilpie Shire Council provides safe and reliable drinking water services to the communities of Quilpie and Eromanga, in conjunction with the *Water Supply (Safety and Reliability) Act 2008* (the Act) which commenced on the 1st of July 2008.

The purpose of the Act is to provide for the safety and reliability of water supply throughout Queensland and it includes provisions relating to the management of drinking water quality, aimed at protecting public health. This outcome is achieved primarily through a regulatory framework for drinking water quality which requires Drinking Water Service Providers (DWSP) to:

- Undertake drinking water monitoring and reporting on water quality;
- Have an approved Drinking Water Quality Management Plan (DWQMP).

This plan has been developed and updated in accordance with the DWQMP Guideline issued by the Department of Local Government, Water and Volunteers (DLGWV).

The operation of a drinking water service is also covered under other State and Federal Legislation. The requirements of the *Water Supply (Safety and Reliability) Act 2008* do not negate the requirements of other Legislation unless expressly stated. The DWSP is responsible for obtaining any necessary approvals under other Acts to ensure the compliant operation of their services. Other State and Commonwealth Legislation relating to the operation of water services may include any of the following:

- *Public Health Act 2005*
- *Public Health Regulation 2018*
- *Plumbing and Drainage Act 2018*
- *Planning Act 2016*
- *Environmental Protection Act 1994*
- *Water Act 2000*
- *Trade Practices Act 1974*
- *Work Health and Safety Act 2011*
- *Food Act 2006*

1.2 Registered Service Details

This Drinking Water Quality Management Plan relates to the water supply services owned and operated by:

Quilpie Shire Council, Service Provider ID 108
50 Brolga Street
QUILPIE 4480
P: (07) 4656 0500
E: admin@quilpie.qld.gov.au

The first point of contact in relation to this plan is:

Eng Lim, Director of Infrastructure Services
P: (07) 4656 0568
M: 0427 486 817
E: engl@quilpie.qld.gov.au

The declared service area mapping for QSC's drinking water schemes can be located here: https://quilpie.qld.gov.au/quilpie-services/water-supply/

The Administration Centre and Main Works Depot for the Shire are located in the town of Quilpie.

1.3 Chief Executive Officer Endorsement

Quilpie Shire Council recognises the importance of this DWQMP in the management and provision of safe and reliable drinking water services to the reticulated parts of the Shire. QSC aims to maintain an integrated approach to their drinking water management, ensuring that the requirements of this DWQMP are adhered to by all QSC staff and any contractors operating on behalf of QSC. In particular, QSC endorses all outcomes from the current Risk Assessment and all items outlined in the Risk Management Improvement Programme.



..... Date..23 September 2026

Eng Lim

Acting Chief Executive Officer

1.4 Quilpie Shire Council

Quilpie Shire is located in Queensland's south-west, covering an area of 67,482km^2 with a population of approximately 698 people (as per the 2021 census from the Australian Bureau of Statistics; Figure 1). The Shire consists of five towns: Quilpie, Eromanga, Adavale, Cheepie and Toompine. The administrative centre of the Shire is located in Quilpie, approximately 1,000km west of Brisbane.

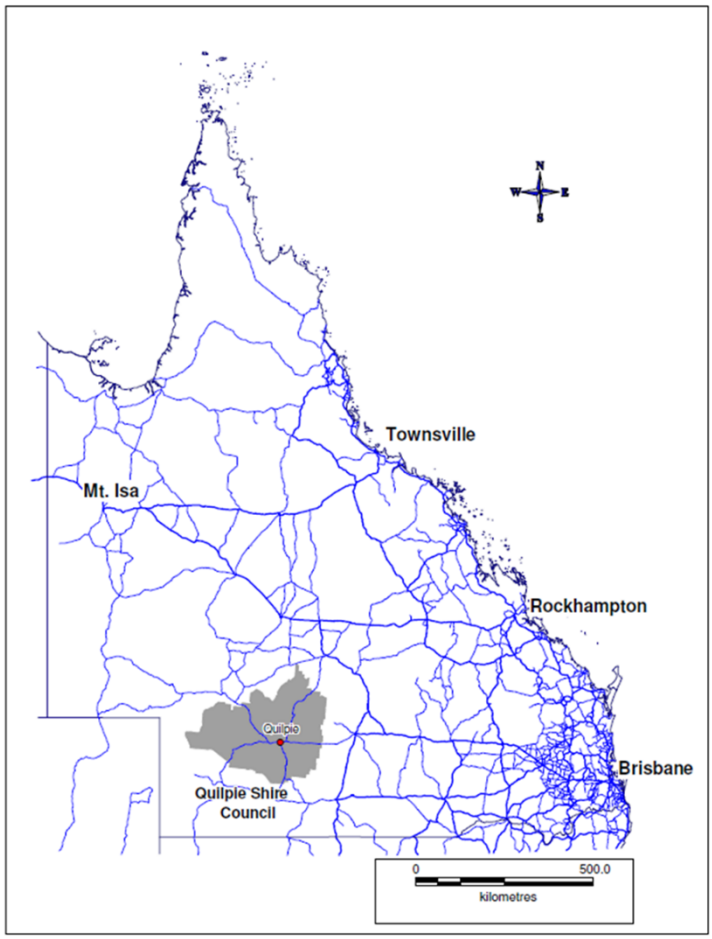


Figure 1: Quilpie Shire Council location relative to Queensland.

Council provides potable water to the towns of Quilpie and Eromanga, sourcing their water from artesian bores. The Adavale Cheepie and Toompine schemes are all non-potable, Council also does not provide any sewerage services to these towns. Table 1 below outlines the current population and connections for the towns of Qulipie and Eromanga.

Table 1: QSC drinking water services.

Scheme Name	Communities Serviced	Population*	Connections	Demand
Quilpie	Quilpie	563	388 (as of 2026 records)	1,600 kL/day
Eromanga	Eromanga	98	31 (as of 2026 records)	104 kL/day
Adavale	Adavale	15	20	Not applicable – non-potable schemes.
Cheepie	Cheepie	2	3	
Toompine	Toompine	2	2	

*Source 2021 ABS census.

1.5 Quilpie Shire Council Stakeholders and Sensitive Users

Key stakeholders and sensitive users relevant to the operation of the Quilpie and Eromanga schemes are provided in Table 2 below.

Table 2: Quilpie Shire Council stakeholders and sensitive users.

Organisation	Contact Name and Details	DWQMP Relevance	How the stakeholder is engaged in the DWQMP
Quilpie Shire Council	Justin Hancock Chief Executive Officer P: (07) 4656 0500 E: ceo@quilpie.qld.gov.au	Council CEO	DWQMP oversight
	Eng Lim Director of Infrastructure Services P: (07) 4656 0568 M: 0427 486 817 E: engl@quilpie.qld.gov.au	Overall Supervisor	Risk management participant and DWQMP implementation
	Brian Weeks Deputy Director, Infrastructure Service P: (07) 4656 0574 M: 0491 718 957 E: brianw@quilpie.qld.gov.au	Operations	Managing and coordinating maintenance and renewals of water related assets
	James Kingston Water and Sewerage Supervisor P: (07) 4656 0572 M: 0427 561 198 E: brianw@quilpie.qld.gov.au	Operations	Water operator responsible for reporting incidents and KPI reporting (SWIM) Secondary contact for routine communication with the WSR staff
GBA Engineers	Isabeau Gavel Senior Environmental Officer P: (07) 4651 5177 M: 0418 411 920 E: igavel@gbaengineers.com.au	Consultancy services	Risk management participant and preparation of DWQMP
Hub 4 Water	M: 0400 465 864 E: accounts@hub4water.com.au E: dave@hub4water.com.au	Water Filtration Solutions	Anti-scalent Supplier
Simmonds and Bristow	2/40 Reginald Street, Brisbane, QLD, 4140 P: (07) 3434 3800	Chemical Supplier	Chlorine Analysers Supplier

Organisation	Contact Name and Details	DWQMP Relevance	How the stakeholder is engaged in the DWQMP
Quilpie Hardware	80 Winchu Street Quilpie, QLD, 4480 P: (07) 4656 2050	Chemical Supplier	Chlorine Supplier
Water Supply Regulator	P: 1300 596 709 (24-hour hotline) E:DrinkingWater.Reporting@dlgwv.qld.gov.au	Water Supply Regulator	Approval of DWQMP documentation
Queensland Public Health Unit	Darling Downs Public Health Unit Queensland Health Building Cnr Tor and Hogg Streets Toowoomba QLD 4350 P: (07) 4699 8240	Public Health Unit	Public Health
Toowoomba Region Laboratory Services	Shuttlewood Court, Mt Kynoch P.O Box 3021 Toowoomba QLD 4350 P: (07) 4688 6270 E: labservices@tr.qld.gov.au	Water Analysis Authority	Chemical Analysis/ Reporting Water Quality
QLD Government Chief Information Office	P: (07) 3215 3951 E: qgisvrt@qld.gov.au	Cyber Security Hotline	Cyber Security Assistance
Quilpie Town Sensitive Users			
Quilpie Hospital	30 Gyrica St, Quilpie QLD 4480 P: (07) 4656 0100	Local health Service	Sensitive User
Quilpie State College	Chulungra St, Quilpie QLD 4480 P: (07) 4656 0333 E: principal@quilpiesc.eq.edu.au	State School	Sensitive User
St Finbarr's School	Jabiru St, Quilpie QLD 4480 P: (07) 4621 5200	Catholic School	Sensitive User
Gyrica Gardens	Units 9-21 Gyrica St, Quilpie, QLD 4480 P: (07) 4656 0500	Aged Care Facility	Sensitive User
Eromanga Town Sensitive Users			
Eromanga State School	13 Donald St, Eromanga, QLD 4480 P: (07) 4656 4892 E: principal@eromangass.eq.edu.au	State School	Sensitive User

2.0 CATCHMENT CHARACTERISTICS

Quilpie Shire is located within the Channel Country in south-western QLD. The main ranges within the Shire include the Grey, McGregor and Willies Ranges. The Willies Range forms the catchment boundary of the Quilpie and Bulloo Shires. The Grey Range separates the Cooper Creek catchment from the Bulloo River. The Bulloo River is the major drainage system in the Shire, with headwaters forming in the Gowan Ranges north of Adavale.

Average annual rainfall for Quilpie is 350.7mm with the majority of rain falling between late November and late March. The mean maximum temperature is 29.2°C although temperatures have exceeded the 45°C mark during the summer months.

Quilpie Shire's economy is based on the grazing and mining industries. The region consists of one of the largest opal boulder deposits in the world along with extensive gas and oil deposits. Road infrastructure construction and maintenance also contribute significantly to provide a stable employment base for the area.

2.1 The Great Artesian Basin

The potable water supplies for both towns are sourced from the Great Artesian Basin (GAB), which extends over the blue shaded area on Figure 2 below.



Figure 2: Great Artesian Basin area and location relative to Australia.

The GAB covers approximately one-fifth of the Australian continent and contains 8.7 x 106 GL of groundwater within Jurassic sandstone aquifers. The GAB is the largest groundwater and artesian basin

in the world, located under mostly arid and semi-arid landscapes to the west of the Great Dividing Range. The GAB supports a wide array of activities such as pastoral, agriculture and mining as well as the rural communities, cultural and tourism activities.

Water in the GAB is held in sandstone layers laid down by the continental erosion of higher ground during the Triassic, Jurassic, and early Cretaceous periods, during a time when much of what is now inland Australia was below sea level. The sandstone was then covered by a layer of marine sedimentary rock shortly afterwards, which formed a confining layer - trapping water in the sandstone aquifer. The eastern edge of the basin was uplifted when the Great Dividing Range formed. The other side was created from the landforms of the Central Eastern Lowlands and the Great Western Plateau to the west.

Most recharge water enters the rock formations from relatively high ground near the eastern edge of the basin (in Queensland and New South Wales) and very gradually flows towards the south and west. A much smaller amount of water enters along the western margin in arid central Australia, flowing to the south and east. As the sandstones are permeable, water gradually makes its way through the pores between the sand grains, flowing at a rate of one to five metres per year.

The age of the groundwater within the GAB has been determined by carbon-14 and chlorine-36 dating which suggests an excess of 1 million years in some areas. Hydraulic modelling for the recharge areas indicates that water would be expected to display a consistent quality.

2.2 Eromanga Sub-Artesian Supply

Eromanga's source water supply comes from four shallow sub-artesian bores, ~40m deep with a positive pressure of ~10m. The source water bores in Eromanga target the Winton formation which forms the uppermost sequence in the Great Artesian Basin, dating back to the Cretaceous period between 98-95 million years old. According to bore logs in the vicinity, the Winton formation can be accessed at relatively shallow depths of approximately 20m, this aquifer is overlayed with quaternary sediments and as such is described as an unconfined aquifer.

3.0 QUILPIE DRINKING WATER SCHEME

The Quilpie drinking water scheme consists of two deep Artesian bores; Town Bore 2 (RN 116266) and New Depot Bore (RN 116564). Town Bore 2 is the main bore. The New Depot Bore acts primarily as a back-up supply, although it does continually supply water to Quilpie's north-west (Airport and new Council Depot), a sluice valve downstream of the New Depot Bore directs water to these facilities. Town Bore 2 is located on Gyrica Street and the New Depot Bore is located in the north-west corner of the Council Depot, 1.5km from the town's centre along the Diamantina Development Road.

Water is pumped under artesian pressure from the two bores directly into the Quilpie distribution system. Water from Town Bore 2 flows at ~ 78°C and through the distribution system at ~60°C. Clay pressure valves have been installed at each bore to reduce pressure before water is supplied to the distribution. Neither bore is at significant risk from bushfires, flooding or damage by vehicles or machinery.

3.1 Infrastructure

Table 3: Quilpie Drinking Water Scheme infrastructure details.

Component		Details	
Source	Name	Town Bore 2	New Depot Bore
	Details	**Artesian RN:** 116266 **Depth:** 960m **Drill Date:** 7/03/2009 **Aquifer:** Hooray Sandstone **Yield:** 19 L/s **Details:** Sealed	**Artesian RN:** 116564 **Depth:** 965m **Drill Date:** 12/06/2020 **Aquifer:** Hooray Sandstone **Yield:** 50 L/s **Details:** Sealed
		See Appendix A for Bore Report Cards.	
	% of Supply	~90%	~10% (Back-up Supply)
	Reliability	100%	100%
	Catchment Categorisation	Class I vulnerability - fully protected groundwater.	
	Contamination Sources	None, boreheads are sealed and water flows under positive pressure at ~78°C from the borehead and ~60°C within the distribution, reducing the potential for pathogenic ingress.	
	Water Quality Issues	High Temperature and elevated Fluoride above the ADWG health value.	
Treatment		None.	
Disinfection		None.	
Distribution System	**Pipe Material**	**Asbestos Cement**	
	Age range	30-60 years @ 2026	
	Approx. % of total length	60% (8.3km)	

Component		Details
	Pipe Material	**DICL**
	Age range	30-60 years @ 2026
	Approx. % of total length	24% (3.7km)
	Pipe Material	**HDPE**
	Age range	4-38 years @ 2026
	Approx. % of total length	13.2% (1.83km)
	Areas where potential long detention periods could be expected?	None.
	Areas where low water pressure (e.g. < 12 m) could be expected during peak or other demand periods?	None.

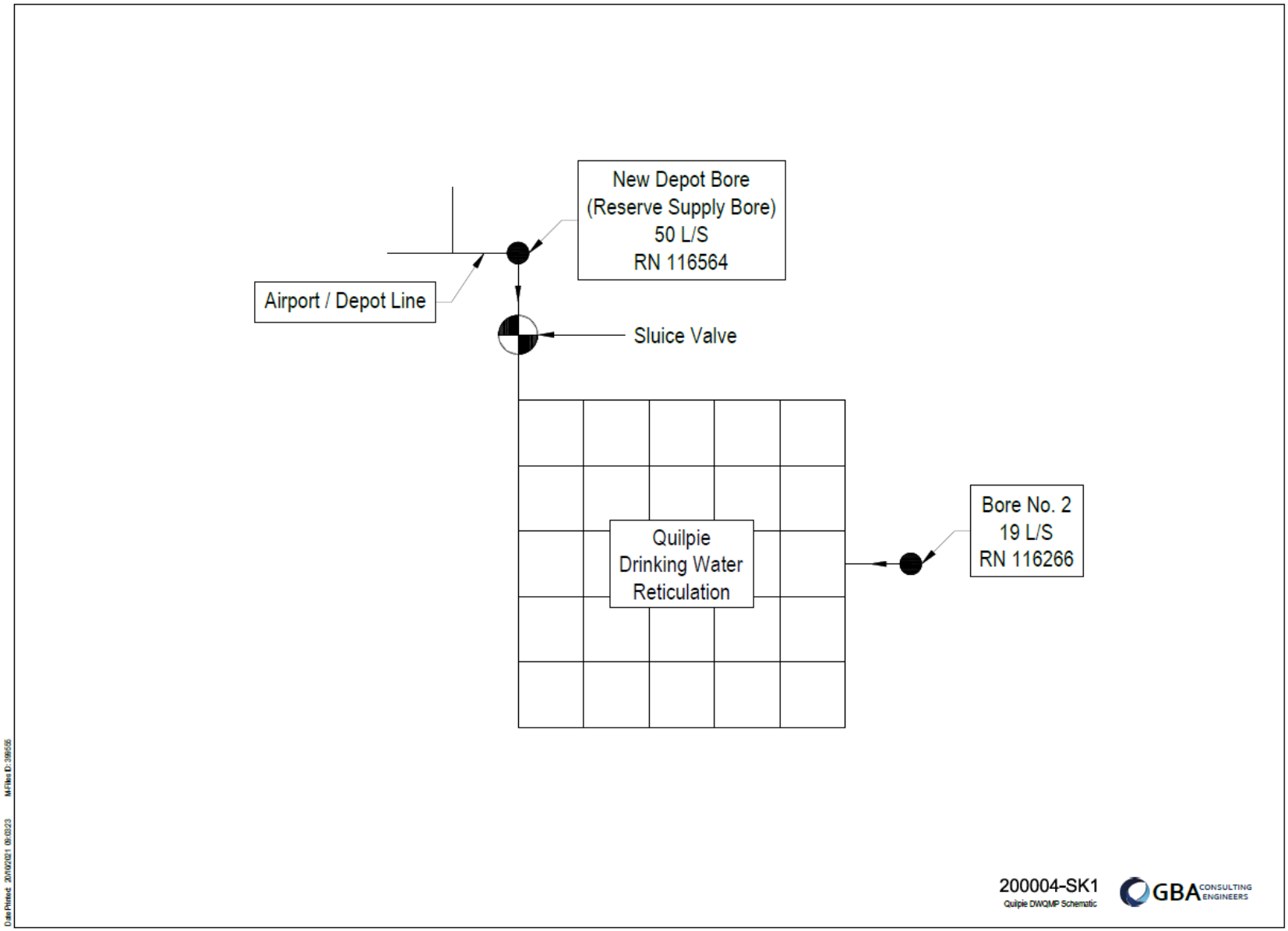


Figure 3: Quilpie drinking water scheme schematic.

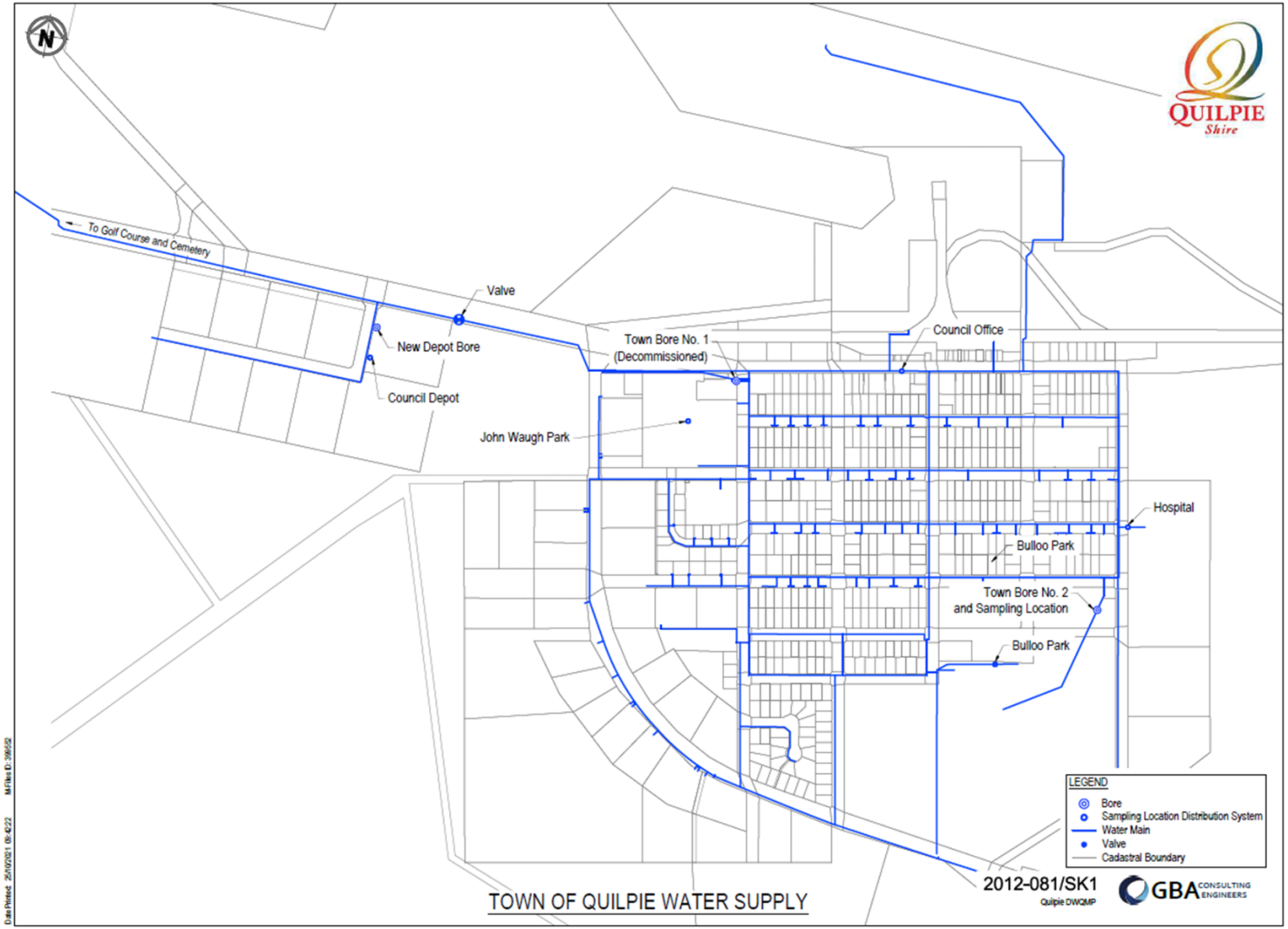


Figure 4: Quilpie drinking water scheme schematic.

3.2 Quilpie Drinking Water Treatment

Quilpie's source water is of a quality that does not require chemical treatment as it generally complies with the Australian Drinking Water Guideline (ADWG) health and aesthetic values. Water is pumped under pressure from a deep artesian aquifer directly into the distribution system. Being deep Artesian ground water, the water is sterile at its source and due to the positive pressure throughout the distribution system, there is no opportunity for contamination to occur under normal operating conditions.

Council's decision to not chlorinate the water also reduces the complexity of the scheme so that it is more manageable for the water operators. Chlorination is also not a viable option for Council to pursue due to the cost required to install a disinfection system and the ongoing maintenance that would be required. If a section of the reticulation is depressurised for repairs, then flushing of the affected section with a chlorine solution is undertaken to disinfect the system.

Council also implements the following management measures to ensure public safety regarding pathogenic ingress, while providing a water service with no disinfection:

- Air Scouring – occurs every 3- 4 years, organised through the SWQWSA group.
- Working day visual inspections of all source water bores.
- Weekly visual inspections – all other drinking water infrastructure.

3.3 Quilpie Sudden Population Increases

Where events result in sudden and short-term population increases, the primary risk to the drinking water supply is ensuring there is sufficient water supply to handle the expected increase in water usage. Quilpie hosts annual races, rodeos and camp drafts, all of which can result in a sudden surge in population for the town over a short period. Additionally, Quilpie Shire receives many visitors during the tourist season from April to September each year. To date, the sudden population increases caused by these events has not been an issue for Council or the management of the Quilpie drinking water scheme.

4.0 EROMANGA DRINKING WATER SCHEME

The Eromanga drinking water scheme consists of four sub-Artesian bores; Bore 1 (Town Hall Rear), Bore 2 (Town Hall Front), Bore 3 (School Oval) and Bore 4 (House opposite Council Depot). Each bore has an electric submersible pump which supplies water on demand as determined by an automated level control system. Level switches on the bores determine the availability of water. Water is pumped from the bores into a raw water tank located at the RO Plant where it undergoes filtration, UV light disinfection, reverse osmosis and chlorine disinfection before being transferred to a clean water tank. From the clean water tank, water is distributed to the town on demand. There are no bypass options available for the RO plant.

Pressure to the town is maintained by two clean water pumps. The RO Plant has a capacity of 100kLday. While Council cannot control how residents use treated RO water on private properties, outdoor watering of treated water in Eromanga is actively discouraged to ensure the capacity of the RO plant is not exceeded. Council officers have held meetings with residents to discourage this practice, particularly during the summer months when water demand and usage are typically higher.

The system is controlled and monitored by a PLC (Programmable Logic Controller) with an HMI (Human Machine Interface) panel located in the main control building. Radio links between each of the four bores and the main control provide run signals to pumps and fault indications back to the PLC and HMI touchscreens. The raw water tank is fitted with a pressure sensor to determine the water level; this is fed back to the PLC which communicates with the bore systems via. a radio network. The four bore pumps operate simultaneously and the flow rates are monitored and recorded on the HMI. The raw water tank low-level set point starts the bore pumps and the raw water tank high-level set point stops the pumps. There is also a pressure set point that triggers a high-pressure fault and shuts the pump down.

Treated water is drawn from the Clean Water tank and pressure is maintained by the two Clean Water pumps and fed to the town supply on demand. The clean water tank level and high/low set-point values are monitored along with the clean water pump operating status. As part of the monitoring, a high alarm is generated when the tank level exceeds 99% and a low alarm is generated when the tank level is below 15%. The low-level alarm will inhibit the operation of the clean water supply pumps until the level is raised.

The clean water pump set is a stand-alone E-Boost pressure system consisting of two delivery pumps with dedicated variable speed drives and pressure sensors for each pump. Although the clean water pumps act as a standalone system, they are interlocked with the clean water tank level and will be inhibited if the clean water tank low-level alarm is activated. The pumps are set-up in a lead/lag configuration to maintain the discharge pressure at approximately 28 psi. The control system interfaces with the pumps system for monitoring and provides low tank level protection.

Eromanga's location is situated between two small watercourses in the upper reaches of Kyabra Creek which flows into Cooper Creek approximately 150km to the north. Eromanga is subject to flooding on rare occasions and is identified as a level 1 flood hazard area in the QLD Governments Flood Plain Assessment Database. Flooding in Eromanga is largely due to the low relief values associated with the Channel Country, where large rainfall events cause widespread inundation across the landscape. Local records indicate that high flood events cause flood waters to rise to approximately one meter, reaching the towns periphery but not impacting upon any drinking water infrastructure.

4.1 Infrastructure

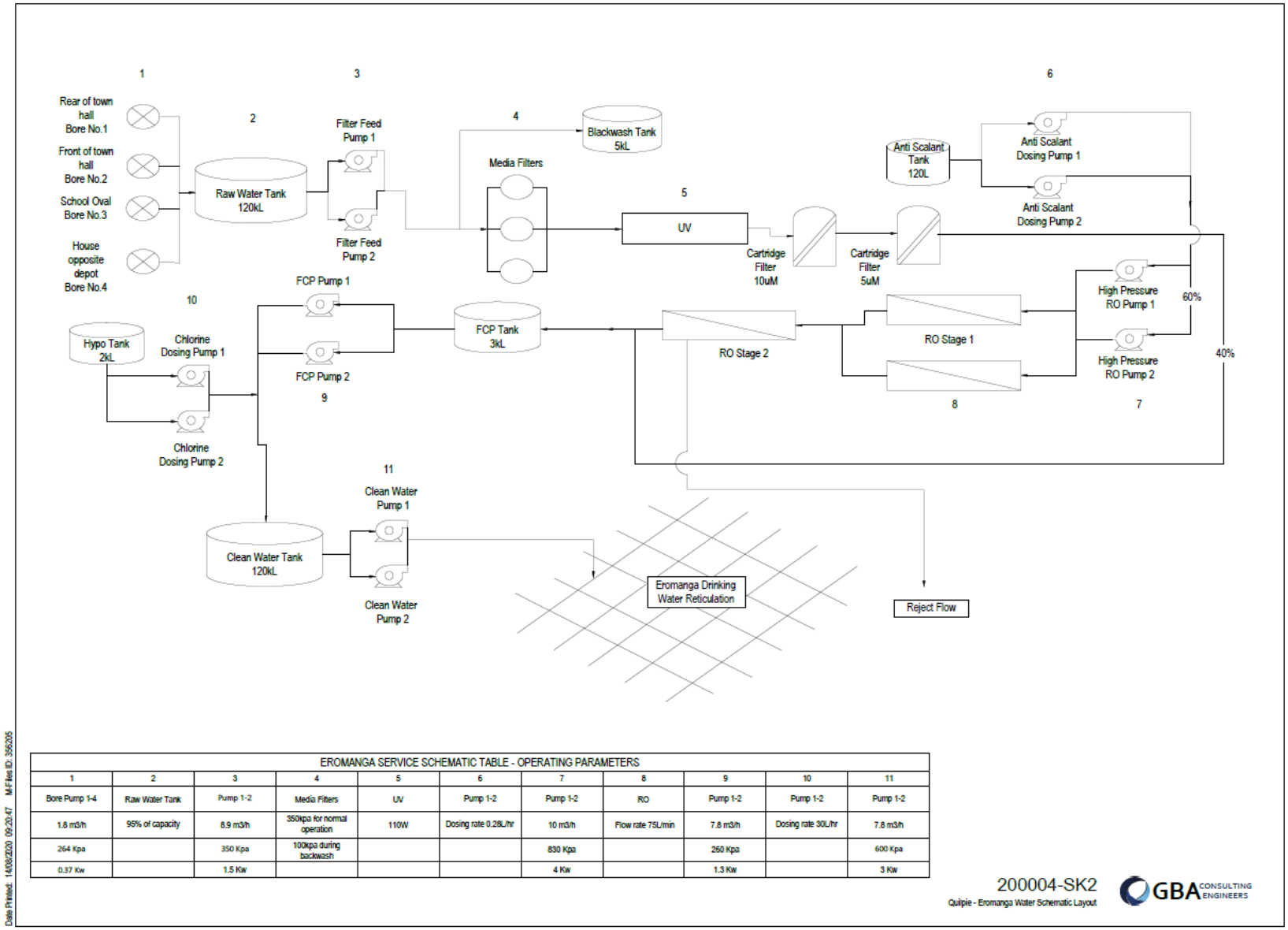
Table 4: Eromanga drinking water scheme infrastructure details.

Component		Details			
Source	Name	Bore 1 (Town Hall Rear)	Bore 2 (Town Hall Front)	Bore 3 (School Oval)	Bore 4 (House opposite Council Depot)
	Details	**Artesian RN:** 213504 **Depth:** 29.6m **Drill Date:** 17/07/2013 **Details:** Sealed	**Artesian RN:** 116267 **Depth:** 38m **Drill Date:** 23/03/2009 **Aquifer:** Winton Formation **Details:** Sealed	**Artesian RN:** 213505 **Depth:** 22.2m **Drill Date:** 18/07/2013 **Details:** Sealed	**Artesian RN:** 213506 **Depth:** 29.8m **Drill Date:** 20/07/2013 **Details:** Sealed
	% of supply	25%	25%	25%	25%
	Reliability	100%	100%	100%	100%
	Catchment Categorisation	Class II vulnerability.			
	Contamination Sources	Sub-artesian supplies may be subject to effluent seepage from surface contaminants. This may cause pollution within the aquifer.			
	Water Quality Issues	Elevated Conductivity, Hardness, Sodium, Chloride and Total Dissolved Solids.			
Treatment	**Type**	Filtration, U.V Light disinfection and Reverse Osmosis.			
	Media Filter Pumps	The Raw Water tank provides flooded suction to two pumps at the head of the RO Plant. The two pumps provide water to the media filter pre-treatment skid and feed the entire water treatment system. They are configured as duty/standby to ensure the water supply is maintained even in the event of a pump failure. The pumps are controlled with individual VSDs (variable speed drives) to maintain a set discharge pressure as measured by a pressure sensor at the filter inlet. The pressure sensor also provides low pressure setpoints which shutdown the pumps. The pumps have a rotating duty cycle to ensure that the run hours are kept approximately equal for each pump. The pumps are integrated with the entire plant and will operate in auto with the following circumstances: • Raw water tank level above Low setpoint. • RO plant is running or backwash cycle is running			
	Media Filter Pre-treatment	The pre-treatment component consists of three pressurized, parallel media filters, designed and installed to prevent fouling of the RO system. The arrangement of media is intended to remove the			

Component		Details
		largest particles at the top of the media bed, while smaller particles are retained deeper and deeper in the media. This allows the entire bed to act as a filter allowing much longer filter run times between backwash and more efficient particulate removal. Each media filter has two motorised valves associated with it: a normally open valve for the inlet stream going into the top of the filter, and a normally closed valve for the backwash waste stream coming out the top of the filter. Filtration is the default mode in which the raw water passes through the three filters (from top to bottom) and to the RO. In this mode all filter inlet valves are open and all backwash valves are closed. The duty feed pump runs to maintain filter inlet pressure at a set-point. A filter backwash cycle is triggered intermittently to remove any solids and impurities that have accumulated on the surface of the filter media. The cycle uses the filtered water from two of the filters to pass through the third filter in the reverse direction at a high velocity.
	Ultraviolet Light Disinfection System	Before entering the RO plant, water is passed through a U.V module to inactivate biological microorganisms from the filtered water, minimising the chance of fouling of the RO membranes. The U.V system also prevents biological growth from occurring in the water during periods of inactivity. The system is constantly active and will raise an alarm if there is a lamp or power failure. The U.V dose rate is set at 35mJ/cm^2.
	Cartridge Filters	Following U.V light disinfection, water is passed through two-staged cartridge filters; first a10µM filter, followed by a and 5µM filter. These filters assist in filtering out particles in the water down to one micron, prior to being dosed with anti-scalant chemical.
	Reverse Osmosis	The RO plant treats 60% of the filtered water from the media filters to reduce the salinity of the water to within the ADWG requirements by passing it at a high pressure through eight semi-permeable membranes. The remaining 40% of the filtered water bypasses the RO and is blended with the pure RO water (permeate). This bypass stream is controlled by a modulating valve, modulated to meet a set conductivity based upon the conductivity reading on the blended water. The RO feed pressure sensor prevents the pumps from dry running (i.e. low suction pressure) by raising an alarm and stopping the pumps. The high-pressure pumps will try to restart three times automatically after a low inlet pressure fault, if it continues to get the fault after the third try the pump will stop until the operator resets the fault. The RO has pre-membrane and post-membrane pressure sensors which provide pressure indication to the HMI. Alarms are provided for high pressure readings with high differential pressure inhibitors installed to protect equipment. The output of the RO plant is regulated by the speed of the high-pressure pumps and by

Component		Details
		throttling the brine water flow and recycling water flow via manual globe valves. RO membranes are replaced every month. There are two duty/standby anti-scalant dosing pumps that operate at a fixed dose rate while the RO is operating. These pumps dose Polycarboxylic Acid (Flocon anti-scalant solution) into the feed water to prevent the build-up of scale. Reject water from the RO plant is discharged to the Common Effluent Disposal (CED) pond. Under normal operating conditions, water evaporates with no recent knowledge of any overflow events.
	FCP Pumps	There are two duty/standby FCP pumps that transfer blended permeate water from the FCP tank to the clean water tank. The pumps are started and stopped based on high and low FCP tank level setpoints. The tank level is measured by a pressure sensor mounted on the bottom of the tank. The pumps are started Direct-On-Line (DOL) and run at a fixed flow. A magnetic flow meter measures the discharge flow to the Clean Water tank and inhibits the pumps in the event of a no flow alarm. This no flow alarm is triggered if a pump is running and there is no flow through the flow meter.
Disinfection	**Type**	Sodium Hypochlorite (Focus Pool Liquid Chlorine) – water is dosed on the transfer line of blended permeate water from the FCP tank into the clean water tank. There are two duty/standby chlorine dosing pumps that inject Sodium Hypochlorite into the FCP pump discharge line at a rate dependant of water usage and target residual levels, with a maximum performance of 30L/hr. The required chlorine dosage is set via. the dosing pump speed and is not regulated automatically. These pumps draw from the 2kL Sodium Hypochlorite tank located in the bulk storage area. The duty dosing pump can be run in auto or manual modes as selected through the HMI. A switch on the control cabinet can bypasses the PLC to allow the pumps to run in the event of a PLC malfunction. The chlorine storage tank has low-level protection for the dosing pumps. If a low-level alarm is activated, the system will stop until the tank is refilled. A chlorine tank low-level alarm will also inhibit the entire system from operating (excluding the bore pumps) as the chlorination process is a critical component. The Chlorine Dosing pumps are intended to operate only when the FCP Pumps are delivering water to the Clean Water tank; therefore, the dosing pumps are inhibited whenever the FCP pumps are NOT running in auto.
Distribution System	**Pipe Material**	**Asbestos Cement**
	Age range	37- 39 years @ 2026

Component		Details
	Approx. % of total length	27.5% (0.413km)
	Pipe Material	**DICL**
	Age range	34+ years @ 2026
	Approx. % of total length	70% (1.048km)
	Pipe Material	**Poly**
	Age range	4- 12 years @ 2026
	Approx. % of total length	0.25% (0.4km)
	Areas where potential long detention periods could be expected	Municipal areas that are not used daily such as the Town Hall, other areas may include accommodation in off-peak season where utilisation rates are low.
	Areas where low water pressure (e.g. < 12 m) could be expected during peak or other demand periods)	Treated water delivery consists of two modern delivery pumps with dedicated pressure sensors for each pump, the two pumps are set-up in a lead/lag configuration to maintain a discharge at approximately 28psi. Low water pressure in the system may occur due to mains breakages or other malfunctions.
Reservoirs	**Name**	**Raw Water Tank**
	Capacity	120 kL
	Material	Reinforced concrete.
	Roofed	Yes, pitched galvanised steel roof.
	Vermin-proof	Yes.
	Runoff directed off roof	Yes.
	Name	**Clean Water Tank**
	Capacity	120 kL
	Material	Reinforced concrete.
	Roofed	Yes, pitched galvanised steel roof.
	Vermin-proof	Yes.
	Runoff directed off roof	Yes.



EROMANGA SERVICE SCHEMATIC TABLE - OPERATING PARAMETERS

1	2	3	4	5	6	7	8	9	10	11
Bore Pump 1-4	Raw Water Tank	Pump 1-2	Media Filters	UV	Pump 1-2	Pump 1-2	RO	Pump 1-2	Pump 1-2	Pump 1-2
1.8 m3/h	95% of capacity	8.9 m3/h	350kpa for normal operation	110W	Dosing rate 0.28L/hr	10 m3/h	Flow rate 75L/min	7.8 m3/h	Dosing rate 30L/hr	7.8 m3/h
264 Kpa		350 Kpa	100kpa during backwash			830 Kpa		260 Kpa		600 Kpa
0.37 Kw		1.5 Kw				4 Kw		1.3 Kw		3 Kw

Figure 5: Eromanga drinking water scheme schematic.

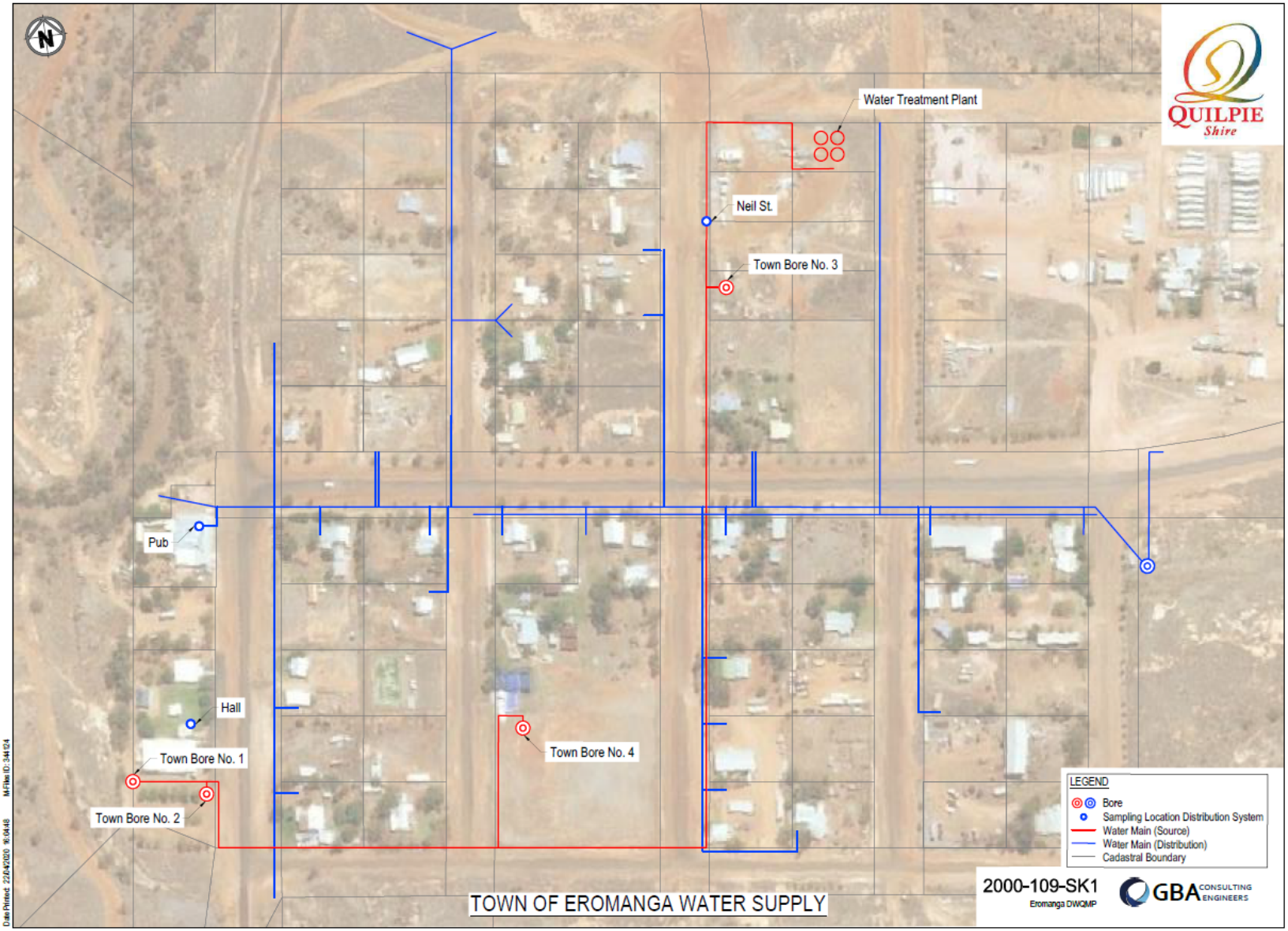


Figure 6: Eromanga drinking water scheme schematic.

4.2 Eromanga Sudden Population Increases

Where events such as rodeos and the tourist season result in sudden population increases, the primary risk to the drinking water supply is ensuring there is sufficient Sodium Hypochlorite and Anti-scalent to handle the expected increase in water usage. To manage this, Council will ensure they check all chemical supplies prior to major events. If an issue were to arise, Council's solution would be to move people on to the other towns as quickly as possible. In extreme circumstances where this is not feasible, a boil water alert may be considered to compensate for the lack of disinfection or chlorine contact time. To date, running out of chemical due to a sudden population increase has not been an issue for the Council or for the management of the Eromanga scheme.

4.3 Eromanga Artesian Water Supply

In 2014 Eromanga switched their source water supply from a non-potable artesian water supply to a potable sub-artesian water supply with the commissioning of the Eromanga RO Plant. The sub-artesian supply was chosen due to the improved water quality. Council have maintained the original artesian water supply for emergency situations, e.g. an RO Plant failure. In the event that the RO Plant is not operational the preferred option will be to truck water in from Quilpie and pump the water into the clean water tank for distribution. In situations where water cannot be delivered from Quilpie, as a last resort the RO Plant will be bypassed and the artesian supply fed directly into the mains supply. The water quality of the artesian bore water is non-potable, when this water is supplied to the customer's, Council will issue a boil water alert and notify all customers.

5.0 QUILPIE AND EROMANGA DRINKING WATER QUALITY

Quilpie Shire Council maintains copies of water quality data from 2009 onwards, all of which is trended in a master spreadsheet. For the purpose of analysing water quality data for the DWQMP, Council have trended all data from the past 5 years, in-line with the requirements of the Departmental Guidelines for preparing a DWQMP.

The data provided in Sections 5.1 and 5.2 below confirms that the drinking water supplied to the towns is generally within the ADWG with only a few occasional health and aesthetic exceedances (discussed in Section 5.1.1 and 5.2.1 below). Graphs have also been provided of the trended water quality data in Appendix B (Quilpie) and Appendix C (Eromanga).

5.1 Quilpie Drinking Water Quality Summary 2021- 2025

Table 5: Quilpie drinking water verification monitoring – source water.

Analyte	Units		Summary of Results						Guideline Values			
		Monitoring	Samples Tested	Maximum Value	Mean Value	Minimum Values	Std Dev	95th %	Health	Exceedances	Aesthetic	Exceedances
Heterotrophic Plate Count	CFU/100mL	External	2	10	10	10	0	10				
Pseudomonas	MPN/100mL	External	2	0	0	0	0	0				
Enterococci	CFU/100mL	External	2	0	0	0	0	0				
Turbidity	NTU	External	7	2	0.917143	0.18	0.560859	1.7			5	
True Colour	HU	External	7	8	6.142857	1	2.948538	8			15	0
pH	pH Units	External	7	8.7	8.571429	8.34	0.116181	8.7			≥6.5 & ≤8.5	4 (>8.5)
Conductivity	µS/cm	External	7	1000	936.7143	860	61.28322	1000				
Total Dissolved Solids	mg/L	External	2	630	623.5	617	6.5	629.35			600	2
Chloride	mg/L	External	7	95	88.52857	82	5.458078	94.61			250	0
Fluoride	mg/L	External	7	1.8	1.757143	1.6	0.072843	1.8	1.5	7		
Sulphate	mg/L	External	7	7	6.285714	5.9	0.356285	6.85			250	0
Silica	mg/L	External	5	42	41.4	40	0.8	42			80	0
Sodium	mg/L	External	7	251	223	200	20.69506	247.7			180	7
Aluminium	mg/L	External	7	0.05	0.034857	0.03	0.007019	0.047			0.2	0
Total Iron	mg/L	External	7	0.077	0.030857	0.01	0.024914	0.0716			0.3	0
Total Manganese	mg/L	External	7	0.008	0.005571	0.004	0.001178	0.0074	0.1	0	0.05	0
Arsenic	mg/L	External	1	-	0.0002	-	-	-	0.01	0		
Boron	mg/L	External	5	0.62	0.268	0.03	0.283436	0.618	4	0		
Cadmium	mg/L	External	1	-	0.0004	-	-	-	0.002	0		
Chromium	mg/L	External	1	-	0.0003	-	-	-	0.05	0		
Copper	mg/L	External	7	0.008	0.004143	0.002	0.0021	0.0074	2	0	1	0

Analyte	Units		Summary of Results						Guideline Values			
		Monitoring	Samples Tested	Maximum Value	Mean Value	Minimum Values	Std Dev	95th %	Health	Exceedances	Aesthetic	Exceedances
Nickel	mg/L	External	1	-	0.001	-	-	-	0.02	0		
Zinc	mg/L	External	7	0.06	0.045714	0.01	0.022588	0.06			3	0
Aesthetic Guideline Exceedance												
Health Guideline Exceedance												

Table 6: Quilpie drinking water verification monitoring – distribution system.

Analyte	Units	Monitoring	Summary of Results						Guideline Values			
			Samples Tested	Maximum Value	Mean Value	Minimum Values	Std Dev	95th %	Health	Exceedances	Aesthetic	Exceedances
E. coli	MPN/100mL	In-house	54	0	0	0	0	0	1	0		
E. coli	MPN/100mL	External	22	0	0	0	0	0	1	0		
Total Coliforms	MPN/100mL	External	22	0	0	0	0	0				
Heterotrophic Plate Count	CFU/100mL	External	2	10	10	10	0	10				
Pseudomonas	MPN/100mL	External	2	0	0	0	0	0				
Enterococci	CFU/100mL	External	2	0	0	0	0	0				
Turbidity	NTU	External	27	3.3	1.056667	0.23	0.463329	1			5	0
True Colour	HU	External	27	8	7.518519	1	1.707725	8			15	0
pH	pH Units	External	27	8.67	8.457037	7.7	0.167549	8.614			≥6.5 & ≤8.5	11 (>8.5)
Conductivity	µS/cm	External	27	1000	906.7037	843	57.0898	1000				
Total Dissolved Solids	mg/L	External	2	548	546.5	545	1.5	547.85			600	0
Total Hardness	mg/L	External	2	6	5.5	5	0.5	5.95			200	0
Nitrate	mg/L	External	2	0.2	0.15	0.1	0.05	0.195	50	0		
Chloride	mg/L	External	27	92	84.92593	80	3.839521	92			250	0
Fluoride	mg/L	External	27	1.9	1.796296	1.7	0.033127	1.8	1.5	27		
Sulphate	mg/L	External	27	11	7.348148	5.7	0.990836	8.04			250	0
Silica	mg/L	External	25	43	41.68	40	0.676461	42.8			80	0
Sodium	mg/L	External	27	240	211	200	14.9096	240			180	27
Aluminium	mg/L	External	25	0.08	0.04184	0.03	0.010066	0.05			0.2	0
Total Iron	mg/L	External	26	0.242	0.019308	0.01	0.04458	0.0175			0.3	0
Total Manganese	mg/L	External	27	0.3	0.016037	0.001	0.055726	0.0112	0.1	1	0.05	0

Analyte	Units	Monitoring	Summary of Results						Guideline Values			
			Samples Tested	Maximum Value	Mean Value	Minimum Values	Std Dev	95th %	Health	Exceedances	Aesthetic	Exceedances
Arsenic	mg/L	External	1	-	0.0006	-	-	-	0.01	0		
Boron	mg/L	External	25	0.62	0.4952	0.04	0.143502	0.618	4	0		
Cadmium	mg/L	External	1	-	0.0004	-	-	-	0.002	0		
Chromium	mg/L	External	1	-	0.0003	-	-	-	0.05	0		
Copper	mg/L	External	27	0.034	0.008778	0.002	0.009358	0.0297	2	0	1	0
Nickel	mg/L	External	1	-	0.001	-	-	-	0.02	0		
Zinc	mg/L	External	27	0.06	0.056444	0.01	0.012583	0.06			3	0
Aesthetic Guideline Exceedance												
Health Guideline Exceedance												

5.1.1 Quilpie Water Quality ADWG Exceedances

There have been no previous *E. coli* detections within the Quilpie scheme.

Regarding physical and chemical properties, Quilpie's source water generally sits within the ADWG for most parameters except for pH, Sodium, Total Dissolved Solids and Fluoride. Elevated pH levels are common in Quilpie's drinking water, caused by the dissolution of minerals associated with the underlying geology of the area. No ADWG health value has been set for pH as elevated levels are generally only associated with taste issues and pipe scaling and therefore, exceedances are not considered a hazard for the scheme. It should be noted that the average pH within Quilpie's distribution system sits at ~8.5pH Units, in-line with the ADWG upper aesthetic of 8.5.

Similarly, elevated Sodium is common within groundwater supplies. The ADWG aesthetic value for Sodium has been set at 180mg/L, based on the taste threshold for Sodium in water. In terms of health risks associated with elevated Sodium levels, there is evidence linking excess Sodium intake with cardiovascular disease, however, Sodium intake via the drinking water supply only makes a modest contribution when compared to an individual's total intake. Therefore, no health guideline value has been set for Sodium concentrations in drinking water and exceedances above the ADWG aesthetic are considered acceptable. Moreover, Quilpie's average Sodium concentration sits at 223 mg/L for the source water and 211 mg/L for the distribution system, which is only slightly above the ADWG aesthetic.

Elevated Fluoride concentrations within Quilpie's source water are discussed in Section 5.1.2 below.

5.1.2 Quilpie Elevated Fluoride

QSC has an ongoing Drinking Water Incident for the elevated Fluoride levels within the drinking water supply. Elevated Fluoride is associated with Quilpie's natural geology and averages around 1.8 mg/L, slightly above ADWG health value of 1.5 mg/L. Treatment to reduce Fluoride levels is not financially feasible for Council considering the town's small population and that the concentration is only slightly above the ADWG health value. The main issues associated with elevated Fluoride is dental fluorosis primarily affecting children under the age of 6. Despite the frequent exceedance of Fluoride levels, quarterly verification monitoring has been deemed suitable for the scheme as historical data has identified Fluoride concentrations to remain within a consistent range.

At this stage, Council's primary management strategy is to provide public notification to Quilpie residents in the form of a Fluoride factsheet to help the community understand the potential impacts of elevated Fluoride in the drinking water supply. This fact-sheet is published on Councils website and Facebook pages. Notification is also made to residents on an annual basis via a mailbox drop.

Refer to Appendix D for a copy of the Fluoride factsheet.

5.2 Eromanga Drinking Water Quality Summary 2020-2025

Table 7: Eromanga drinking water verification monitoring – source water.

Analyte	Units	Monitoring	Summary of Results						Guideline Values			
			Samples Tested	Maximum Value	Mean Value	Minimum Values	Std Dev	95th %	Health	Exceedances	Aesthetic	Exceedances
E. coli	MPN/100mL	External	-	-	0	-	-	-	1	0		
Total Coliforms	MPN/100mL	External	-	-	1	-	-	-				
Heterotrophic Plate Count	CFU/100mL	External	-	-	<10	-	-	-				
Pseudomonas	MPN/100mL	External	-	-	0	-	-	-				
Enterococci	CFU/100mL	External	-	-	0	-	-	-				
pH	pH Units	External	5	7.1	6.92	6.8	0.098793	7.064			≥6.5 & ≤8.5	0
Conductivity	µS/cm	External	5	2990	2402	1750	396.656	2894				
Total Hardness	mg/L	External	5	462	415.8	273	72.00667	461.6			200	5
Total Dissolved Solids	mg/L	External	5	1740	1424	1060	220.327	1688			600	5
Chloride	mg/L	External	5	700	539.4	330	119.5217	674			250	5
Sulphate	mg/L	External	5	280	238.2	210	24.91907	274.2			250	1
Silica	mg/L	External	5	86	72.6	56	9.748846	84.2			80	1
Sodium	mg/L	External	5	450	343.6	260	62.4487	430			180	5
Calcium	mg/L	External	5	99.8	89.96	58	16.03766	99.64				
Potassium	mg/L	External	5	6.2	5.1	4.2	0.666333	6.02				
Magnesium	mg/L	External	5	52	46.46	31	7.925049	51.86				
Nitrate	mg/L	External	5	19	15.92	10	3.374255	19	50	0		
Total Iron	mg/L	External	5	0.01	0.01	0.01	0	0.01			0.3	0
Total Manganese	mg/L	External	5	0.04	0.009	0.001	0.015505	0.0324	0.1	0	0.05	0
Arsenic	mg/L	External	-	-	0.0008	-	-	-	0.01	0		
Cadmium	mg/L	External	-	-	0.105	-	-	-	0.002	1		

Analyte	Units	Monitoring	Summary of Results						Guideline Values			
			Samples Tested	Maximum Value	Mean Value	Minimum Values	Std Dev	95th %	Health	Exceedances	Aesthetic	Exceedances
Chromium	mg/L	External	-	-	0.0006	-	-	-	0.05			
Copper	mg/L	External	5	0.005	0.00324	0.0002	0.001764	0.005	2	0	1	0
Nickel	mg/L	External	-	-	0.001	-	-	-	0.02	0		
Lead	mg/L	External	-	-	0.0002	-	-	-	0.05	0		
Zinc	mg/L	External	5	0.1	0.058	0.01	0.028566	0.092			3	0
Aesthetic Guideline Exceedance												
Health Guideline Exceedance												

Table 8: Eromanga drinking water verification monitoring – distribution system.

Analyte	Units	Monitoring	Summary of Results						Guideline Values			
			Samples Tested	Maximum Value	Mean Value	Minimum Values	Std Dev	95th %	Health	Exceedances	Aesthetic	Exceedances
E. coli	MPN/100mL	In-house	66	0	0	0	0	0	1	0		
E. coli	MPN/100mL	External	22	0	0	0	0	0	1	0		
Heterotrophic Plate Count	CFU/100mL	External	4	10	5.5	0	4.555217	10				
Free Chlorine	mg/L	In-house	208	1.99	0.5983	0.06	0.26	0.937			>0.2, >5 (operational)	13 (<0.2)
Turbidity	NTU	In-house	29	1.26	0.374483	0.2	0.197617	0.604			5	0
Turbidity	NTU	External	21	13	1.649524	0.15	2.699286	5			5	1
True Colour	HU	External	21	8	6.666667	1	2.64275	8			15	0
pH	pH Units	External	21	6.9	6.560952	5.67	0.255956	6.8			≥6.5 & ≤8.5	5 (<6.5)
Conductivity	µS/cm	External	21	527	401.5714	250	84.50617	518				
Total Dissolved Solids	mg/L	External	4	292	280.5	275	6.800735	290.05			600	0
Total Hardness	mg/L	External	4	87	70.75	54	14.02453	86.25			200	0
Nitrate	mg/L	External	21	6.9	5.814286	3.5	0.989125	6.8	50	0		
Chloride	mg/L	External	21	121	89.85714	59	17.07765	116			250	0
Fluoride	mg/L	External	21	0.1	0.066667	0.04	0.018083	0.1	1.5	0		
Sulphate	mg/L	External	20	45	17.515	1.1	12.00526	44.05			250	0
Silica	mg/L	External	17	17	13.92941	8.8	2.338367	16.2			80	0
Sodium	mg/L	External	21	79.2	61.55714	42	10.04393	75.4			180	0
Aluminium	mg/L	External	21	0.1	0.030476	0.01	0.017037	0.03			0.2	0
Total Iron	mg/L	External	21	1.57	0.094952	0.01	0.331211	0.137			0.3	1
Total Manganese	mg/L	External	21	0.003	0.001238	0.001	0.000526	0.002	0.1	0	0.05	0
Arsenic	mg/L	External	2	0.001	0.0006	0.0002	0.0004	0.00096	0.01	0		

Analyte	Units	Monitoring	Summary of Results						Guideline Values			
			Samples Tested	Maximum Value	Mean Value	Minimum Values	Std Dev	95th %	Health	Exceedances	Aesthetic	Exceedances
Boron	mg/L	External	17	0.24	0.207059	0.2	0.009558	0.216	4	0		
Cadmium	mg/L	External	2	0.0004	0.0004	0.0004	0	0.0004	0.002	0		
Chromium	mg/L	External	2	0.0003	0.0003	0.0003	0	0.0003	0.05	0		
Copper	mg/L	External	21	0.58	0.098905	0.006	0.141448	0.31	2	0	1	0
Nickel	mg/L	External	2	0.002	0.0015	0.001	0.0005	0.00195	0.02	0		
Zinc	mg/L	External	21	3.51	0.242476	0.019	0.733884	0.34			3	1
Operational Exceedance												
Aesthetic Guideline Exceedance												
Health Guideline Exceedance												

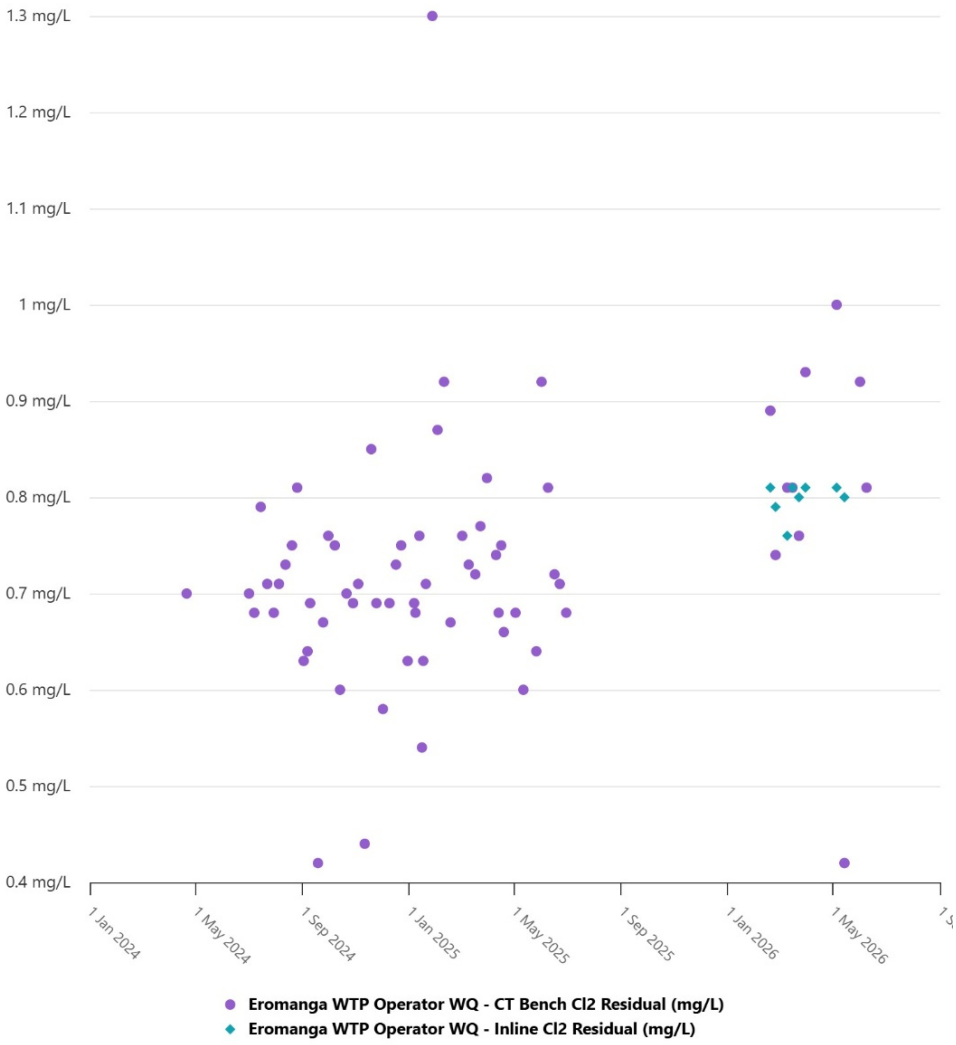


Figure 7: Eromanga Free Chlorine data (2024-2026).

5.2.1 Eromanga Water Quality ADWG Value Exceedances

There have been no previous *E. coli* detections within the Eromanga scheme. Nonetheless, as the scheme sources its water from sub-artesian bores, all water is treated before being reticulated to the town due to the increased likelihood of pathogens being present within sub-artesian supplies.

Water quality monitoring data for Eromanga identifies the following ADWG aesthetic exceedances in the scheme's source water:

- Conductivity
- Total Hardness
- Sodium
- Chloride
- Total Dissolved Solids

All the above ADWG aesthetic exceedances are addressed during the water treatment process, with no exceedances detected in Eromanga's treated water. This confirms that the water treatment process is effective, treating Eromanga's source water to within the ADWG.

The only ADWG aesthetic exceedances reported in Eromanga's treated water is for pH. This is not considered a concern for the scheme as the average pH concentration in the treated water is 6.5, which is within the ADWG.

5.3 Drinking Water Complaints

Quilpie Shire Council has several ways that complaints can be made, all of which are outlined in Council's complaints procedure located here: https://quilpie.qld.gov.au/wp-content/uploads/2023/07/G.03-A-Administrative-action-complaints-procedure.pdf.

Complaints can be made via the following methods:

- In person at Council's Administration Centre in Quilpie or by calling (07) 4656 0500.
- In writing, by letter or email, addressed to the Chief Executive Officer:

  Postal Address: P.O Box 57, Quilpie QLD 4480
  Email: admin@quilpie.qld.gov.au

The following details must be included when a complaint is lodged:

- The nature of the complaint with as much detail as possible;
- Details of any loss or detriment suffered;
- If the incident has been reported to any other agency or authority;
- The remedy being sought;
- Any supporting information or documentation, including names and contact details of anyone else who is able to support the complaint;
- Details of the complainant.

All drinking water complaints that are lodged with Council are sent directly to the Water and Sewerage Supervisor, however, due to the small populations of the towns, it's not uncommon for informal complaints to be made as most individuals know who to talk to directly regarding drinking water-related issues. If informal complaints are made, these are investigated by Council with details of the investigation outcomes recorded in Council's document management system. Council acknowledges that in the past, informal complaints may have been made and not properly recorded. Moving forward Council aims to ensure that all informal/formal complaints are adequately documented.

To date, there have been no drinking water complaints made in either of the schemes.

6.0 HAZARD IDENTIFICATION AND RISK ASSESSMENT

The hazard identification and risk assessment for Quilpie Shire Council's DWQMP was undertaken using the risk methodology detailed in the Departmental guideline. The final risk assessments for each scheme include the following:

- Identified hazards or hazardous events
- Hazard or hazardous event sources
- An assessment of the unmitigated maximum risk level likelihood of each hazard being present or each hazardous event occurring
- Existing preventative measures implemented to counteract each hazard or hazardous event to reduce the maximum risk level
- A re-assessed mitigated risk level which details the final risk level of a hazard or hazardous event that is applicable when the appropriate mitigation measures have been implemented. The mitigated risk level is determined using the same methodology as the initial maximum risk assessment; however, changes to the assessed likelihood should result in an overall lower risk level.

The risk assessment was last reviewed in December 2025 and amended accordingly during a risk assessment workshop held over Microsoft Teams. Details of the individuals involved in the workshop are provided in Table 9 below. Moving forward, Council intends to review the risk assessment every 2 years, to coincide with the DWQMP Regular Reviews. All amendments will be referred to the Director of Infrastructure Services for input, review and acceptance of the new risk assessment.

Table 9: 2025 risk assessment workshop participants.

Name	Organisation	Position	Reason for Inclusion
Eng Lim	Quilpie Shire Council	Director of Infrastructure Services	Oversees DWQMP implementation
Brian Weeks	Quilpie Shire Council	Deputy Director of Infrastructure Services	Oversees DWQMP implementation
Isabeau Gavel	GBA Consulting Engineers	Senior Environmental Officer	Assists with DWQMP implementation

6.1 Risk Assessment Methodology

In assessing each hazard or hazardous event's risk score, the first step is to determine the consequence as detailed in Table 10.

Table 10: Consequence descriptors.

Consequence	Descriptors
Insignificant	Negligible injury or health effects, isolated complaints related to aesthetic parameters. Little to no disruption to the normal operation of the scheme.
Minor	Negligible injury or health effects, widespread complaints related to aesthetic parameters.
Moderate	Potential acute health impact or potential chronic health impact.
Major	Acute health impact, no declared outbreak expected.
Catastrophic	Declared outbreak expected with an acute health impact. One or more fatalities or large number of hospitalisations.

Once the consequences were identified, the likelihood of each consequence occurring was determined using the categories outlined in Table 11 below.

Table 11: Likelihood Descriptors.

Likelihood	Descriptors
Almost Certain	Hazard is considered to be present on a daily to weekly basis.
Likely	Occurs more often than once per month and up to once per week.
Possible	Occurs more often than once per year and up to once a month.
Unlikely	Unlikely but may occur once every 1- 5 years.
Rare	Hazard is expected to arise in exceptional circumstances; <1 occurrence every 5 years.

Risk scores were then determined using the likelihood and consequence matrix provided in Table 12 below. Risk scores were calculated by the intercept of likelihood and consequence.

Table 12: Risk Matrix used for the risk assessments.

	Consequence				
Likelihood	**Insignificant**	**Minor**	**Moderate**	**Major**	**Catastrophic**
Almost Certain	Medium- 6	High- 10	High- 15	Extreme- 20	Extreme- 25
Likely	Medium- 5	Medium- 8	High- 12	High- 16	Extreme- 20
Possible	Low- 3	Medium- 6	Medium- 9	High- 12	High- 15
Unlikely	Low- 2	Low- 4	Medium- 6	Medium- 8	High- 10
Rare	Low- 1	Low- 2	Low- 3	Medium- 5	Medium- 6

Finally, uncertainty was assessed (Table 13) to provide an indication of the need to undertake further work or gather more data to ensure that the risk assessment is accurate and reliable.

Table 13: Uncertainty definitions.

Level of Uncertainty	Definition
Certain	There is 5 years of continuous monitoring data, which has been trended and assessed, with at least daily monitoring; or the processes involved are thoroughly understood.
Confident	There is 5 years of continuous monitoring data, which has been collated and assessed, with at least weekly monitoring or monitoring for the duration of seasonal events; or there is a good understanding of the processes involved.
Reliable	There is at least a year of continuous monitoring data available, which has been assessed; or there is reasonable understanding of the processes involved.
Estimate	There is limited monitoring data available; or there is limited understanding of the processes involved.
Uncertain	There is limited or no monitoring data available; or the processes are not well understood, and the processes are based on best estimates.

The acceptable risk level in relation to public health depends on the likelihood and consequence descriptors used for the assessment. For the criteria used by QSC, all risk levels identified as medium or less are considered acceptable risks for the schemes.

In some cases, actions have been taken to reduce low or medium level risks, while other high level risks have been left unmitigated (e.g. elevated Fluoride levels in Quilpie). These decisions are based on two factors:

- the magnitude of the risk, and
- the cost and difficulty of actions required to reduce the risk.

All unacceptable risks identified in the risk assessment are used to inform the Risk Management Improvement Programme (RMIP), outlined in Section 7 below.

6.2 Quilpie Risk Assessment

Risk ID	Hazard	Hazard/Hazardous Event	Scheme	Unmitigated Risk Level			Primary Preventative Measure	Other Preventative Measures	Mitigated Risk Level			Uncertainty	Documented Procedures	Comments	RMIP Item
				Likelihood	Consequence	Risk Level			Likelihood	Consequence	Risk Level				
Source Water															
Q1	**Bacteria and Virus**	**Contamination in the Artesian Aquifer**	Quilpie	Rare	Major	Medium-5	Deep Artesian water is sterile at the source, providing protection from bacteria/virus contamination	Water quality monitoring for *E. coli*	Rare	Major	Medium-5	Certain	Water Quality Monitoring SOP	Mitigated risk level is as low as possible. Bores are ~900m deep.	
Q2	**Protozoa**	**Contamination in the Artesian Aquifer**	Quilpie	Rare	Major	Medium-5	Deep Artesian water is sterile at the source, providing protection from protozoa contamination		Rare	Major	Medium-5	Certain	Water Quality Monitoring SOP	Mitigated risk level is as low as possible. Bores are ~900m deep.	
Q3	***Naegleria fowleri***	**Contamination in the Artesian Aquifer**	Quilpie	Rare	Catastrophic	Medium-6	Deep Artesian water is sterile at the source, providing protection from *Naegleria fowleri* contamination		Rare	Catastrophic	Medium-6	Certain		Mitigated risk level is as low as possible. Bores are ~900m deep.	**RA5:** One-off *N. fowleri* monitoring to confirm mitigated risk level
Q4	**Bacteria and Virus**	**Borehead integrity compromised causing ingress through borehead or cracked casing**	Quilpie	Unlikely	Major	Medium-8	Boreheads were constructed to Australian standards, are sealed and flow under positive pressure. Heat of source water also provides sterilisation (~78°C)	Working day visual inspections and water quality monitoring for *E. coli*	Rare	Major	Medium-5	Reliable	Bore Inspection SOP, Water Quality Monitoring SOP	Mitigated risk level is as low as possible	
Q5	**Protozoa**	**Borehead integrity compromised causing ingress through borehead or cracked casing**	Quilpie	Unlikely	Major	Medium-8	Boreheads were constructed to Australian standards, are sealed and flow under positive pressure. Heat of source water also provides sterilisation (~78°C)	Working day visual inspections	Rare	Major	Medium-5	Reliable	Bore Inspection SOP	Mitigated risk level is as low as possible	
Q6	***Naegleria fowleri***	**Borehead integrity compromised causing ingress through borehead or cracked casing**	Quilpie	Unlikely	Catastrophic	High-10	Boreheads were constructed to Australian standards, are sealed and flow under positive pressure. Heat of source water also provides sterilisation (~78°C)	Working day visual inspections	Rare	Catastrophic	Medium-6	Reliable	Bore Inspection SOP	Mitigated risk level is as low as possible	**RA5:** One-off *N. fowleri* monitoring to confirm mitigated risk level

Risk ID	Hazard	Hazard/Hazardous Event	Scheme	Unmitigated Risk Level			Primary Preventative Measure	Other Preventative Measures	Mitigated Risk Level			Uncertainty	Documented Procedures	Comments	RMIP Item
				Likelihood	Consequence	Risk Level			Likelihood	Consequence	Risk Level				
Q7	**Loss of water supply**	**Long term power supply failure**	Quilpie	Unlikely	Moderate	Medium-6	Bores flow under artesian pressure straight into the distribution system. Therefore, no pumps are required and bores can run even during a long-term power supply failures	Working day visual inspections	Rare	Moderate	Low-3	Certain			
Q8	**Loss of water supply**	**Bore Failure**	Quilpie	Rare	Moderate	Low-3	Working day visual inspections to check bore integrity	Back-up bore supply if needed	Rare	Moderate	Low-3	Certain	Bore Inspection SOP, Disaster Management Plan	CCTV camera inspections of bores undertaken in 2025 through the SWQWSA	
Q9	**Loss of water supply**	**Bore failure caused by flood**	Quilpie	Unlikely	Moderate	Medium-6	Bores are located above the flood zone	Both boreheads are sealed, drawing from a deep protected aquifer. Back-up bore available if required.	Rare	Moderate	Low-3	Certain	Bore Inspection SOP, Disaster Management Plan		
Q10	**Loss of water supply**	**Bore failure caused by fire**	Quilpie	Unlikely	Moderate	Medium-6	Bores are located in clear compounds with no nearby flammable debris	Back-up bore available if one bore fails due to fire	Rare	Moderate	Low-3	Certain	Bore Inspection SOP, Disaster Management Plan		
Q11	**Loss of water supply**	**Bore failure caused by natural disaster**	Quilpie	Unlikely	Moderate	Medium-6	Flood and fire (assessed above) are the most likely natural disasters to impact the scheme. GAB water supply provides water security during periods of drought		Rare	Moderate	Low-3	Certain	Bore Inspection SOP, Disaster Management Plan		
Q12	**Loss of water supply**	**Bore failure caused by sabotage/damage to bore**	Quilpie	Unlikely	Moderate	Medium-6	Bores located in fenced/locked compounds to restrict unauthorised access.	Working day visual inspections.	Rare	Moderate	Low-3	Certain	Bore Inspection SOP	Mitigated risk level is as low as possible. Quilpie is a small town, suspicious activity would be noticed	
Q13	**Temperature**	**Supply of water above safe temperature (e.g. burns/scalding)**	Quilpie	Likely	Minor	Medium-8	Some level of cooling is provided as water flows through the distribution system before it reaches customer taps.	Temperature fact-sheet available for residents.	Likely	Minor	Medium-8	Reliable		Bore water flows at ~60°C through the distribution (but can be as high as 68°C). Unlikely to cause major health concerns but burns/scalding could occur. Final risk level is considered acceptable by	

Risk ID	Hazard	Hazard/Hazardous Event	Scheme	Unmitigated Risk Level			Primary Preventative Measure	Other Preventative Measures	Mitigated Risk Level			Uncertainty	Documented Procedures	Comments	RMIP Item
				Likelihood	Consequence	Risk Level			Likelihood	Consequence	Risk Level				
														Council. Residents are aware of the elevated water temperature, Council do not receive water complaints regarding temperature. Temperature study undertaken in 2020 (Appendix E).	
Q14	**Fluoride**	**Naturally elevated Fluoride levels present in the source water above the ADWG guideline value**	Quilpie	Almost Certain	Moderate	High-15	Distribution of Fluoride fact-sheet notify residents of potential impacts of the elevated Fluoride concentrations.	Quarterly verification monitoring	Almost Certain	Moderate	High-15	Reliable	Water Quality Monitoring SOP	Verification monitoring indicates an average Fluoride concentration of ~1.8mg/L, only slightly above the ADWG	**RA6:** Annual notification to residents regarding Fluoride
Q15	**Radiological Activity**	**Naturally elevated radiological activity present in the source water, above the ADWG guideline values**	Quilpie	Rare	Moderate	Low-3	Verification monitoring		Rare	Moderate	Low-3	Estimate	Water Quality Monitoring SOP	One round of monitoring to be undertaken in 2026 to confirm mitigated risk level.	**RA5:** One-off radiological monitoring to confirm mitigated risk level
Q16	**Heavy Metals**	**Naturally elevated heavy metal levels present in the source water, above the ADWG guideline values**	Quilpie	Rare	Moderate	Low-3	Quarterly verification monitoring to confirm concentrations are within the ADWG		Rare	Moderate	Low-3	Reliable	Water Quality Monitoring SOP	To date, heavy metal monitoring has not identified any ADWG exceedances in Quilpie's source water or distribution system	
Q17	**PFAS**	**Elevated PFAS levels present in the source water, above the ADWG guideline values**	Quilpie	Rare	Moderate	Low-3	Water is sourced from a deep aquifer (~900m deep) which would be protected from leaching of surface contaminants	Bore is not located near any known PFAS sources	Rare	Moderate	Low-3	Estimate	Water Quality Monitoring SOP	One round of monitoring to be undertaken in 2026 to confirm mitigated risk level.	**RA5:** One-off PFAS monitoring to confirm mitigated risk level
Q18	**pH**	**Naturally elevated pH levels present in the source water, above the ADWG guideline values**	Quilpie	Almost Certain	Insignificant	Medium-6	Quarterly verification monitoring		Possible	Insignificant	Low-3	Reliable	Water Quality Monitoring SOP	4x rounds of verification monitoring undertaken over the past year indicate an average pH concentration of 8.44, with only one exceedance of the ADWG upper aesthetic limit. This is considered acceptable by Council	

Risk ID	Hazard	Hazard/Hazardous Event	Scheme	Unmitigated Risk Level			Primary Preventative Measure	Other Preventative Measures	Mitigated Risk Level			Uncertainty	Documented Procedures	Comments	RMIP Item
				Likelihood	Consequence	Risk Level			Likelihood	Consequence	Risk Level				
Q19	**Sodium**	**Naturally elevated Sodium levels present in the source water, above the ADWG guideline value**	Quilpie	Almost Certain	Insignificant	Medium-6	Quarterly verification monitoring		Almost Likely	Insignificant	Medium-6	Reliable	Water Quality Monitoring SOP	4x rounds of verification monitoring, undertaken over the past year indicate an average Sodium concentration of 197mg/L, slightly above the ADWG aesthetic which has been set at 180mg/L. This is considered acceptable by Council	
Q20	**Cyber Security**	**Breach of Council's internal system causing access to restricted information**	Quilpie	Rare	Moderate	Low-3	Bores are not connected to a SCADA system and therefore cannot be accessed remotely		Rare	Moderate	Low-3	Confident			
Repair, Maintenance and Commissioning of Mains															
Q21	**Bacteria and Virus**	**Contamination during repair, maintenance or commissioning of water mains**	Quilpie	Possible	Major	High-12	Staff trained to exercise correct hygiene practices	Maintenance undertaken by trained plumber	Rare	Major	Medium-5	Reliable	Repair, Maintenance and Commissioning of Mains SOP	Mitigated risk-level is as low as possible	**RA1:** Review and update O&M procedures
Q22	**Protozoa**	**Contamination during repair, maintenance or commissioning of water mains**	Quilpie	Possible	Major	High-12	Staff trained to exercise correct hygiene practices	Maintenance undertaken by trained plumber	Rare	Major	Medium-5	Reliable	Repair, Maintenance and Commissioning of Mains SOP	Mitigated risk-level is as low as possible	**RA1:** Review and update O&M procedures
Q23	***Naegleria fowleri***	**Contamination during repair, maintenance or commissioning of water mains**	Quilpie	Possible	Catastrophic	High-15	Staff trained to exercise correct hygiene practices	Maintenance undertaken by trained plumber	Rare	Catastrophic	Medium-6	Estimate	Repair, Maintenance and Commissioning of Mains SOP	Mitigated risk-level is as low as possible	**RA1:** Review and update O&M procedures **RA5:** One-off *N. fowleri* monitoring to confirm mitigated risk level

Risk ID	Hazard	Hazard/Hazardous Event	Scheme	Unmitigated Risk Level			Primary Preventative Measure	Other Preventative Measures	Mitigated Risk Level			Uncertainty	Documented Procedures	Comments	RMIP Item
				Likelihood	Consequence	Risk Level			Likelihood	Consequence	Risk Level				
Q24	**Turbidity**	**Elevated Turbidity caused by repair, maintenance or commissioning of water mains**	Quilpie	Possible	Minor	Medium-6	Staff trained to exercise correct hygiene practices	Maintenance undertaken by trained plumber	Rare	Minor	Low-2	Reliable	Repair, Maintenance and Commissioning of Mains SOP		**RA1:** Review and update O&M procedures
Q25	**Bacteria and Virus**	**Contamination caused from backflow occurring during repair, maintenance or commissioning of water mains**	Quilpie	Possible	Major	High-12	Staff trained to exercise correct hygiene practices	Maintenance undertaken by trained plumber	Rare	Major	Medium-5	Reliable	Repair, Maintenance and Commissioning of Mains SOP	Mitigated risk-level is as low as possible	**RA1:** Review and update O&M procedures
Q26	**Protozoa**	**Contamination caused from backflow occurring during repair, maintenance or commissioning of water mains**	Quilpie	Possible	Major	High-12	Staff trained to exercise correct hygiene practices	Maintenance undertaken by trained plumber	Rare	Major	Medium-5	Reliable	Repair, Maintenance and Commissioning of Mains SOP	Mitigated risk-level is as low as possible	**RA1:** Review and update O&M procedures
Q27	***Naegleria fowleri***	**Contamination caused from backflow occurring during repair, maintenance or commissioning of water mains**	Quilpie	Possible	Catastrophic	High-15	Staff trained to exercise correct hygiene practices	Maintenance undertaken by trained plumber	Rare	Catastrophic	Medium-6	Estimate	Repair, Maintenance and Commissioning of Mains SOP	Mitigated risk-level is as low as possible	**RA1:** Review and update O&M procedures **RA5:** One-off *N. fowleri* monitoring to confirm mitigated risk level
Distribution System															
Q28	**Bacteria and Virus**	**Contamination of water supply from long detention time within the main**	Quilpie	Possible	Major	High-12	Flushing mains with long detention times based on bacteriological results	Quilpie has a compact distribution system with no areas with long detention times	Rare	Major	Medium-5	Reliable		Mitigated risk-level is as low as possible	
Q29	**Bacteria and Virus**	**Contamination from a lack of back-flow prevention devices in the distribution system**	Quilpie	Possible	Major	High-12	Positive pressure within the distribution system	Distribution system temperature is ~60°C, providing some protection from	Rare	Major	Medium-5	Reliable		Mitigated risk-level is as low as possible	**RA3:** Review schematics and identify if there are any hazardous connections that require back-flow devices

Risk ID	Hazard	Hazard/Hazardous Event	Scheme	Unmitigated Risk Level			Primary Preventative Measure	Other Preventative Measures	Mitigated Risk Level			Uncertainty	Documented Procedures	Comments	RMIP Item
				Likelihood	Consequence	Risk Level			Likelihood	Consequence	Risk Level				
								pathogenic ingress							
Q30	**Bacteria and Virus**	**Contamination from metal leaching from the distribution system mains**	Quilpie	Possible	Major	High-12	Quarterly water quality monitoring to confirm that chemical parameters are within the ADWG		Rare	Major	Medium-5	Reliable		Mitigated risk-level is as low as possible	
Q31	**Temperature**	**Leaching of contaminants from HDPE pipework**	Quilpie	Unlikely	Moderate	Medium-6	The primary driver of HDPE breakdown is prolonged exposure to high heat and chlorine radicals. As Council doesn't chlorinate their water supply, there is no oxidative stress on the pipework (only thermal)		Rare	Moderate	Low-3	Reliable		HPDE pipes are between 0-38 yrs (@ 2026). HDPE breakdown can occur through a combination of exposure to high heat, high pressure and chlorine radicals. Council will undertake VOC testing in response to aesthetic complaints (taste/odour) unrelated to Hydrogen Sulfide, or in response to a chemical spill or contamination event that might introduce foreign contaminants into the pipework.	
Q32	**Hydrocarbons**	**Contamination from spill**	Quilpie	Unlikely	Moderate	Medium-6	Hydrocarbon SOP		Rare	Moderate	Low-3	Reliable		No history of spills in scheme	
Whole of System															
Q33	**Lack of skilled/trained staff**	**Inability for staff to respond to drinking water incidents/events due to a lack of formal training and/or skills**	Quilpie	Unlikely	Major	Medium-8	Maintenance undertaken by plumbers/water operators that are familiar with the scheme	Operation and maintenance procedures	Rare	Major	Medium-5	Estimate		Mitigated risk-level is as low as possible	**RA2:** Consolidate all drinking water records/data so that it can be managed centrally **RA4:** Incident and emergency training workshop for all QSC water operators

Risk ID	Hazard	Hazard/Hazardous Event	Scheme	Unmitigated Risk Level			Primary Preventative Measure	Other Preventative Measures	Mitigated Risk Level			Uncertainty	Documented Procedures	Comments	RMIP Item
				Likelihood	Consequence	Risk Level			Likelihood	Consequence	Risk Level				
Q34	**Missed water sampling**	**Undetected water quality incidents/events**	Quilpie	Likely	Major	High – 16	DWQMP refresher training to ensure staff understand testing requirements		Likely	Major	High – 16	Estimate			**RA2:** Consolidate all drinking water records/data so that it can be managed centrally **RA4:** Incident and emergency training workshop for all QSC water operators
Q35	**Cyber security breach**	**Breach of Council's internal systems causing access to restricted information**	Quilpie	Possible	Major	High-12	High grade security protection, user authentication, restricted administration privileges, malware protection, anti-virus protection and sonic wall protection		Rare	Major	Medium-5	Reliable		If remote access was obtained, they would only gain access to records, not water infrastructure	

6.3 Eromanga Risk Assessment

Risk ID	Hazard	Hazard/Hazardous Event	Scheme	Unmitigated Risk Level			Primary Preventative Measure	Other Preventative Measures	Mitigated Risk Level			Uncertainty	Documented Procedures	Comments	RMIP Item
				Likelihood	Consequence	Risk Level			Likelihood	Consequence	Risk Level				
Source Water															
E1`	**Bacteria and Virus**	**Contamination in the Artesian Aquifer**	Eromanga	Possible	Major	High-12	Chlorine and U.V light disinfection	Water quality monitoring for *E. coli*	Rare	Major	Medium-5	Estimate	Water Quality Monitoring SOP	Mitigated risk level is as low as possible	**RA7:** Undertake bore water quality assessment to assess the risk of pathogenic ingress within the sub-artesian water
E2	**Protozoa**	**Contamination in the Artesian Aquifer**	Eromanga	Possible	Major	High-12	Chlorine and U.V light disinfection		Rare	Major	Medium-5	Estimate	Water Quality Monitoring SOP	Mitigated risk level is as low as possible	**RA7:** Undertake bore water quality assessment to assess the risk of pathogenic ingress within the sub-artesian water
E3	***Naegleria fowleri***	**Contamination in the Artesian Aquifer**	Eromanga	Possible	Catastrophic	High-15	Chlorine and U.V light disinfection		Rare	Catastrophic	Medium-6	Estimate		Mitigated risk level is as low as possible	**RA7:** Undertake bore water quality assessment to assess the risk of pathogenic ingress within the sub-artesian water **RA5:** One-off *N. fowleri* monitoring to confirm mitigated risk level
E4	**Bacteria and Virus**	**Borehead integrity compromised causing ingress through borehead or cracked casing**	Eromanga	Unlikely	Major	Medium – 8	Chlorine and U.V light disinfection. Boreheads are sealed and well maintained to prevent pathogenic ingress	Working day visual inspections and water quality monitoring for *E. coli*	Rare	Major	Medium-5	Reliable	Bore Inspection SOP, Water Quality Monitoring SOP	Mitigated risk level is as low as possible	
E5	**Protozoa**	**Borehead integrity compromised causing ingress through borehead or cracked casing**	Eromanga	Unlikely	Major	Medium – 8	Chlorine and U.V light disinfection. Boreheads are sealed and well maintained to prevent pathogenic ingress	Working day visual inspections	Rare	Major	Medium-5	Reliable	Bore Inspection SOP, Water Quality Monitoring SOP	Mitigated risk level is as low as possible	

Risk ID	Hazard	Hazard/Hazardous Event	Scheme	Unmitigated Risk Level			Primary Preventative Measure	Other Preventative Measures	Mitigated Risk Level			Uncertainty	Documented Procedures	Comments	RMIP Item
				Likelihood	Consequence	Risk Level			Likelihood	Consequence	Risk Level				
E6	***Naegleria fowleri***	**Borehead integrity compromised causing ingress through borehead or cracked casing**	Eromanga	Unlikely	Catastrophic	High-10	Chlorine and U.V light disinfection. Boreheads are sealed and well maintained to prevent pathogenic ingress	Working day visual inspections	Rare	Catastrophic	Medium-6	Reliable	Bore Inspection SOP	Mitigated risk level is as low as possible	**RA5:** One-off *N. fowleri* monitoring to confirm mitigated risk level
E7	**Loss of water supply**	**Long term power supply failure**	Eromanga	Unlikely	Major	Medium-8	Working day visual inspections	Back-up generator available to run bores/RO plant during a power outage.	Rare	Major	Medium-5	Certain	Bore Inspection SOP	Mitigated risk level is as low as possible. Council are in the process of commissioning a second reservoir to increase water security for the town	
E8	**Loss of water supply**	**Bore Failure**	Eromanga	Rare	Major	Medium-5	Working day visual inspections to check bore integrity	4x bores feed into the RO plant, if one bore were to fail, 3x back-up supplies would remain	Rare	Major	Medium-5	Certain	Bore Inspection SOP, Disaster Management Plan	Mitigated risk level is as low as possible. CCTV camera inspections of bores undertaken in 2025 through the SWQWSA	
E9	**Loss of water supply**	**Bore failure caused by flood**	Eromanga	Unlikely	Major	Medium-8	Bores are located above the flood zone	All boreheads are sealed, with back-up supplies available if required.	Rare	Major	Medium-5	Certain	Bore Inspection SOP, Disaster Management Plan	Mitigated risk level is as low as possible. Chlorine disinfection provides protection against floodwater ingress into the boreheads	
E10	**Loss of water supply**	**Bore failure caused by fire**	Eromanga	Unlikely	Major	Medium-8	Bores are located in clear compounds with no nearby flammable debris	Back-up bores available if one bore fails due to fire	Rare	Major	Medium-5	Certain	Bore Inspection SOP, Disaster Management Plan	Mitigated risk level is as low as possible	
E11	**Loss of water supply**	**Bore failure caused by natural disaster**	Eromanga	Unlikely	Major	Medium-8	Flood and fire (assessed above) are the most likely natural disasters to impact the scheme. GAB water supply provides water security during periods of drought		Rare	Major	Medium-5	Certain	Bore Inspection SOP, Disaster Management Plan	Mitigated risk level is as low as possible	

Risk ID	Hazard	Hazard/Hazardous Event	Scheme	Unmitigated Risk Level			Primary Preventative Measure	Other Preventative Measures	Mitigated Risk Level			Uncertainty	Documented Procedures	Comments	RMIP Item
				Likelihood	Consequence	Risk Level			Likelihood	Consequence	Risk Level				
E12	**Loss of water supply**	**Bore failure caused by sabotage/damage to bore**	Eromanga	Unlikely	Major	Medium-8	All bores are located in fenced/locked compounds to restrict unauthorised access	Working day visual inspections, Back-up bores available if one must be taken off-line due to damage	Rare	Major	Medium-5	Certain	Bore Inspection SOP	Mitigated risk level is as low as possible. Eromanga is a small town, suspicious activity would be noticed	
E13	**Radiological Activity**	**Naturally elevated radiological activity present in the source water, above the ADWG guideline values**	Eromanga	Rare	Moderate	Low-3	Verification monitoring		Rare	Moderate	Low-3	Estimate		One round of monitoring to be undertaken in 2026 to confirm mitigated risk level.	**RA5:** One-off radiological monitoring to confirm mitigated risk level
E14	**Heavy Metals**	**Naturally elevated heavy metal levels present in the source water, above the ADWG guideline values**	Eromanga	Rare	Moderate	Low-3	Quarterly water quality monitoring to confirm concentrations are within the ADWG		Rare	Moderate	Low-3	Reliable	Water Quality Monitoring SOP	To date, heavy metal monitoring has not identified any ADWG exceedances in Eromanga's source water or distribution system	
E15	**PFAS**	**Elevated PFAS levels present in the source water, above the ADWG guideline values**	Eromanga	Rare	Moderate	Low-3	Bores are not located near any known PFAS sources, or areas considered high-risk for PFAS	Reverse Osmosis would assist in removing PFAS from source water if it were present	Rare	Moderate	Low-3	Estimate		One round of monitoring to be undertaken in 2026 to confirm mitigated risk level.	**RA5:** One-off PFAS monitoring to confirm mitigated risk level
E16	**pH**	**Naturally low pH levels present in the source water, below the ADWG guideline values**	Eromanga	Almost Certain	Insignificant	Medium-6	Anti-scalent dosing	Quarterly verification monitoring	Likely	Insignificant	Medium-5	Reliable	Water Quality Monitoring SOP	Verification monitoring indicates occasional pH detections below the ADWG aesthetic of 6.5	
E17	**Conductivity**	**Naturally elevated Conductivity present in the source water**	Eromanga	Almost Certain	Minor	High-10	Reverse osmosis	Online monitoring at RO Plant and quarterly verification monitoring	Rare	Minor	Low-2	Confident	Water Quality Monitoring SOP	Verification monitoring indicates significantly lower Conductivity within Eromanga's treated water supply than compared with the source water	
E18	**Hardness/Total Dissolved Solids**	**Naturally elevated Hardness/TDS levels present in the source water,**	Eromanga	Almost Certain	Minor	High-10	Reverse osmosis	Online monitoring at RO Plant and quarterly verification monitoring	Rare	Minor	Low-2	Confident	Water Quality Monitoring SOP	Verification monitoring indicates Hardness and TDS	

Risk ID	Hazard	Hazard/Hazardous Event	Scheme	Unmitigated Risk Level			Primary Preventative Measure	Other Preventative Measures	Mitigated Risk Level			Uncertainty	Documented Procedures	Comments	RMIP Item
				Likelihood	Consequence	Risk Level			Likelihood	Consequence	Risk Level				
		above the ADWG guideline values												concentrations to be within the ADWG in Eromanga's treated water supply	
E19	**Chloride**	**Naturally elevated Chloride levels present in the source water, above the ADWG guideline value**	Eromanga	Almost Certain	Insignificant	Medium-6	Reverse osmosis	Online monitoring at RO Plant and quarterly verification monitoring	Rare	Insignificant	Low-1	Confident	Water Quality Monitoring SOP	Verification monitoring indicates Chloride concentrations to be within the ADWG in Eromanga's treated water supply	
E20	**Sodium**	**Naturally elevated Sodium levels present in the source water, above the ADWG guideline value**	Eromanga	Almost Certain	Insignificant	Medium-6	Reverse osmosis	Online monitoring at RO Plant and quarterly verification monitoring	Rare	Insignificant	Low-1	Confident	Water Quality Monitoring SOP	Verification monitoring indicates Sodium concentrations to be within the ADWG in Eromanga's treated water supply	
E21	**RO Plant reject water**	**Ingress into aquifer**	Eromanga	Possible	Moderate	Medium-9	Reverse osmosis	Source water monitoring	Possible	Moderate	Medium-9	Estimate			
E22	**Septic tanks**	**Ingress into aquifer**	Eromanga	Possible	Moderate	Medium-9	Reverse osmosis, UV disinfection and chlorine disinfection		Possible	Moderate	Medium-9	Estimate			
Water Treatment/RO Plant															
E23	**pH**	**Acid dosing equipment failure/Acid underdose**	Eromanga	Possible	Minor	Medium-6	Fixed dose-rate. Standby acid dosing pump		Possible	Minor	Medium-6	Estimate	WTP Manual OCP 3		
E24	**pH**	**Acid overdose**	Eromanga	Possible	Minor	Medium-6	Fixed dose-rate		Possible	Minor	Medium-6	Estimate	WTP Manual OCP 3		
E25	**Protozoa**	**Media filter breakthrough**	Eromanga	Possible	Major	High-12	Chlorine disinfection	U.V light disinfection system	Rare	Major	Medium-5	Estimate	WTP Manual OCP 2	Mitigated risk level is as low as possible	
E26	**Turbidity**	**Media filter breakthrough**	Eromanga	Possible	Moderate	Medium-9	Chlorine disinfection	U.V light disinfection system	Rare	Moderate	Low-3	Estimate	WTP Manual OCP 2		
E27	**Loss of water supply**	**Long-term power supply failure**	Eromanga	Possible	Major	High-12	Back-up generator available on-site		Rare	Major	Medium-5	Estimate	WTP Manual	Mitigated risk level is as low as possible	
E28	**Conductivity**	**Membrane breach**	Eromanga	Possible	Major	High-12	RO system high/low	U.V light disinfection system	Rare	Major	Medium-5	Estimate	WTP Manual CCP 2	Mitigated risk level is as low as possible	

Risk ID	Hazard	Hazard/Hazardous Event	Scheme	Unmitigated Risk Level			Primary Preventative Measure	Other Preventative Measures	Mitigated Risk Level			Uncertainty	Documented Procedures	Comments	RMIP Item
				Likelihood	Consequence	Risk Level			Likelihood	Consequence	Risk Level				
							pressure alarms in place								
E29	**Conductivity**	**Head loss build-up to media filters and RO membranes**	Eromanga	Possible	Major	High-12	RO system high/low pressure alarms in place	Chlorine and U.V light disinfection systems	Rare	Major	Medium-5	Estimate	WTP Manual CCP 2	Mitigated risk level is as low as possible	
E30	**Loss of water supply**	**Inability to bypass RO plant**	Eromanga	Possible	Major	High-12	Some storage provided in clean water tank	Water can be carted from Quilpie if RO plant were to go off-line	Rare	Major	Medium-5	Reliable		Raw water is not fit for consumption so even if bypass options were available, the water supplied would not be potable. To date, carting water from Quilpie has never been required but if it was needed, available water tanker is food safe and *E.coli* monitoring would be undertaken prior to water distribution.	
E31	**Loss of water supply**	**Equipment breakdown at RO plant**	Eromanga	Possible	Major	High-12	Critical spares available on-site including pumps and UV bulbs	Generator on-site to run RO plant and bores as needed during a power outage. Water can be carted from Quilpie if RO plant were to go off-line	Unlikely	Major	Medium-8	Reliable			
Disinfection															
E32	**Bacteria/Virus**	**Chlorine dosing equipment failure/Chlorine underdose**	Eromanga	Unlikely	Major	Medium-8	U.V light disinfection system	RO microfiltration. Standby Chlorine dosing pump. Low-level Chlorine alarms in place	Rare	Major	Medium-5	Estimate	WTP Manual CCP 1	Mitigated risk level is as low as possible	
E33	**Protozoa**	**Chlorine dosing equipment failure/Chlorine underdose**	Eromanga	Unlikely	Major	Medium-8	U.V light disinfection system	RO microfiltration. Standby Chlorine dosing pump. Low-level Chlorine alarms in place	Rare	Major	Medium-5	Estimate	WTP Manual	Mitigated risk level is as low as possible	
E34	***Naegleria fowleri***	**Chlorine dosing equipment failure/Chlorine underdose**	Eromanga	Unlikely	Catastrophic	High-10	U.V light disinfection system	RO microfiltration. Standby Chlorine dosing pump. Low-level Chlorine alarms in place	Rare	Catastrophic	Medium-6	Estimate	WTP Manual	Mitigated risk level is as low as possible	**RA5:** One-off *N. fowleri* monitoring to confirm mitigated risk level
E35	**Bacteria/Virus**	**Inadequate Chlorine contact time**	Eromanga	Unlikely	Major	Medium-8	U.V light disinfection system	RO microfiltration	Rare	Major	Medium-5	Estimate	WTP Manual CCP 1	Mitigated risk level is as low as possible	
E36	**Protozoa**	**Inadequate Chlorine contact time**	Eromanga	Unlikely	Major	Medium-8	U.V light disinfection system	RO microfiltration	Rare	Major	Medium-5	Estimate	WTP Manual	Mitigated risk level is as low as possible	
E37	***Naegleria fowleri***	**Inadequate Chlorine contact time**	Eromanga	Unlikely	Catastrophic	High-10	U.V light disinfection system	RO microfiltration	Rare	Catastrophic	Medium-6	Estimate	WTP Manual	Mitigated risk level is as low as possible	**RA5:** One-off *N. fowleri* monitoring to confirm

Risk ID	Hazard	Hazard/Hazardous Event	Scheme	Unmitigated Risk Level			Primary Preventative Measure	Other Preventative Measures	Mitigated Risk Level			Uncertainty	Documented Procedures	Comments	RMIP Item
				Likelihood	Consequence	Risk Level			Likelihood	Consequence	Risk Level				
															mitigated risk level
E38	**Bacteria/Virus**	**U.V system failure**	Eromanga	Unlikely	Major	Medium-8	Chlorine disinfection	Alarms in place for lamp or power failures	Rare	Major	Medium-5	Estimate	WTP Manual	Mitigated risk level is as low as possible	
E39	**Protozoa**	**U.V system failure**	Eromanga	Unlikely	Major	Medium-8	Chlorine disinfection	Alarms in place for lamp or power failures	Rare	Major	Medium-5	Estimate	WTP Manual	Mitigated risk level is as low as possible	
E40	***Naegleria fowleri***	**U.V system failure**	Eromanga	Unlikely	Catastrophic	High-10	Chlorine disinfection	Alarms in place for lamp or power failures	Rare	Catastrophic	Medium-6	Estimate	WTP Manual	Mitigated risk level is as low as possible	**RA5:** One-off *N. fowleri* monitoring to confirm mitigated risk level
E41	**Chlorine**	**Chlorine overdose**	Eromanga	Unlikely	Major	Medium-8	High-level Chlorine alarm	Operational monitoring	Rare	Major	Medium-5	Estimate	WTP Manual CCP 1	Mitigated risk level is as low as possible	**RA10:** Review the suitability of the Chlorine chemical used to ensure its suitability for drinking water
E42	**Chlorate**	**Disinfection by-products**	Eromanga	Possible	Moderate	Medium -9	Quarterly verification monitoring		Possible	Moderate	Medium - 9	Uncertain	Water Quality Monitoring SOP	No monitoring data available, therefore, mitigated risk-level remains high. Sodium Hypochlorite is stored in 20L in air-conditioned room.	**RA11:** undertake external monitoring for Chlorate and Trihalomethanes to ensure they are within the ADWG.
E43	**Trihalomethanes**	**Disinfection by-products**	Eromanga	Possible	Moderate	Medium -9	Quarterly verification monitoring		Possible	Moderate	Medium - 9	Uncertain	Water Quality Monitoring SOP	No monitoring data available, therefore, mitigated risk-level remains high	
Reservoirs															
E44	**Bacteria/Virus**	**Contamination of water supply in reservoir (animal access)**	Eromanga	Possible	Major	High-12	Chlorie disinfection. Vermin proofing on reservoir	U.V light disinfection system, filtration and RO. Reservoir inspections	Rare	Major	Medium-5	Reliable	Reservoir Inspection SOP OCP 1	Mitigated risk-level is as low as possible	
E45	**Protozoa**	**Contamination of water supply in reservoir (animal access)**	Eromanga	Possible	Major	High-12	Chlorie disinfection. Vermin proofing on reservoir	U.V light disinfection system, filtration and RO. Reservoir inspections	Rare	Major	Medium-5	Reliable	Reservoir Inspection SOP	Mitigated risk-level is as low as possible	
E46	***Naegleria fowleri***	**Contamination of water supply in reservoir (animal access)**	Eromanga	Possible	Catastrophic	High-15	Chlorie disinfection. Vermin proofing on reservoir	U.V light disinfection system, filtration and RO. Reservoir inspections	Rare	Catastrophic	Medium-6	Estimate	Reservoir Inspection SOP	Mitigated risk-level is as low as possible	**RA5:** One-off *N. fowleri* monitoring to confirm mitigated risk level
E47	**Bacteria/Virus**	**Contamination from reticulation mains (mains break/back flow) into the reservoir**	Eromanga	Possible	Major	High-12	Chlorie disinfection	U.V light disinfection system, filtration and RO. Reservoir inspections	Rare	Major	Medium-5	Reliable	Repair, Maintenance and Commissioning of Mains SOP OCP 1	Mitigated risk-level is as low as possible	

Risk ID	Hazard	Hazard/Hazardous Event	Scheme	Unmitigated Risk Level			Primary Preventative Measure	Other Preventative Measures	Mitigated Risk Level			Uncertainty	Documented Procedures	Comments	RMIP Item
				Likelihood	Consequence	Risk Level			Likelihood	Consequence	Risk Level				
E48	**Protozoa**	**Contamination from reticulation mains (mains break/back flow) into the reservoir**	Eromanga	Possible	Major	High-12	Chlorie disinfection	U.V light disinfection system, filtration and RO. Reservoir inspections	Rare	Major	Medium-5	Reliable	Repair, Maintenance and Commissioning of Mains SOP	Mitigated risk-level is as low as possible	
E49	***Naegleria fowleri***	**Contamination from reticulation mains (mains break/back flow) into the reservoir**	Eromanga	Possible	Catastrophic	High-15	Chlorie disinfection	U.V light disinfection system, filtration and RO. Reservoir inspections	Rare	Catastrophic	Medium-6		Repair, Maintenance and Commissioning of Mains SOP	Mitigated risk-level is as low as possible	**RA5:** One-off *N. fowleri* monitoring to confirm mitigated risk level mitigated risk level
E50	**Damage to infrastructure**	**Damage caused by illegal access to reservoir**	Eromanga	Unlikely	Major	Medium-8	Visual inspections		Rare	Major	Medium-5	Confident	Reservoir Inspection SOP	Mitigated risk level is as low as possible. Eromanga is a small town, suspicious activity would be noticed	
Repair, Maintenance and Commissioning of Mains															
E51	**Bacteria and Virus**	**Contamination during repair, maintenance or commissioning of water mains**	Eromanga	Possible	Major	High-12	Chlorine disinfection	Maintenance undertaken by trained plumber. Staff trained to exercise correct hygiene practices	Rare	Major	Medium-5	Reliable	Repair, Maintenance and Commissioning of Mains SOP	Mitigated risk-level is as low as possible	**RA1:** Review and update O&M procedures
E52	**Protozoa**	**Contamination during repair, maintenance or commissioning of water mains**	Eromanga	Possible	Major	High-12	Chlorine disinfection	Maintenance undertaken by trained plumber. Staff trained to exercise correct hygiene practices	Rare	Major	Medium-5	Reliable	Repair, Maintenance and Commissioning of Mains SOP	Mitigated risk-level is as low as possible	**RA1:** Review and update O&M procedures
E53	***Naegleria fowleri***	**Contamination during repair, maintenance or commissioning of water mains**	Eromanga	Possible	Catastrophic	High-15	Chlorine disinfection	Maintenance undertaken by trained plumber. Staff trained to exercise correct hygiene practices	Rare	Catastrophic	Medium-6	Estimate	Repair, Maintenance and Commissioning of Mains SOP	Mitigated risk-level is as low as possible	**RA1:** Review and update O&M procedures **RA5:** One-off *N. fowleri* monitoring to confirm mitigated risk level
E54	**Turbidity**	**Elevated Turbidity caused by repair, maintenance or commissioning of water mains**	Eromanga	Possible	Minor	Medium-6	Chlorine disinfection	Maintenance undertaken by trained plumber. Staff trained to exercise correct hygiene practices	Rare	Minor	Low-2	Reliable	Repair, Maintenance and Commissioning of Mains SOP		**RA1:** Review and update O&M procedures
E55	**Bacteria and Virus**	**Contamination caused from backflow occurring during repair, maintenance or commissioning of water mains**	Eromanga	Possible	Major	High-12	Chlorine disinfection	Maintenance undertaken by trained plumber. Staff trained to exercise correct hygiene practices	Rare	Major	Medium-5	Reliable	Repair, Maintenance and Commissioning of Mains SOP	Mitigated risk-level is as low as possible	**RA1:** Review and update O&M procedures

Risk ID	Hazard	Hazard/Hazardous Event	Scheme	Unmitigated Risk Level			Primary Preventative Measure	Other Preventative Measures	Mitigated Risk Level			Uncertainty	Documented Procedures	Comments	RMIP Item
				Likelihood	Consequence	Risk Level			Likelihood	Consequence	Risk Level				
E56	**Protozoa**	**Contamination caused from backflow occurring during repair, maintenance or commissioning of water mains**	Eromanga	Possible	Major	High-12	Chlorine disinfection	Maintenance undertaken by trained plumber. Staff trained to exercise correct hygiene practices	Rare	Major	Medium-5	Reliable	Repair, Maintenance and Commissioning of Mains SOP	Mitigated risk-level is as low as possible	**RA1:** Review and update O&M procedures
E57	***Naegleria fowleri***	**Contamination caused from backflow occurring during repair, maintenance or commissioning of water mains**	Eromanga	Possible	Catastrophic	High-15	Chlorine disinfection	Maintenance undertaken by trained plumber. Staff trained to exercise correct hygiene practices	Rare	Catastrophic	Medium-6	Estimate	Repair, Maintenance and Commissioning of Mains SOP	Mitigated risk-level is as low as possible	**RA1:** Review and update O&M procedures **RA5:** One-off *N. fowleri* monitoring to confirm mitigated risk level
Distribution System															
E58	**Bacteria and Virus**	**Contamination of water supply from long detention time within the main**	Eromanga	Possible	Major	High-12	Chlorine disinfection	Flushing mains with long detention times based on bacteriological results. Operational monitoring to confirm Free Chlorine residual is being maintained	Rare	Major	Medium-5	Reliable		Mitigated risk-level is as low as possible. Eromanga has a compact distribution system with no areas with long detention times	
E59	**Bacteria and Virus**	**Contamination from a lack of back-flow prevention devices in the distribution system**	Eromanga	Possible	Major	High-12	Chlorine disinfection	Positive pressure within the distribution system. Operational monitoring to confirm Free Chlorine residual is being maintained	Rare	Major	Medium-5	Reliable		Mitigated risk-level is as low as possible	**RA8:** Review schematics and identify if there are any hazardous connections that require back-flow devices
E60	**Bacteria and Virus**	**Contamination from metal leaching from the distribution system mains**	Eromanga	Possible	Major	High-12	Chlorine disinfection	Quarterly verification monitoring to confirm that chemical parameters are within the ADWG	Rare	Major	Medium-5	Reliable		Mitigated risk-level is as low as possible	
E61	**Hydrocarbons**	**Contamination from spill**	Quilpie	Unlikely	Moderate	Medium-6	Hydrocarbon SOP		Rare	Moderate	Low-3	Reliable		No history of spills in scheme	
Whole of System															
E62	**Lack of skilled/trained staff**	**Inability for staff to respond to drinking water incidents/events due to a lack of formal training and/or skills**	Eromanga	Unlikely	Major	Medium-8	Maintenance undertaken by plumbers/water operators that are familiar with the scheme	Operation and maintenance procedures	Rare	Major	Medium-5	Estimate		Mitigated risk-level is as low as possible	**RA2:** Consolidate all drinking water records/data so that it can be managed centrally **RA4:** Incident and emergency training workshop for

Risk ID	Hazard	Hazard/Hazardous Event	Scheme	Unmitigated Risk Level			Primary Preventative Measure	Other Preventative Measures	Mitigated Risk Level			Uncertainty	Documented Procedures	Comments	RMIP Item
				Likelihood	Consequence	Risk Level			Likelihood	Consequence	Risk Level				
															all QSC water operators
E63	**Missed water sampling**	**Undetected water quality incidents/events**	Quilpie	Likely	Major	High – 16	DWQMP refresher training to ensure staff understand testing requirements		Likely	Major	High – 16	Estimate			**RA2:** Consolidate all drinking water records/data so that it can be managed centrally **RA4:** Incident and emergency training workshop for all QSC water operators
E64	**Cyber security breach**	**Breach of Council's internal systems causing access to restricted information**	Eromanga	Possible	Major	High-12	High grade security protection, user authentication, restricted administration privileges, malware protection, anti-virus protection and sonic wall protection		Rare	Major	Medium-5	Reliable		Mitigated risk-level is as low as possible	
E65	**Loss of water supply**	**High water usage in town, putting strain on the RO Plant**	Eromanga	Possible	Major	High-12	Council meetings with residents to discourage use of treated water for garden irrigation		Unlikely	Major	Medium-8	Estimate			**RA9:** Investigation into recent water usage spikes for the town to ensure the RO Plant design capacity is sufficient

7.0 RISK MANAGEMENT IMPROVEMENT PROGRAMME

QSC's Risk Management Improvement Programme for both schemes is provided in Table 13 below. Council also maintains a "live version" of the RMIP in their Council database which can be updated more frequently as items are completed.

The RMIP was last reviewed and amended in November 2025 via. consultation with the QSC Director of Infrastructure Services. Moving forward, Council intends to review all completion target dates at 6-monthly intervals to ensure that the processes are in place for items to be completed within their forecast timeframes. The target dates for all RMIP items were determined via. consultation with Council staff responsible for the respective items.

Table 14: Quilpie and Eromanga Risk Management Improvement Programme.

2026 Code	2021 Code	Hazard/Hazardous Event	Scheme	Improvement Item	Priority	Target Date/s	Comments	Responsibility
RA1	Q1	Pathogenic ingress	Quilpie/ Eromanga	Review/Update operation and maintenance procedures to address the microbial contamination risks for the maintenance and repair of water mains.	High	26/27 FY	Water main repair procedure developed but requires updates to include best practice hygiene steps to prevent microbial contamination. The DWQMP Audit also identified the need for a water sampling and borehead inspection procedures which are drafted but yet to be implemented.	Director of Infrastructure Services
RA2	Q2	Lack of DWQMP data/procedures	Quilpie/ Eromanga	Consolidating all drinking water records/data so that it can be managed centrally.	High	26/27 FY	Council previously utilised *InfoExpert* to capture all DWQMP records, procedures and documentation, however, its use throughout Council needs to be improved by establishing suitable naming conventions for ease of document retrieval. Council has recently migrated to SWIM Local as the common database to capture and trend water quality data.	Director of Infrastructure Services
RA3	Q3	Pathogenic ingress caused by back-flow	Quilpie	Review schematics and identify if there are any hazardous connection to stock watering points or other potentially high-risk sites.	High	Tbc.	Ongoing. This item is considered a priority for Council but is difficult to action due to costs and staff availability. It will be actioned when time permits.	Director of Infrastructure Services
RA4	-	Drinking water incident/event	Quilpie/ Eromanga	Incident and emergency training for all QSC staff.	Medium	26/27 FY	Council are in the process of hiring new members for their water team. Once this is complete incident and emergency training will be conducted.	Director of Infrastructure Services
RA5	-	*N. fowleri*, Radiological Activity and PFAS	Quilpie/ Eromanga	Verification monitoring to confirm the Risk Assessment mitigated risk levels for Radiological Activity, PFAS and *N. fowleri*.	High	26/27 FY	Council are undertaking testing for these parameters to confirm that the final mitigated risk level in the risk assessments are correct.	Director of Infrastructure Services

2026 Code	2021 Code	Hazard/Hazardous Event	Scheme	Improvement Item	Priority	Target Date/s	Comments	Responsibility
RA6	-	Fluoride	Quilpie	Annual notification to residents informing them of the elevated Fluoride concentrations in the drinking water supply	High	N/A Ongoing item.	Council to annually notify residents of elevated Fluoride levels.	Director of Infrastructure Services
RA7	E1	Pathogenic ingress	Eromanga	Undertake bore water quality investigation to assess the risk of pathogenic ingress in the sub-artesian water.	Medium	26/27 FY	Ongoing. The outcome of this assessment may lead to a new deep artesian bore for the town.	Director of Infrastructure Services
RA8	E5	Pathogenic ingress caused by back-flow	Eromanga	Review scheme and identify if there are any hazardous connection to stock watering points or other potentially high-risk sites.	Low	Tbc.	A concrete slab has been built at the sewerage dump point to isolate any spills from potentially fouling the water table. Priority has been assessed as low as *E. coli* has never been detected within the scheme and water is Chlorinated before being distributed to customers.	Director of Infrastructure Services
RA9	-	Loss of water supply	Eromanga	Investigation into recent water usage spikes for the town to ensure that the design capacity of the RO Plant is sufficient.	Medium	26/27 FY	Similar to item E1, the outcome of this assessment may lead to a new deep artesian bore for the town.	Director of Infrastructure Services
RA10	-	Chlorine	Eromanga	Chlorine dosing	High	26/27 FY	Review the suitability of the Chlorine chemical used at Eromanga to ensure it is suitable for use in drinking water.	Director of Infrastructure Services
RA11	-	Chlorination by-products	Eromanga	Undertake water quality monitoring for Chlorate and Trihalomethanes to ensure parameters are within the ADWG.	High	26/27 FY	Target date is for first round of testing to be completed by is August 2026. Once testing commences data will assist in informing the risk assessment.	Director of Infrastructure Services

8.0 OPERATION AND MAINTENANCE PROCEDURES

Council have developed a series of operational and critical control points (OCP/CCPs) and operation and maintenance procedures for the operation of their two schemes.

OCPs and CCPs only relate to the Eromanga scheme and include the following:

- OCP 1 – Free Chlorine Residual, Eromanga Distribution
- OCP 2 – Turbidity, Eromanga Distribution
- OCP 3 – pH, Eromanga Distribution
- CCP 1 – Free Chlorine Residual, Eromanga RO Plant
- CCP 2 – Conductivity, Eromanga RO Plant

OCPs and CCPs are provided in Appendix F.

Operation and maintenance procedures relate to both schemes and are outlined in Table 14 below. Council undertake reviews of their OCPs, CCPs and procedures as detailed below:

- Following significant changes in processes;
- At the time of the scheduled DWQMP Review.

Table 15: Quilpie and Eromanga Operation and Maintenance Procedures.

Scheme Component / Sub-component	Preventive Measure Managed	Documented Procedure	Version Date	Next Review	Status
Whole of System	Eromanga Drinking Water Scheme	Eromanga RO Plant Manual	2014	2028	Implemented.
Sourcing Infrastructure & Distribution System	Distribution System	Water Mains Repair Procedure	2021	2028	Implemented.
		Water Mains Repair Disinfection Procedure			
		Mains Flushing Procedure			
	Boreheads	Borehead Inspection Procedure	2026	2028	Implemented.
Reservoirs	Infrastructure	Reservoir Inspection Procedure	2026	2028	Implemented.
Water Sampling	Verification and Operational Monitoring	Water Sampling Procedure	2026	2028	Implemented.

9.0 OPERATIONAL AND VERIFICATION MONITORING

9.1 Quilpie and Eromanga Operational Monitoring

In the Quilpie and Eromanga drinking water supply schemes, the operational monitoring programme for both schemes has been developed so that it's feasible for Council to achieve all their monitoring requirements whilst still providing safe drinking water to their customers. As such, most operational monitoring occurs on a fortnightly basis for both schemes, as Council does not have the capacity for more frequent monitoring to occur. In the past, Council have attempted to undertake weekly *E. coli* and Turbidity monitoring within Eromanga, however, they faced considerable challenges finding available staff to maintain this frequency. As such, monitoring has been scaled back to fortnightly. This is considered acceptable for the scheme due to the efficacy of the water treatment process.

While Council prioritises and adheres to the operational testing regime outlined in the DWQMP, there have been unavoidable/unforeseen circumstances in the past where staff have been unavailable, or road closures have caused for some water testing to be missed.

Table 15 below identifies the operational monitoring programme for the Quilpie and Eromanga schemes.

Table 16: Quilpie operational monitoring programme.

System Location	Parameter	Associated Hazard	Sampling/Assessment		Target Limit	Monitoring Location	Action if Target Limit Exceeded	Critical Limit	Action if Critical Limit Exceeded	Positions Responsible
			Frequency	Method						
Bores	Pressure	Bore pressure exceedance or blockage	Weekly	Visual	200-550kPa	Bore head works below pressure reducing valve	- Check pressure reducing valves - Replace valves if necessary - Check bore pressure	785kPa	- Replace pressure reducing valve - Flush Bore - CCTV bore inspection	**Overall Responsibility** Chief Executive Officer **Implementation: review and actions** Director and Deputy Director of Infrastructure Services **Operations** Water Officer
	Integrity	Microorganism ingress	Weekly	Visual	N/A	Bore Head	- Record issues in maintenance log - Program maintenance	N/A	- Record issues in maintenance log - Program maintenance - Repair security fence if required	
	Security	Unauthorised access	Weekly	Visual	N/A	Bore Head	- Record issues in maintenance log - Program maintenance	N/A	- Record issues in maintenance log - Program maintenance - Repair security fence if required	
Reticulation System	*E. coli*	Bacteria	Fortnightly	Colilert test	0 - *E. coli* detection	**5 Sites:** - Quilpie Hospital - Quilpie Shire Office - Quilpie Shire Depot - John Waugh Park - Bulloo Park Complex	- Implement incident management process - Isolate if possible - Boil water alert if necessary - Incident investigation and improvement actions implemented	1 - *E. coli* detection	- Implement incident management process - Isolate if possible - Boil water alert if necessary - Incident investigation and improvement actions implemented	
	Integrity	Microorganism ingress	Opportunistically	Visual	N/A	All over	- Record issues in maintenance log - Program maintenance	N/A	- Record issues in maintenance log - Program maintenance	
	N/A	Microorganism ingress	6-monthly or if water quality complaint received	Mains Flushing	Flush for ~10mins	Designated flushing points	N/A	N/A	N/A	

Table 17: Eromanga operational monitoring programme.

System Location	Parameter	Associated Hazard	Sampling/Assessment		Target Limit	Monitoring Location	Action if Target Limit Exceeded	Critical Limit	Action if Critical Limit Exceeded	Positions Responsible
			Frequency	Method						
Bores	Security	Unauthorised access	Weekly	Visual	N/A	Bore Head	- Record issues in maintenance log - Program maintenance - Conduct *E. coli* testing if bore integrity is compromised and potential for infiltration is identified	N/A	- Record issues in maintenance log - Program maintenance - Repair security fence if required	**Overall Responsibility** Chief Executive Officer **Implementation, review and actions:** Director and Deputy Director of Infrastructure Services **Operations:** Water Officer
Raw Water Tanks	Volume (L)	Insufficient Tank Supply	Constant	Electronic Monitoring	95% raw water tank capacity	Pressure sensor on the raw water tank outlet	Stop Bore supply pumps until capacity reaches 90%	**Upper Critical Limit:** 99% **Lower Critical Limit:** 15%	**Upper Critical Limit:** Shutdown Bore supply pumps **Lower Critical Limit:** Shut down Media Filter Pumps and engage bore supply pumps	
RO Plant	Anti-scalant Dosing	Severe RO Plant Damage	Constant	Electronic Monitoring	0.28L/hr	Electronic dosage meter anti-scalant tank	Adjust dosage pump speed as required	<0.28L/hr	- Shutdown RO plant to prevent damage - Check anti-scalant tanks and replace if low	
	Media filtration pressure	Blinding of filter media	Weekly	Visual	To be determined	Pre and post media filter	N/A	To be determined	- If obvious pre-filter pressure differentials are occurring and automatic backwashes are not reducing pressures media should be replaced.	
	RO Conductivity	Scaling / Aesthetics	Constant	Electronic Monitoring	<350µs/cm	Conductivity sensor prior to RO on butterfly valve & Blended water sensor post RO membranes	Clean/Replace RO membranes	>875µs/cm Blend Conductivity	- Reduce blend valve opening % - Check HMI faults page and conduct maintenance - Engage specialist if required	
	RO pressure	Scaling of membranes	Constant	Electronic Monitoring	To be determined	Pressure valve pre and post RO membranes	Clean/Replace RO membranes	To be determined	- If obvious pre-membrane pressure differentials are occurring, clean or replace membranes - Engage specialist if required	
Reticulation System	Free Chlorine	Bacteria	Fortnightly	Water sample	>0.2 mg/L	**4x locations:** - Clean water tank outlet - Eromanga Pub - Eromanga Hall - Neil Street	Adjust dosage pump speed as required	**Upper Critical Limit:** >2.5mg/L **Lower Critical Limit**: <0.2mg/L	**Upper Critical Limit** - Reduce dosage pump speed - Top up supply with lower chlorine concentration - Engage disinfection specialist if required **Lower Critical Limit** - Check chlorine storage tank level - Increase dosage pump speed - Conduct *E. coli* test and issue boil water alert - Engage specialist if required	
	E. coli			Colilert test	0 - *E. coli* detection	**4x locations:** - Clean water tank outlet - Eromanga Pub - Eromanga Hall - Neil Street	- Isolate if possible - Boil water alert if necessary - Incident investigation and improvement actions implemented	1 - *E. coli* detection	- Implement incident management process - Isolate if possible - Boil water alert if necessary - Incident investigation and improvement actions implemented	
	Turbidity			Water Sample	<0.5 NTU			>1 NTU		
	N/A	Microorganism ingress	6-monthly or if water quality complaint received	Mains Flushing	Flush for ~10mins	Designated flushing points	N/A	N/A	N/A	

9.2 Quilpie and Eromanga Verification Monitoring

Council undertakes quarterly verification monitoring within both schemes. Samples are sent to an external NATA accredited laboratory located in Toowoomba to verify the chemical quality of the water. Due to the remoteness of the Shire, staff availability and seasonal flooding resulting in road closures has often created challenges for Council in complying with the verification monitoring programmes.

Tables 17 and 18 below identifies the verification monitoring programmes for Quilpie and Eromanga.

Table 18: Quilpie verification monitoring programme.

Characteristic	Parameter	ADWG &/or Regulation Value	Associated Hazard	Frequency	Location	Testing Facility	Positions Responsible
Microbial Quality	*E. coli*	Nil Detected – Health	Bacteria	Quarterly	**7x Locations:** - Quilpie Hospital - John Waugh Park - Council Depot - Town Bore 2 - New Depot Bore - Bulloo Park - Council Office	**Toowoomba Regional Council Laboratory**	**Overall Responsibility** Chief Executive Officer **Implementation, and Review** Director and Deputy Director of Infrastructure Services **Operations** Water Operator
	Total Coliforms	Nil Detected					
	Heterotrophic Plate Count	N/A					
	Pseudomonas	N/A					
	Enterococci	N/A					
Physical	Conductivity	N/A	Hazards that arise from natural geological processes in the aquifer				
	True Colour	15 HU – Aesthetic					
	pH	pH >6.5, <8.5 – Aesthetic					
	Total Hardness	200 mg/L – Aesthetic					
	Total Dissolved Solids	600 mg/L – Aesthetic					
	Turbidity	5 NTU – Aesthetic					
Inorganics	Chloride	250mg/L – Aesthetic					
	Fluoride	1.5mg/L – Health					
	Sodium	180mg/L – Aesthetic					
	Nitrate	50mg/L – Health					
	Sulphate	250 mg/L – Aesthetic					
	Ammonia	0.5mg/L – Aesthetic					

Characteristic	Parameter	ADWG &/or Regulation Value	Associated Hazard	Frequency	Location	Testing Facility	Positions Responsible
	Total Iron	0.3mg/L – Aesthetic					
	Total Manganese	0.05mg/L –Aesthetic 0.1mg/L – Health					
	Aluminium	0.2 mg/L – Aesthetic					
	Arsenic	0.01mg/L – Health					
	Cadmium	0.002mg/L – Health					
	Chromium	0.05mg/L – Health					
	Copper	1mg/L – Aesthetic 2mg/L – Health					
	Lead	0.005mg/L – Health					
	Mercury	0.001mg/L – Health					
	Nickel	0.02mg/L – Health					
	Selenium	0.004mg/L – Health					
	Zinc	3mg/L – Aesthetic					
Radiological Activity	Gross Alpha	0.5Bq/L – Aesthetic		2-yearly (Source Water)	- Town Bore 2 - New Depot Bore		
	Gross Beta	0.5Bq/L – Aesthetic					

Table 19: Eromanga verification monitoring programme.

Characteristic	Parameter	ADWG &/or Regulation Value	Associated Hazard	Frequency	Location	Testing Facility	Positions Responsible
Microbial Quality	*E. coli*	Nil Detected – Health	Bacteria	Quarterly (Distribution) Annually (Source Water)	**8x Locations:** **<u>Quarterly</u>** - Clean Water Tank Outlet - Eromanga Pub - Eromanga Hall - Neil Street **<u>Annual</u>** - Hall Bore 1 - Hall Bore 2 - School Bore - Council House Bore	**Toowoomba Regional Council Laboratory**	**Overall Responsibility** Chief Executive Officer **Implementation, and Review** Director and Deputy Director of Infrastructure Services **Operations** Water Operator
	Total Coliforms	Nil Detected					
	Heterotrophic Plate Count	N/A					
	Pseudomonas	N/A					
	Enterococci	N/A					
Physical	Conductivity	N/A	Hazards that arise from natural geological processes in the aquifer				
	True Colour	15 HU – Aesthetic					
	pH	pH >6.5, <8.5 – Aesthetic					
	Total Hardness	200 mg/L – Aesthetic					
	Total Dissolved Solids	600 mg/L – Aesthetic					
	Turbidity	5 NTU – Aesthetic					
Inorganics	Chloride	250mg/L – Aesthetic					
	Fluoride	1.5mg/L – Health					
	Nitrate	50mg/L – Health					
	Sodium	180mg/L – Aesthetic					
	Sulphate	250 mg/L – Aesthetic					
	Ammonia	0.5mg/L – Aesthetic					
	Total Iron	0.3mg/L – Aesthetic					

Characteristic	Parameter	ADWG &/or Regulation Value	Associated Hazard	Frequency	Location	Testing Facility	Positions Responsible
	Total Manganese	0.05mg/L –Aesthetic 0.1mg/L – Health					
	Aluminium	0.2 mg/L – Aesthetic					
	Chlorate	0.8mg/L – Health					
	Trihalomethanes	0.25mg/L – Health					
	Arsenic	0.01mg/L – Health					
	Cadmium	0.002mg/L – Health					
	Chromium	0.05mg/L – Health					
	Copper	1mg/L – Aesthetic 2mg/L – Health					
	Lead	0.005mg/L – Health					
	Mercury	0.001mg/L – Health					
	Nickel	0.02mg/L – Health					
	Selenium	0.004mg/L – Health					
	Zinc	3mg/L – Aesthetic					
Radiological Activity	Gross Alpha	0.5Bq/L – Aesthetic		2-yearly (Source Water)	- Hall Bore 1 - Hall Bore 2 - School Bore - Council House Bore		
	Gross Beta	0.5Bq/L – Aesthetic					

10.0 INCIDENTS AND EMERGENCIES

Quilpie Shire Council operates on a 3-level incident and emergency framework in the management of their drinking water incidents and emergencies, starting at Level 1 (least severe) through to Level 3 (most severe); these are outlined in Table 19 below. It should be noted that during a full-scale emergency response and recovery scenario (e.g. a natural disaster), the Local Disaster Management Group is activated in accordance with QSC's Local Disaster Management Plan. The Quilpie Local Disaster Management Plan can be accessed here:

https://quilpie.qld.gov.au/wp-content/uploads/2022/12/2022-12-Local-Disaster-Management-Plan-V11_.pdf.

During an incident or emergency, Council will notify residents using the usual notification channels, including the Council website and Facebook page. Sensitive users will also be directly notified, using the contact details provided in Table 2 above. Following on from an incident or emergency, Council will undertake debrief sessions with relevant staff members to review all information and identify any preventative measures or procedures that need to be implemented to prevent recurrence or future incidents.

The drinking water incident and emergency action plan for the Quilpie and Eromanga schemes is provided in Section 10.1 below.

Table 20: QSC incident and emergency framework.

Alert Level	Description	Key Management Responses	Positions Responsible
Level 1 Low-Risk Operational Actions	Operational issues that could escalate if not responded to. These types of incidents are managed immediately and effectively by QSC staff, without any public health impact to the community. For example: • Exceedance of an operational limit managed through OCPs, CCPs and operation and maintenance procedures. • Exceedance of an ADWG aesthetic value that can be managed under the DWQMP. • Short-term drinking water infrastructure fail.	1. Notify Water Operator and/or Director of Infrastructure Services. 2. Check and act upon OCPS, CCPs and operation and maintenance procedures. 3. Take appropriate actions to rectify the situation.	Water Operator, Director of Infrastructure Services (DIS)
Level 2 Medium-Risk Incidents and Emergencies	All ADWG health exceedances and incidents where normal actions under the DWQMP do not effectively manage the issue and there is a concern that public health may be impacted. For example: • Detection of a parameter with no water quality criteria that may have an adverse impact upon public health. • Detection of an ADWG aesthetic/screening value exceedance	1. Inform Director of Infrastructure Services and implement short-term management measures. 2. Report incident/event to the Water Regulator. 3. Undertake incident investigation.	Water Operator, DIS, Water Regulator

Alert Level	Description	Key Management Responses	Positions Responsible
	that may have an adverse impact upon public health (e.g. radiological activity). • Minor exceedance of an ADWG health value. • Short-term loss of drinking water supply (<24 hours). • Cyber security breach		
Level 3 High-Risk Declared Disaster	This level of emergency or disaster generally requires coordination across departments and is dealt with at the CEO level. For example: • Widespread outbreak of a waterborne disease. • Major loss of drinking water supply (>24 hours over wide area). • Gross exceedance of an ADWG health guideline value. • Declared disaster. • Long-term drinking water infrastructure failure. • Detection of *E. coli* in Quilpie water supply or Eromanga treated water supply.	1. Notify Director of Infrastructure Services who will inform the Chief Executive Officer 2. CEO makes the call to activate the Local Disaster Management Plan (as required) 3. Report incident/event to the Water Regulator. 4. Implement short-term management measures. 5. Undertake incident investigation.	Water Operator, DIS, Water Regulator, Chief Executive Officer (CEO)

10.1 QSC Incident and Emergency Action Plan

Table 21: QSC drinking water Incident and emergency action plan.

Level	Incident Or Emergency	Summary Of Actions to be Undertaken	Positions Responsible for Actions
1	**Exceedance of an operational limit managed through OCPs, CCPs and operational and maintenance procedures OR exceedance of an ADWG aesthetic value that can be managed under the DWQMP**	1. Water Operator to notify supervisor. 2. Ensure all control measures identified in the OCPs and CCPs are functioning effectively. Review operation and maintenance records for anomalies. If simple adjustment is required, make adjustment and record details. 3. If a more substantial system change is required (e.g. maintenance to overcome a recurring problem), advise DIS so budget can be made available. 4. Organise system change or list for capital works as appropriate.	Water Operator & DIS
	Short-term drinking water infrastructure fail	1. Water Operator to notify supervisor. 2. Determine the potentially affected area and isolate. 3. Inform concerned customers of the details of the incident and anticipated progress (if required). 4. Rectify the problem. 5. Investigate options to avoid any reoccurrence. 6. If a more substantial system change is required (e.g. maintenance to overcome a recurring problem), advise DIS so budget can be made available.	Water Operator & DIS
2	**Detection of a parameter with no water quality criteria that may have an adverse impact upon Public Health OR detection of an ADWG aesthetic value exceedance that may have an adverse impact upon public health**	1. Water Operator or supervisor to notify DIS. 2. Check with the testing laboratory/re-commence in-house testing to confirm the exceedance or adverse water quality criteria. 3. Report details of the incident to the Regulator within 3 hours via the Drinking Water Hotline (P: 1300 596 709) and the online notification form within 24 hours (E: DrinkingWater.Reporting@dlgwv.qld.gov.au). Contact Public Health Unit if required. 4. Determine the potentially affected area and advise customers (via usual communication channels) if required. 5. Commence investigation. Ensure all control measures, OCPs and CCPs are functioning effectively. Some aesthetic exceedances or adverse water quality may be fixed with mains flushing. 6. Once investigation is complete and the issue fixed, re-test the drinking water supply and send samples to the external laboratory (if required) for confirmation that there are no issues. 7. Investigate options to avoid any reoccurrences.	Water Operator, DIS, Water Regulator

Level	Incident Or Emergency	Summary Of Actions to be Undertaken	Positions Responsible for Actions
		8. Upon resolution, provide written report to Regulator (Part 2 of Incident Reporting Form).	
	Minor exceedance of an ADWG health value	1. Water Operator or supervisor to notify DIS. 2. Where an exceedance has been observed check with the testing laboratory for confirmation. 3. Report details to Regulator within 3 hours via the Drinking Water Hotline (P: 1300 596 709) and the online notification form within 24 hours (E: DrinkingWater.Reporting@dlgwv.qld.gov.au). Contact Public Health Unit if required. 4. Determine if water quality can be corrected and the time/resources required. Ensure all control measures, OCPs and CCPs are functioning effectively. 5. Advise customers and make temporary water supply arrangements including bottled potable water (if required). 6. Rectify the problem or inform customers of ongoing water quality limitation. 7. Once rectified, re-test and send the water samples to an external lab for confirmation issue has been resolved (if required). 8. Upon resolution, provide written report to Regulator (Part 2 of Incident Reporting Form).	Water Operator, DIS, Water Regulator
	Short-term loss of drinking water (<24 hours)	1. Water Operator or supervisor to notify DIS. 2. Details of the supply loss or infrastructure fail are to be reported to the Regulator within 3 hours via the Drinking Water Hotline (P: 1300 596 709) and the online notification form within 24 hours (E: DrinkingWater.Reporting@dlgwv.qld.gov.au). Contact Public Health Unit if required. 3. Determine potentially affected area and advise effected customers (via usual communication channels) and implement temporary water restrictions (if applicable). 4. Rectify the problem. 5. Investigate options to avoid any reoccurrence. 6. Upon resolution, provide written report to Regulator (Part 2 of Incident Reporting Form).	Water Operator, DIS, Water Regulator
	Cyber Security Breach	1. Water Operator or supervisor to notify DIS.	Water Operator, DIS, Water Regulator

Level	Incident Or Emergency	Summary Of Actions to be Undertaken	Positions Responsible for Actions
		2. Determine effected area (i.e. access to Council files). 3. Alert Australian Government Cyber Security Hotline (P: (07) 3215 3951) 4. If water infrastructure or Council water-related files have been compromised, report details to the Regulator within 3 hours via the Drinking Water Hotline (P: 1300 596 709) and the online notification form within 24 hours (E: DrinkingWater.Reporting@dlgwv.qld.gov.au). 5. Rectify the problem. Ensure all control measures, OCPs and CCPs are functioning effectively. 6. Investigate options to avoid any reoccurrence. 7. Upon resolution, provide written report to Regulator (Part 2 of Incident Reporting Form).	
3	**Widespread outbreak of a waterborne disease OR *E.coli* detection in the drinking water supply**	1. Water Operator or supervisor to notify DIS. 2. DIS to alert CEO to coordinate notification, investigation and response including activation of the Emergency Response/Disaster Management Plans (as required). 3. Details of the outbreak are to be reported to the Regulator within 3 hours via the Drinking Water Hotline (P: 1300 596 709) and the online notification form within 24 hours (E: DrinkingWater.Reporting@dlgwv.qld.gov.au). 4. Determine the potentially affected area and isolate if possible. Issue a Boil Water Alert and advise effected customers (via usual communication channels) or other precautions as required. 5. Flush all affected mains. 6. Provide additional/temporary chlorine dosing if practical. 7. Undertake a comprehensive contamination investigation and take necessary corrective actions. 8. Upon resolution, provide written report to Regulator (Part 2 of Incident Reporting Form).	Water Operator, DIS, Water Regulator, Chief Executive Officer
	Major loss of drinking water supply (>24 hours) OR long-term drinking water infrastructure fail	1. Water Operator or supervisor to notify DIS. 2. DIS to alert CEO to coordinate notification, investigation and response including activation of the Emergency Response /Disaster Management Pans (as required). 3. Details of the supply loss or infrastructure fail are to be reported to the Regulator within 3 hours via the Drinking Water Hotline (P: 1300 596 709) and the online notification form within 24 hours (E: DrinkingWater.Reporting@dlgwv.qld.gov.au).	Water Operator, DIS, Water Regulator, Chief Executive Officer

Level	Incident Or Emergency	Summary Of Actions to be Undertaken	Positions Responsible for Actions
		4. Determine potentially affected area and advise customers (via usual communication channels) and implement temporary water restrictions/supply arrangements if required. 5. Rectify the problem. 6. Investigate options to avoid any reoccurrence. 7. Upon resolution, provide written report to Regulator (Part 2 of Incident Reporting Form).	
	Gross exceedance of an ADWG health value	1. Water Operator or supervisor to notify DIS. 2. DIS to alert CEO to coordinate notification, investigation and response including activation of the Emergency Response /Disaster Management Pans (as required). 3. Check with the testing laboratory to confirm the exceedance (a sudden gross exceedance is only likely to occur as the result of sabotage or an unreported chemical spill). 4. Report details of the exceedance to the Regulator within 3 hours via the Drinking Water Hotline (P: 1300 596 709) and the online notification form within 24 hours (E: DrinkingWater.Reporting@dlgwv.qld.gov.au). 5. Determine potentially affected area and advise customers (via usual communication channels) not to drink the water. 6. Re-test the drinking water supply and send samples to the external laboratory for confirmation that health exceedance was not a testing error. 7. Make temporary supply arrangements, including bottled potable water if required. 8. Commence investigation into exceedance and rectify the problem. 9. Once, rectified, re-test the drinking water supply and send samples to the external laboratory to confirm that the problem has been fixed and the drinking water is safe for consumption. 10. Investigate options to avoid any reoccurrence. 11. Upon resolution, provide written report to Regulator (Part 2 of Incident Reporting Form).	Water Operator, DIS, Water Regulator, Chief Executive Officer
	Declared disaster	1. Water Operator or supervisor to notify DIS.	Water Operator, DIS, Water Regulator, Chief Executive Officer

Level	Incident Or Emergency	Summary Of Actions to be Undertaken	Positions Responsible for Actions
		2. DIS to alert CEO and liaise with Local Disaster Management centre to monitor the potential effect of the disaster upon water supply services. 3. If impact to drinking water services, details of the event to be reported to the Regulator within 3 hours via the Drinking Water Hotline (P: 1300 596 709) and the online notification form within 24 hours (E: DrinkingWater.Reporting@dlgwv.qld.gov.au). 4. If the water supply has been affected, consider a Boil Water Alert and take relevant actions as per the DWQMP and direction from the Local disaster Management Centre and Water Regulator. 5. If the water supply has been affected, upon resolution, provide written report to Regulator (Part 2 of Incident Reporting Form).	

11.0 INFORMATION MANAGEMENT

Quilpie Shire Council is a relatively small organisation with a records system that is available to all relevant staff. Water quality results are received by Council's Water Officer. Data is maintained in electronic format in a spreadsheet to maintain a single record of all water quality data. Analytical reports received from the Toowoomba lab and in-house test results are uploaded into Council's information management system *Info Expert* and stored in electronic format in a chronological order to ensure information is easily accessible. Records are stored for a minimum of 7 years.

In order to manage information effectively it is necessary to identify stakeholders involved in the delivery and management of safe drinking water supplies. Table 21 below provides a breakdown of the information management requirements for the Quilpie and Eromanga schemes.

Table 22: QSC information management staff responsibilities.

Role	Responsibility
Chief Executive Officer	Ensure quality management systems in place
Administration Officer	Record Keeping - Monitoring - Filing operational monitoring inspection forms - Filing verification monitoring lab reports - Filing monthly in-house bacteriological results - Collation of weekly operational monitoring data - Collation of monthly bacteriological results to dataset - Collation of verification monitoring results to dataset - Filing chain of custody documents for verification testing samples
	Record Keeping General - Record all incidents, file notifications and associated data - Record water quality complaints on complaints register
	Document Control/ Quality Systems Management - Maintain document register for all DWQMP related documents including O&M procedures - Track review dates for documents and initiate reviews
Water Officer	Operational inspections of water bores in Quilpie and Eromanga - Completion of weekly visual inspections - Delivery of inspection forms to Administration Officer
	Operational water testing and maintenance inspections at Eromanga RO Plant - Completion of weekly visual inspections - Documentation of maintenance works - Delivery of water testing and maintenance documentation to Administration Officer
	Operations in-house Bacteriological testing - Record and document test results - Delivery of water testing results to Administration Officer
	Monthly Water Officers Report - Record and document water management activities
	Quarterly Verification Monitoring - Signing chain of custody document prior to sending samples - Sampling water and freight tot lab

Role	Responsibility
	DWQMP Procedures - Develop or assist with the development of Operational & Maintenance procedures - Amend procedures when changes are implemented
	Incident Management - Compile or assist with compilation of incident notification - Record incident in monthly Water Officers report. - Direct water quality complaints or record complaint information to be recorded on the water quality complaints register

11.1 Document Control Procedures

Council's document control procedures require Operation and Maintenance documents to be given a document number, title, and revision date used for maintaining the documented control procedure. The principal purpose of the document control procedures is to implement routine revision of documents and maintain up-to-date records as required to all necessary parties.

The document control procedures adopted by QSC form a key component of their quality assurance system. The control procedures track documentation preparation and handling and in turn place accountability with employees. The identification of version number and subsequent version date ensures that only the most recent valid information is published and circulated.

Based on control procedures, documents are routinely reviewed on a regular basis and amended where required to ensure employees have access to the most current information. This process is reflective of QCS's commitment to continual development.

In order to provide a robust document control system a document register is to be developed identifying all of the documentation relating to DWQMP for the water supply schemes of QSC. The document register will record the title of all documents relating to drinking water quality management, stakeholders the document is targeted for, the locations that the documents are to be kept, the approval date of the document and the next scheduled review date for the document.

APPENDIX A

BORE REPORT CARDS

Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
116266	Artesian - Controlled Flow	Existing	07/03/2009	Charleville	6150 - QUILPIE

Details

Description			
Parish	5162 - WOORBIL		
Original Name			
Driller Name	TAYLER, STEPHEN CHARLES		
Const Method	MUD ROTARY		
Bore Line			
D/O File No	V17 0274	**Polygon**	
R/O File No		**Equipment**	HW
H/O File No		**RN of Bore Replaced**	
Log Received Date	19/03/2009	**Data Owner**	
Roles	Water Supply		

Location

Datum	GDA94	**Basin**	0112
Latitude	26-37-05	**Sub-area**	
Longitude	144-16-26	**Lot**	3
GIS Latitude	-26.61809	**Plan**	SP204518
GIS Longitude	144.2737307		
Easting	228555	**Map Scale**	254 - 1: 250 000
Northing	7052981	**Map Series**	N - New Series
Zone	55	**Map No**	SG55-9
Accuracy	GPS	**Map Name**	QUILPIE
GPS Accuracy	3	**Prog Section**	
Checked	Yes		

Casing

6 ***records for RN*** **116266**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	21/02/2009	1	0.00	156.00	Steel Casing	6.400	WT - Wall Thickness	219
A	21/02/2009	2	0.00	156.00	Grout			279
A	04/03/2009	3	0.00	817.00	Steel Casing	6.400	WT - Wall Thickness	168
A	05/03/2009	4	0.00	817.00	Grout			200
A	07/03/2009	5	809.30	966.30	Steel Casing	6.000	WT - Wall Thickness	141

Bore Report

From Year:

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	07/03/2009	6	858.30	966.30	Perforated or Slotted Casing	3.000	AP - Aperture Size	141

Strata Logs

15 *records for RN* **116266**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.00	TOP SOIL
2	1.00	20.00	WHITE ROCK
3	20.00	61.00	GREY CLAY
4	61.00	73.00	SDST
5	73.00	85.00	GREY CLAY
6	85.00	93.00	SDST
7	93.00	111.00	GREY SHALE
8	111.00	136.00	SHALE & SILTSTONE
9	136.00	143.00	GREY SHALE
10	143.00	870.00	SILTSTONE WITH SHALE LAYERS
11	870.00	904.00	WHITE MUDSTONE
12	904.00	914.00	SHALE & SDST LAYERS ****
13	914.00	930.00	SDST **** 45 L/SEC
14	930.00	960.00	SILTSTONE AND SDST LAYERS
15	960.00	966.30	SHALE WITH SILTSTONE

Stratigraphies

0 *records for RN* **116266**

Aquifers

1 *records for RN* **116266**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	914.00	960.00	SDST - Sandstone	07/03/2009	79.70	Y	POTABLE		Y	PS	HOORAY SANDSTONE

Pump Tests Part 1

1 *records for RN* 116266

Pipe	Date	Rec	RN of Pumped Bore	Top (m)	Bottom (m)	Dist (m)	Meth	Test Types	Pump Type	Suction Set (m)	Q Prior to Test (l/s)	Dur of Q PR (mins)	Pres on Arriv (m)	Q on Arriv (l/s/)
A	26/03/2009	1	116266	914.00	960.00	0.80	ART	AC FR ST DT			0.00		76.44	0.00

Pump Tests Part 2

1 *records for RN* 116266

Pipe	Date	Rec	Test Dur (mins)	SWL(m)	Recov Time (mins)	Resid DD (m)	Max DD or P RED (m)	Q at Max DD (l/s)	Time to Max DD (mins)	Max Q (l/s)	Calc Stat HD (m)	Design Yield (l/s)	Design BP (m)	Suct. Set (m)	Tmsy (m2/Day)	Stor
A	26/03/2009	1	360	82.16	120		67.35	60.54	120	63.55	81.53				3100	

Bore Conditions

1 *records for RN* 116266

	Drain Details			*Headworks*									
Date	Tot Len (km)	Max Run (km)	Cond	Ret Len (km)	Cond	Ctrl	Leak	Flow Irreg	Precip	Est Use (ML/yr)	Num of Cattle	Num of Sheep	Comments
26/03/2008					Good	F							Town supply not hooked up when tested.

Elevations

1 *records for RN* 116266

Pipe	Date	Elevation (m)	Precision		Datum	Meas	Point	Survey Source
X	26/03/2009	188.00	GPS	Global Positioning System	AHD - Aust. Height Datum	N	Natural Surface	JOHN YOUNG

Water Analysis Part 1

1 *records for RN* 116266

Bore Report

From Year:

Pipe	Date	Rec	Analyst	Analysis No	Depth (m)	Meth	Src	Cond (uS/cm)	pH	Si (mg/L)	Total Ions (mg/L)	Total Solids (mg/L)	Hard	Alk	Fig. of Merit	SAR	RAH
A	26/03/2009	1	GCL	195495	914.00	PU	GB	778	8.6	43	621.00	488.00	6	296	0.0	32.0	5.80

Water Analysis Part 2

1 ***records for RN*** **116266**

Pipe	Date	Rec	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	26/03/2009	1	184.0	2.9	2.4	0.1	<0.01	345.0	<0.01	7.9	72.0	1.90	<0.5	4.6	<0.01	<0.05	0.27	<0.03

Water Levels

0 ***records for RN*** **116266**

Wire Line Logs

0 ***records for RN*** **116266**

Field Measurements

1 ***records for RN*** **116266**

Pipe	Date	Depth (m)	Conduct (uS/cm)	pH	Temp (C)	NO3 (mg/L)	DO2 (mg/L)	Eh (mV)	Alkalinity (mV)	Samp	Method	Samp	Source
A	26/03/2009	914.00	794	9.2	78.0					PU	Pump - Other or Flowing Bore	GB	Groundwater - from Bore

Special Water Analysis

0 ***records for RN*** **116266**

Bore Report

From Year:

User Licence and Conditions

Disclaimer

Based on or contains data provided by the State of Queensland 2025. The State makes no representations or warranties in relation to the supplied data, and you agree that, to the extent permitted by law, all warranties relating to accuracy, reliability, completeness, currency or suitability for any particular purpose and all liability for any loss, damage or costs (including consequential damage) incurred in any way (including but not limited to that arising from negligence) in connection with any use of or reliance on the supplied data are excluded or limited. You agree to continually indemnify the State (including its officers and employees) against any loss, cost, expense, damage and liability of any kind (including consequential damage and liability in negligence) arising directly or indirectly from or related to any claim relating to your use of the supplied data or any product made from the supplied data.

© State of Queensland, 2025 The Queensland Government supports and encourages the dissemination and exchange of its information. The copyright in this publication is licensed under a Creative Commons Attribution 4.0 International (CC BY 4.0) licence. Under this licence you are free, without having to seek our permission, to use this publication in accordance with the licence terms. You must keep intact the copyright notice and attribute the State of Queensland as the source of the publication.

Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
116564	Artesian - Controlled Flow	Existing	12/06/2020	Charleville	6150 - QUILPIE

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name			
Driller Name	BEALE, WILLIAM		
Const Method	ROTARY MUD		
Bore Line			
D/O File No	083/0023605 (0274)2	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	07/12/2020	**Data Owner**	
Roles	Town Water Supply		

Location

Datum	GDA94	**Basin**	0112
Latitude	26-36-51	**Sub-area**	
Longitude	144-15-31	**Lot**	
GIS Latitude	-26.614100066	**Plan**	
GIS Longitude	144.2585197413		
Easting	227018	**Map Scale**	
Northing	7053378	**Map Series**	
Zone	55	**Map No**	
Accuracy		**Map Name**	
GPS Accuracy		**Prog Section**	
Checked	Yes		

Casing

10 ***records for RN*** **116564**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	12/06/2020	1	0.00	142.00	Steel Casing	6.400	WT - Wall Thickness	219
A	12/06/2020	2	0.00	841.00	Steel Casing	6.400	WT - Wall Thickness	168
A	12/06/2020	3	828.00	975.00	Steel Casing	6.600	WT - Wall Thickness	141
A	12/06/2020	4	0.00	6.00	Steel Casing	6.400	WT - Wall Thickness	305
A	12/06/2020	5	0.00	841.00	Centraliser			

Bore Report

From Year:

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	12/06/2020	6	860.00	960.00	Perforated or Slotted Casing	10.000	AP - Aperture Size	141
A	12/06/2020	10	0.00	142.00	Centraliser			
X	12/06/2020	7	0.00	6.00	Grout			350
X	12/06/2020	8	0.00	142.00	Grout			270
X	12/06/2020	9	0.00	841.00	Grout			200

Strata Logs

10 ***records for RN*** **116564**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	2.00	RED SOFT SOIL
2	2.00	8.00	HARD CAP ROCK - VERY HARD
3	8.00	34.00	RED ROCK - NOT HARD
4	34.00	128.00	CLAY YELLOW, RED & WHITE
5	128.00	265.00	SHALE DARK GREY
6	265.00	455.00	SHALE WITH S-STONE BANDS (HARD)
7	455.00	462.00	SANDSTONE F/M
8	462.00	731.00	SHALE WITH LIMESTONE BANDS
9	731.00	841.00	SHALE WITH THIN S-STONE STRINGERS. HARD
10	841.00	965.00	SANDSTONE, F/M/C VERY HARD STRINGERS THROUGH OUT *

Stratigraphies

0 ***records for RN*** **116564**

Aquifers

1 ***records for RN*** **116564**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	841.00	965.00	SDST - Sandstone			Y	800 US/CM	50.00	Y	PS	HOORAY SANDSTONE

Bore Report

From Year:

Pump Tests Part 1	**0**	*records for RN*	**116564**
Pump Tests Part 2	**0**	*records for RN*	**116564**
Bore Conditions	**0**	*records for RN*	**116564**
Elevations	**0**	*records for RN*	**116564**
Water Analysis Part 1	**0**	*records for RN*	**116564**
Water Analysis Part 2	**0**	*records for RN*	**116564**
Water Levels	**0**	*records for RN*	**116564**
Wire Line Logs	**0**	*records for RN*	**116564**
Field Measurements	**0**	*records for RN*	**116564**
Special Water Analysis	**0**	*records for RN*	**116564**

Bore Report

From Year:

User Licence and Conditions

Disclaimer

Based on or contains data provided by the State of Queensland 2025. The State makes no representations or warranties in relation to the supplied data, and you agree that, to the extent permitted by law, all warranties relating to accuracy, reliability, completeness, currency or suitability for any particular purpose and all liability for any loss, damage or costs (including consequential damage) incurred in any way (including but not limited to that arising from negligence) in connection with any use of or reliance on the supplied data are excluded or limited. You agree to continually indemnify the State (including its officers and employees) against any loss, cost, expense, damage and liability of any kind (including consequential damage and liability in negligence) arising directly or indirectly from or related to any claim relating to your use of the supplied data or any product made from the supplied data.

© State of Queensland, 2025 The Queensland Government supports and encourages the dissemination and exchange of its information. The copyright in this publication is licensed under a Creative Commons Attribution 4.0 International (CC BY 4.0) licence. Under this licence you are free, without having to seek our permission, to use this publication in accordance with the licence terms. You must keep intact the copyright notice and attribute the State of Queensland as the source of the publication.

Eromanga Town Hall Rear Bore

Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
213504	Sub-Artesian Facility	Existing	17/07/2013	Charleville	6150 - QUILPIE

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name	HALL BORE 2		
Driller Name	HOFFMANN, SCOTT		
Const Method	ROTARY AIR		
Bore Line			
D/O File No		**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	03/06/2026	**Data Owner**	
Roles			

Location

Datum	GDA94	**Basin**	0031
Latitude	26-40-11.84	**Sub-area**	
Longitude	143-15-59.59	**Lot**	105
GIS Latitude	-26.669954858	**Plan**	E3051
GIS Longitude	143.2665531686		
Easting	725564.7	**Map Scale**	
Northing	7048116.2	**Map Series**	
Zone	54	**Map No**	
Accuracy		**Map Name**	
GPS Accuracy		**Prog Section**	
Checked	Yes		

Casing

5 ***records for RN*** **213504**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	17/07/2013	1	0.00	5.00	Steel Casing	5.000	WT - Wall Thickness	219
A	17/07/2013	2	0.00	29.60	Polyvinyl Chloride	11.000	WT - Wall Thickness	141
A	17/07/2013	3	23.60	29.60	Perforated or Slotted Casing	1.500	AP - Aperture Size	141
X	17/07/2013	4	0.00	5.00	Grout			300
X	17/07/2013	5	17.50	29.60	Gravel Pack	2.000	GR - Gravel Size	172

Bore Report

From Year:

Strata Logs

8 ***records for RN*** **213504**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.30	ROADBASE
2	0.30	3.00	CLAY, GREY
3	3.00	4.00	SANDSTONE
4	4.00	7.00	CLAY, SANDY, LIGHT BROWN
5	7.00	9.00	CLAY, SANDY, WHITE, LIGHT BROWN
6	9.00	11.00	CLAY, SANDY, BROWN
7	11.00	16.00	CLAY, SANDY, RED, BROWN, SOME ROCK LAYERS *
8	16.00	29.60	SILTSTONE, BROWN AND CREAM; SOME IRONSTONE LAYERS WITH SANDY CLAY *

Stratigraphies

0 ***records for RN*** **213504**

Aquifers

2 ***records for RN*** **213504**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	14.00		CLAY - Clay						Y	SC	
2	23.00		SSTO - Siltstone	17/07/2013	-11.80	N	POTABLE	1.00	Y	SC	

Pump Tests Part 1

1 ***records for RN*** **213504**

Pipe	Date	Rec	RN of Pumped Bore	Top (m)	Bottom (m)	Dist (m)	Meth	Test Types	Pump Type	Suction Set (m)	Q Prior to Test (l/s)	Dur of Q PR (mins)	Pres on Arriv (m)	Q on Arriv (l/s/)
A	17/07/2013	1							AURLIFT	-20.00				

Pump Tests Part 2

1 ***records for RN*** **213504**

Pipe	Date	Rec	Test Dur	SWL(m)	Recov Time	Resid DD (m)	Max DD or P	Q at Max DD	Time to Max DD	Max Q (l/s)	Calc Stat HD	Design Yield	Design BP (m)	Suct. Set (m)	Tmsy (m2/Day)	Stor

Bore Report

From Year:

		(mins)	(mins)	RED (m)	(l/s)	(mins)	(m)	(l/s)		
A	17/07/2013	1	120	-11.80	7.40	1.00			-20.00	11

Bore Conditions
0 *records for RN* **213504**

Elevations
0 *records for RN* **213504**

Water Analysis Part 1
0 *records for RN* **213504**

Water Analysis Part 2
0 *records for RN* **213504**

Water Levels
0 *records for RN* **213504**

Wire Line Logs
0 *records for RN* **213504**

Field Measurements
0 *records for RN* **213504**

Special Water Analysis
0 *records for RN* **213504**

Bore Report

From Year:

User Licence and Conditions

Disclaimer

Based on or contains data provided by the State of Queensland 2026. The State makes no representations or warranties in relation to the supplied data, and you agree that, to the extent permitted by law, all warranties relating to accuracy, reliability, completeness, currency or suitability for any particular purpose and all liability for any loss, damage or costs (including consequential damage) incurred in any way (including but not limited to that arising from negligence) in connection with any use of or reliance on the supplied data are excluded or limited. You agree to continually indemnify the State (including its officers and employees) against any loss, cost, expense, damage and liability of any kind (including consequential damage and liability in negligence) arising directly or indirectly from or related to any claim relating to your use of the supplied data or any product made from the supplied data.

© State of Queensland, 2026 The Queensland Government supports and encourages the dissemination and exchange of its information. The copyright in this publication is licensed under a Creative Commons Attribution 4.0 International (CC BY 4.0) licence. Under this licence you are free, without having to seek our permission, to use this publication in accordance with the licence terms. You must keep intact the copyright notice and attribute the State of Queensland as the source of the publication.

Eromanga Town Hall Front Bore

Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
116267	Sub-Artesian Facility	Existing	23/03/2009	Charleville	6150 - QUILPIE

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name	PUBLIC HALL		
Driller Name	DALY, KENNETH PATRICK		
Const Method	AIR ROTARY		
Bore Line			
D/O File No		**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	06/04/2009	**Data Owner**	
Roles	Water Supply		

Location

Datum	GDA94	**Basin**	0031
Latitude	26-40-11.83	**Sub-area**	
Longitude	143-15-59.6	**Lot**	105
GIS Latitude	-26.6699525271	**Plan**	E3051
GIS Longitude	143.2665546821		
Easting	725564.8	**Map Scale**	254 - 1: 250 000
Northing	7048116.4	**Map Series**	N - New Series
Zone	54	**Map No**	SG 54-12
Accuracy	GPS	**Map Name**	
GPS Accuracy	3	**Prog Section**	
Checked	Yes		

Casing

4 ***records for RN*** **116267**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	22/03/2009	1	0.00	6.00	Steel Casing	6.400	WT - Wall Thickness	168
A	22/03/2009	2	0.00	6.00	Grout			215
A	23/03/2009	3	0.00	38.00	Steel Casing	4.800	WT - Wall Thickness	141
A	23/03/2009	4	19.55	35.45	Perforated or Slotted Casing	4.000	AP - Aperture Size	141

Strata Logs

9 ***records for RN*** **116267**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.00	TOP SOIL
2	1.00	9.00	WHITE CLAY & GRAVEL
3	9.00	17.30	YELLOW & RED CLAY & GRAVEL
4	17.30	19.20	RED ROCK & FINE SAND
5	19.20	28.70	WHITE & RED ROCK & GRAVEL ****
6	28.70	29.70	CONGLOMERATE
7	29.70	30.30	WHITE ROCK & IRONSTONE ****
8	30.30	33.50	WHITE & RED ROCK & FINE SAND ****
9	33.50	38.00	WHITE ROCK **** 5 L/SEC

Stratigraphies

0 *records for RN* **116267**

Aquifers

1 *records for RN* **116267**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	19.20	38.00	SAGR - Sand and Gravel	23/03/2009	-12.00	N	POTABLE	5.00	Y	PS	WINTON FORMATION

Pump Tests Part 1

0 *records for RN* **116267**

Pump Tests Part 2

0 *records for RN* **116267**

Bore Conditions

0 *records for RN* **116267**

Elevations

0 *records for RN* **116267**

Water Analysis Part 1

0 *records for RN* **116267**

Water Analysis Part 2

0 *records for RN* **116267**

Water Levels

0 *records for RN* **116267**

Bore Report

From Year:

Wire Line Logs

0 *records for RN* **116267**

Field Measurements

0 *records for RN* **116267**

Special Water Analysis

0 *records for RN* **116267**

Bore Report

From Year:

User Licence and Conditions

Disclaimer

Based on or contains data provided by the State of Queensland 2026. The State makes no representations or warranties in relation to the supplied data, and you agree that, to the extent permitted by law, all warranties relating to accuracy, reliability, completeness, currency or suitability for any particular purpose and all liability for any loss, damage or costs (including consequential damage) incurred in any way (including but not limited to that arising from negligence) in connection with any use of or reliance on the supplied data are excluded or limited. You agree to continually indemnify the State (including its officers and employees) against any loss, cost, expense, damage and liability of any kind (including consequential damage and liability in negligence) arising directly or indirectly from or related to any claim relating to your use of the supplied data or any product made from the supplied data.

© State of Queensland, 2026 The Queensland Government supports and encourages the dissemination and exchange of its information. The copyright in this publication is licensed under a Creative Commons Attribution 4.0 International (CC BY 4.0) licence. Under this licence you are free, without having to seek our permission, to use this publication in accordance with the licence terms. You must keep intact the copyright notice and attribute the State of Queensland as the source of the publication.

Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
213505	Sub-Artesian Facility	Existing	18/07/2013	Charleville	6150 - QUILPIE

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name	EROMANGA SCHOOL BORE		
Driller Name	HOFFMANN, SCOTT		
Const Method	ROTARY AIR		
Bore Line			
D/O File No		**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	03/06/2026	**Data Owner**	
Roles			

Location

Datum	GDA94	**Basin**	0031
Latitude	26-40-11.78	**Sub-area**	
Longitude	143-16-06.74	**Lot**	302
GIS Latitude	-26.66994	**Plan**	E3051
GIS Longitude	143.26854		
Easting	725762.5	**Map Scale**	
Northing	7048114.3	**Map Series**	
Zone	54	**Map No**	
Accuracy		**Map Name**	
GPS Accuracy		**Prog Section**	
Checked	Yes		

Casing

5 ***records for RN*** **213505**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	18/07/2013	1	0.00	5.80	Steel Casing	5.000	WT - Wall Thickness	219
A	18/07/2013	2	0.00	25.00	Polyvinyl Chloride	11.000	WT - Wall Thickness	141
A	18/07/2013	3	19.00	25.00	Perforated or Slotted Casing	1.500	AP - Aperture Size	141
X	18/07/2013	4	0.00	5.80	Grout			300
X	18/07/2013	5	13.00	25.00	Gravel Pack	2.000	GR - Gravel Size	171

Bore Report

From Year:

Strata Logs

8 *records for RN* **213505**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.50	TOPSOIL
2	0.50	3.20	CLAY, GREY
3	3.20	4.20	SANDSTONE
4	4.20	7.20	CLAY, SANDY, LIGHT BROWN
5	7.20	10.00	CLAY, SANDY, WHITE, LIGHT BROWN
6	10.00	14.20	CLAY, SANDY, BROWN
7	14.20	22.20	CLAY, SANDY, RED, BROWN, SOME ROCK LAYERS *
8	22.20	25.00	IRONSTONE, SILTSTONE, MOTTLED RED AND WHITE

Stratigraphies

0 *records for RN* **213505**

Aquifers

2 *records for RN* **213505**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	14.00		CLAY - Clay						Y	SC	
2	19.00		CLAY - Clay	18/07/2013	-11.80	N	POTABLE	2.00	Y	SC	

Pump Tests Part 1

1 *records for RN* **213505**

Pipe	Date	Rec	RN of Pumped Bore	Top (m)	Bottom (m)	Dist (m)	Meth	Test Types	Pump Type	Suction Set (m)	Q Prior to Test (l/s)	Dur of Q PR (mins)	Pres on Arriv (m)	Q on Arriv (l/s/)
A	18/07/2013	1							AIRLIFT	-18.00				

Pump Tests Part 2

1 *records for RN* **213505**

Pipe	Date	Rec	Test Dur	SWL(m)	Recov Time	Resid DD (m)	Max DD or P	Q at Max DD	Time to Max DD	Max Q (l/s)	Calc Stat HD	Design Yield	Design BP (m)	Suct. Set (m)	Tmsy (m2/Day)	Stor

Bore Report

From Year:

		(mins)	(mins)	RED (m)	(l/s)	(mins)	(m)	(l/s)		
A	18/07/2013	1	120	-11.80	4.20	2.00			-18.00	45

Bore Conditions
0 *records for RN* **213505**

Elevations
0 *records for RN* **213505**

Water Analysis Part 1
0 *records for RN* **213505**

Water Analysis Part 2
0 *records for RN* **213505**

Water Levels
0 *records for RN* **213505**

Wire Line Logs
0 *records for RN* **213505**

Field Measurements
0 *records for RN* **213505**

Special Water Analysis
0 *records for RN* **213505**

Bore Report

From Year:

User Licence and Conditions

Disclaimer

Based on or contains data provided by the State of Queensland 2026. The State makes no representations or warranties in relation to the supplied data, and you agree that, to the extent permitted by law, all warranties relating to accuracy, reliability, completeness, currency or suitability for any particular purpose and all liability for any loss, damage or costs (including consequential damage) incurred in any way (including but not limited to that arising from negligence) in connection with any use of or reliance on the supplied data are excluded or limited. You agree to continually indemnify the State (including its officers and employees) against any loss, cost, expense, damage and liability of any kind (including consequential damage and liability in negligence) arising directly or indirectly from or related to any claim relating to your use of the supplied data or any product made from the supplied data.

© State of Queensland, 2026 The Queensland Government supports and encourages the dissemination and exchange of its information. The copyright in this publication is licensed under a Creative Commons Attribution 4.0 International (CC BY 4.0) licence. Under this licence you are free, without having to seek our permission, to use this publication in accordance with the licence terms. You must keep intact the copyright notice and attribute the State of Queensland as the source of the publication.

Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
213506	Sub-Artesian Facility	Existing	20/07/2013	Charleville	6150 - QUILPIE

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name	HOUSE BORE		
Driller Name	HOFFMANN, SCOTT		
Const Method	ROTARY AIR		
Bore Line			
D/O File No		**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	03/06/2026	**Data Owner**	
Roles	Domestic		

Location

Datum	GDA94	**Basin**	0031
Latitude	26-40-03.11	**Sub-area**	
Longitude	143-16-13.12	**Lot**	5
GIS Latitude	-26.66753	**Plan**	CP857799
GIS Longitude	143.27031		
Easting	725943.4	**Map Scale**	
Northing	7048378.2	**Map Series**	
Zone	54	**Map No**	
Accuracy		**Map Name**	
GPS Accuracy		**Prog Section**	
Checked	Yes		

Casing

4 ***records for RN*** **213506**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	20/07/2013	1	0.00	5.80	Steel Casing	6.400	WT - Wall Thickness	219
A	20/07/2013	2	0.00	29.80	Polyvinyl Chloride	11.000	WT - Wall Thickness	141
A	20/07/2013	3	23.80	29.80	Perforated or Slotted Casing			141
X	20/07/2013	4	0.00	5.80	Grout			300

Strata Logs

8 ***records for RN*** **213506**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.20	ROADBASE
2	0.20	3.00	CLAY, SILTY, GREY
3	3.00	4.00	SANDSTONE
4	4.00	12.00	CLAY, SANDY, YELLOW, BROWN
5	12.00	15.00	CLAY, SANDY, PUGGY
6	15.00	18.00	SILTSTONE, YELLOW, BROWN
7	18.00	26.00	SILTSTONE, WHITE *
8	26.00	29.80	IRONSTONE, SILTSTONE, MOTTLED RED AND LIGHT GREY

Stratigraphies

0 *records for RN* **213506**

Aquifers

1 *records for RN* **213506**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	23.80		SSTO - Siltstone	20/07/2013	-11.50	N	POTABLE	1.00	Y	SC	

Pump Tests Part 1

1 *records for RN* **213506**

Pipe	Date	Rec	RN of Pumped Bore	Top (m)	Bottom (m)	Dist (m)	Meth	Test Types	Pump Type	Suction Set (m)	Q Prior to Test (l/s)	Dur of Q PR (mins)	Pres on Arriv (m)	Q on Arriv (l/s/)
A	20/07/2013	1							AIRLIFT	-20.00				

Pump Tests Part 2

1 *records for RN* **213506**

Pipe	Date	Rec	Test Dur (mins)	SWL(m)	Recov Time (mins)	Resid DD (m)	Max DD or P RED (m)	Q at Max DD (l/s)	Time to Max DD (mins)	Max Q (l/s)	Calc Stat HD (m)	Design Yield (l/s)	Design BP (m)	Suct. Set (m)	Tmsy (m2/Day)	Stor
A	20/07/2013	1	120	-11.50			7.70	1.00						-20.00	10	

Bore Report

From Year:

Bore Conditions	**0** *records for RN* **213506**
Elevations	**0** *records for RN* **213506**
Water Analysis Part 1	**0** *records for RN* **213506**
Water Analysis Part 2	**0** *records for RN* **213506**
Water Levels	**0** *records for RN* **213506**
Wire Line Logs	**0** *records for RN* **213506**
Field Measurements	**0** *records for RN* **213506**
Special Water Analysis	**0** *records for RN* **213506**

Bore Report

From Year:

User Licence and Conditions

Disclaimer

Based on or contains data provided by the State of Queensland 2026. The State makes no representations or warranties in relation to the supplied data, and you agree that, to the extent permitted by law, all warranties relating to accuracy, reliability, completeness, currency or suitability for any particular purpose and all liability for any loss, damage or costs (including consequential damage) incurred in any way (including but not limited to that arising from negligence) in connection with any use of or reliance on the supplied data are excluded or limited. You agree to continually indemnify the State (including its officers and employees) against any loss, cost, expense, damage and liability of any kind (including consequential damage and liability in negligence) arising directly or indirectly from or related to any claim relating to your use of the supplied data or any product made from the supplied data.

© State of Queensland, 2026 The Queensland Government supports and encourages the dissemination and exchange of its information. The copyright in this publication is licensed under a Creative Commons Attribution 4.0 International (CC BY 4.0) licence. Under this licence you are free, without having to seek our permission, to use this publication in accordance with the licence terms. You must keep intact the copyright notice and attribute the State of Queensland as the source of the publication.

APPENDIX B

QUILPIE DRINKING WATER QUALITY TRENDED DATA

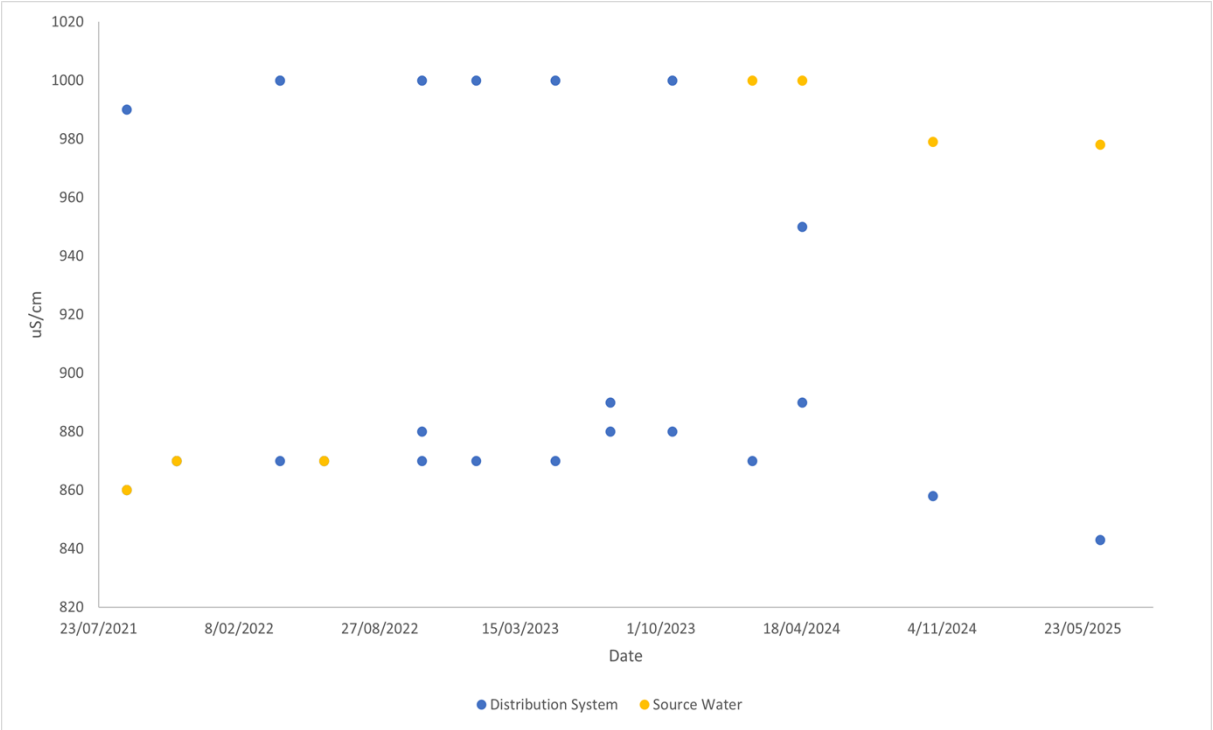


Figure 8: Conductivity trends for the Quilpie scheme (2021- 2025).

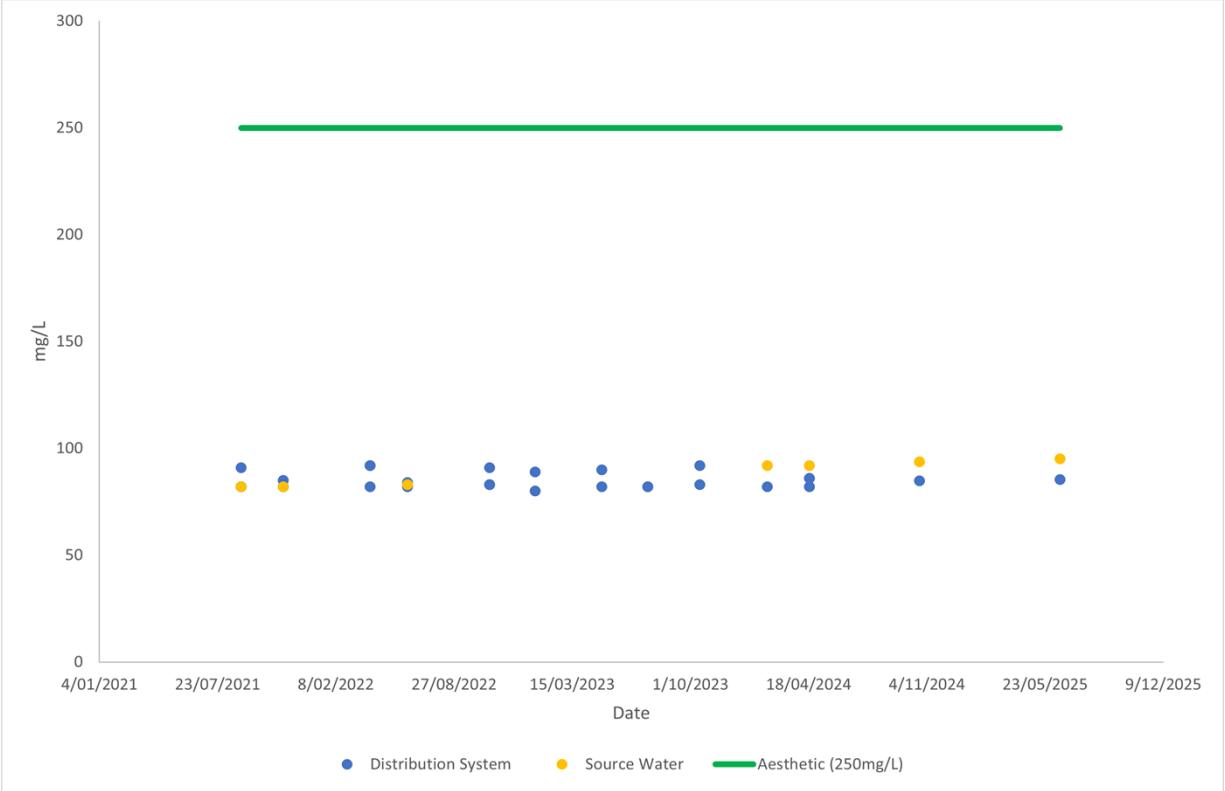


Figure 9: Chloride trends for the Quilpie scheme (2021- 2025).

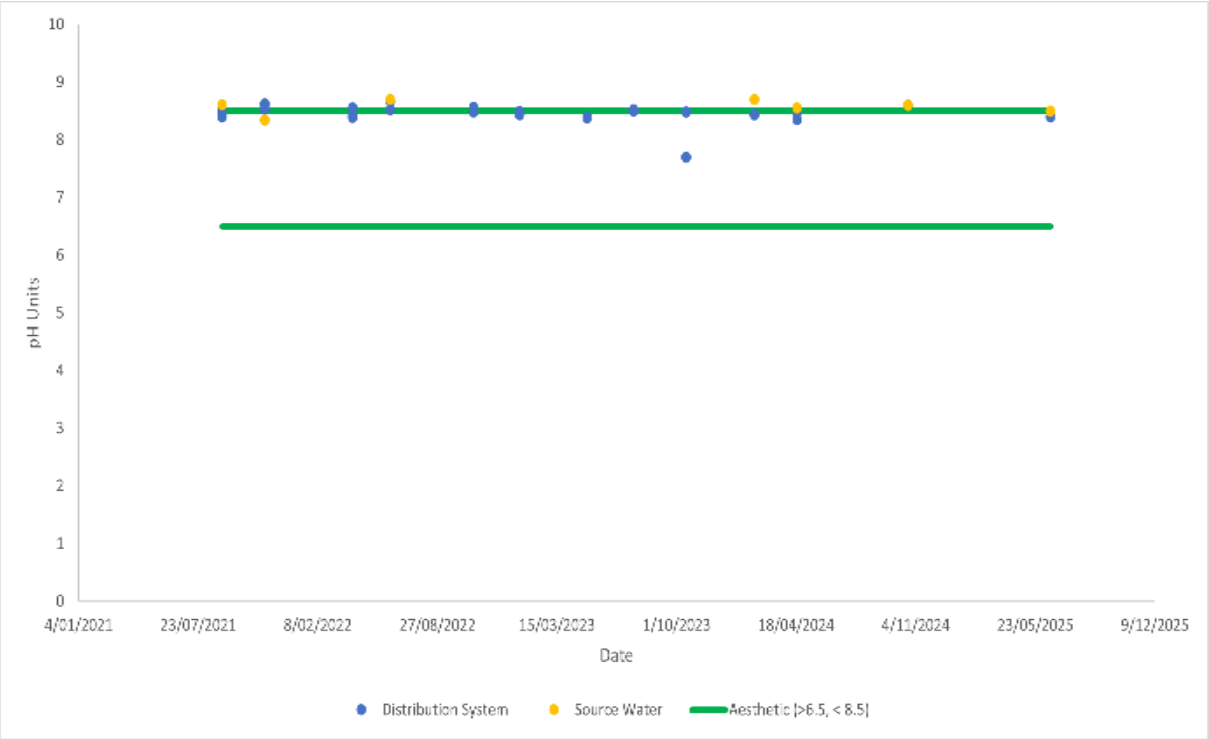


Figure 10: pH trends for the Quilpie scheme (2021- 2025).

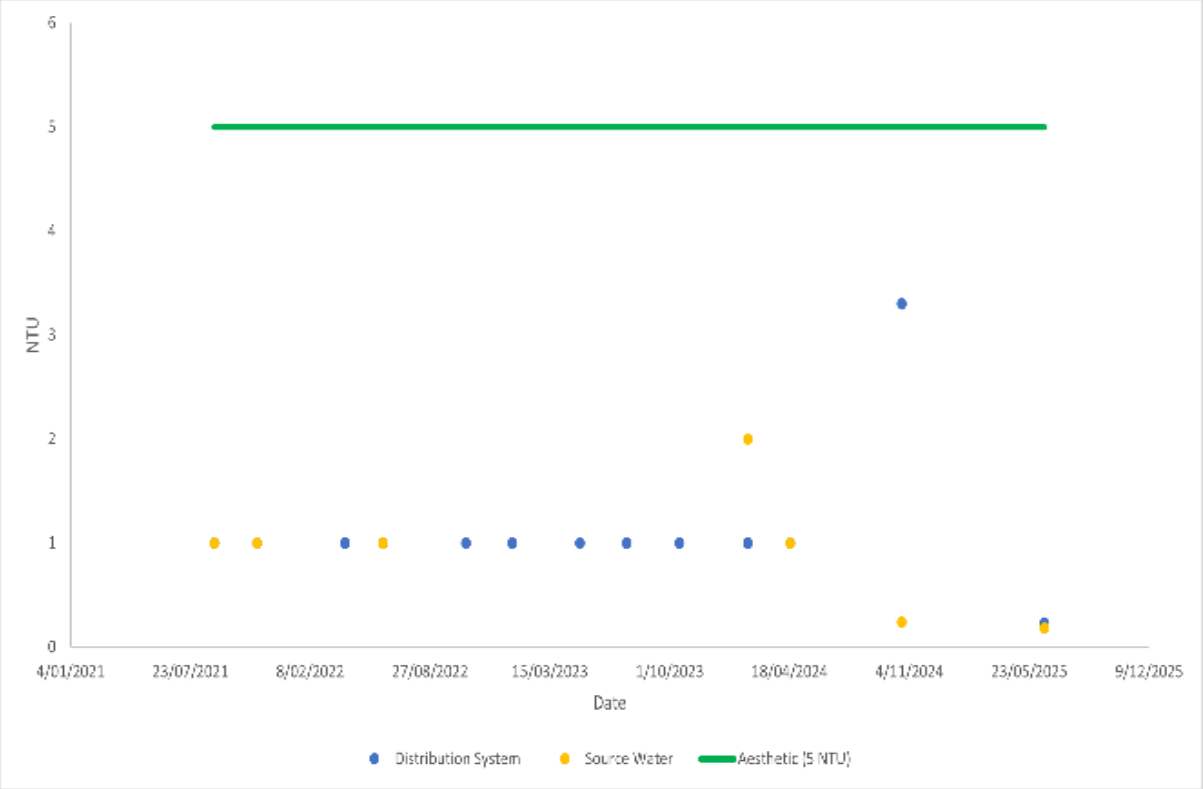


Figure 11: Turbidity trends for the Quilpie scheme (2021- 2025).

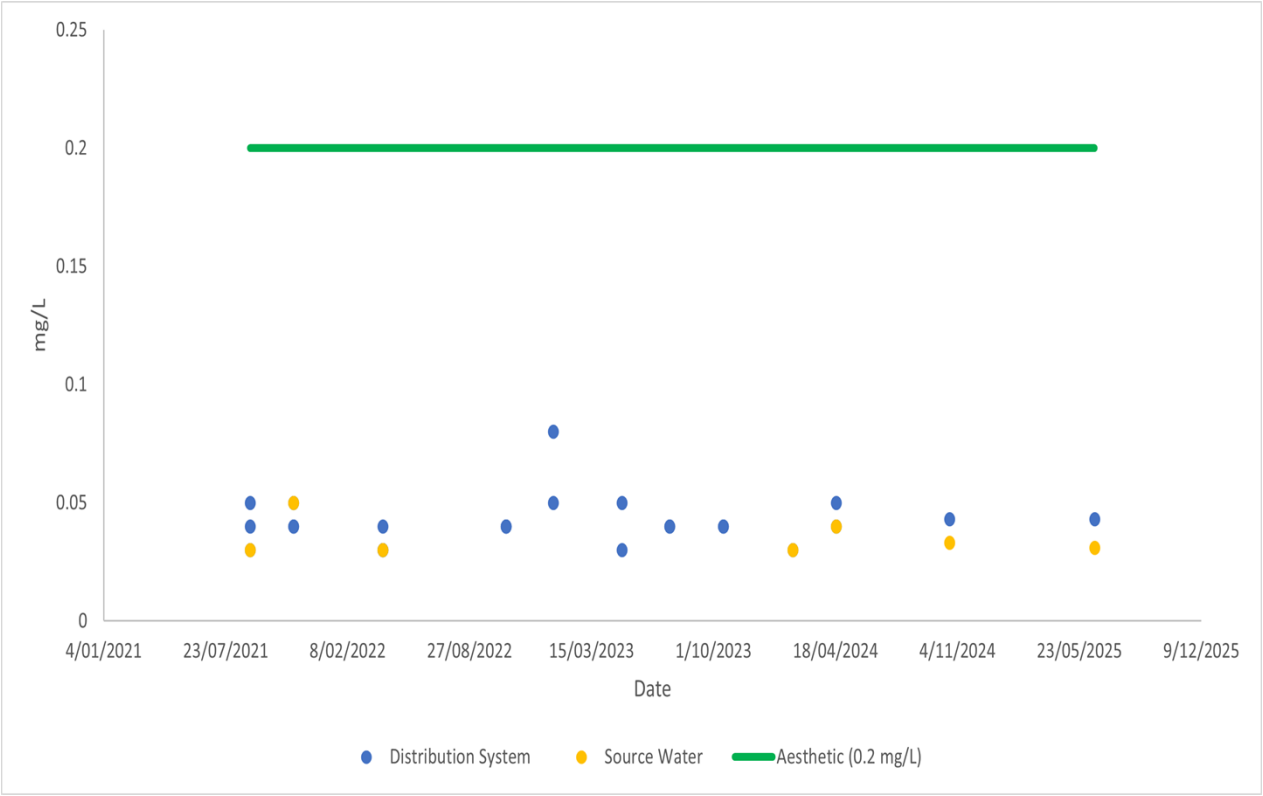


Figure 12: Aluminium trends for the Quilpie scheme (2021- 2025).

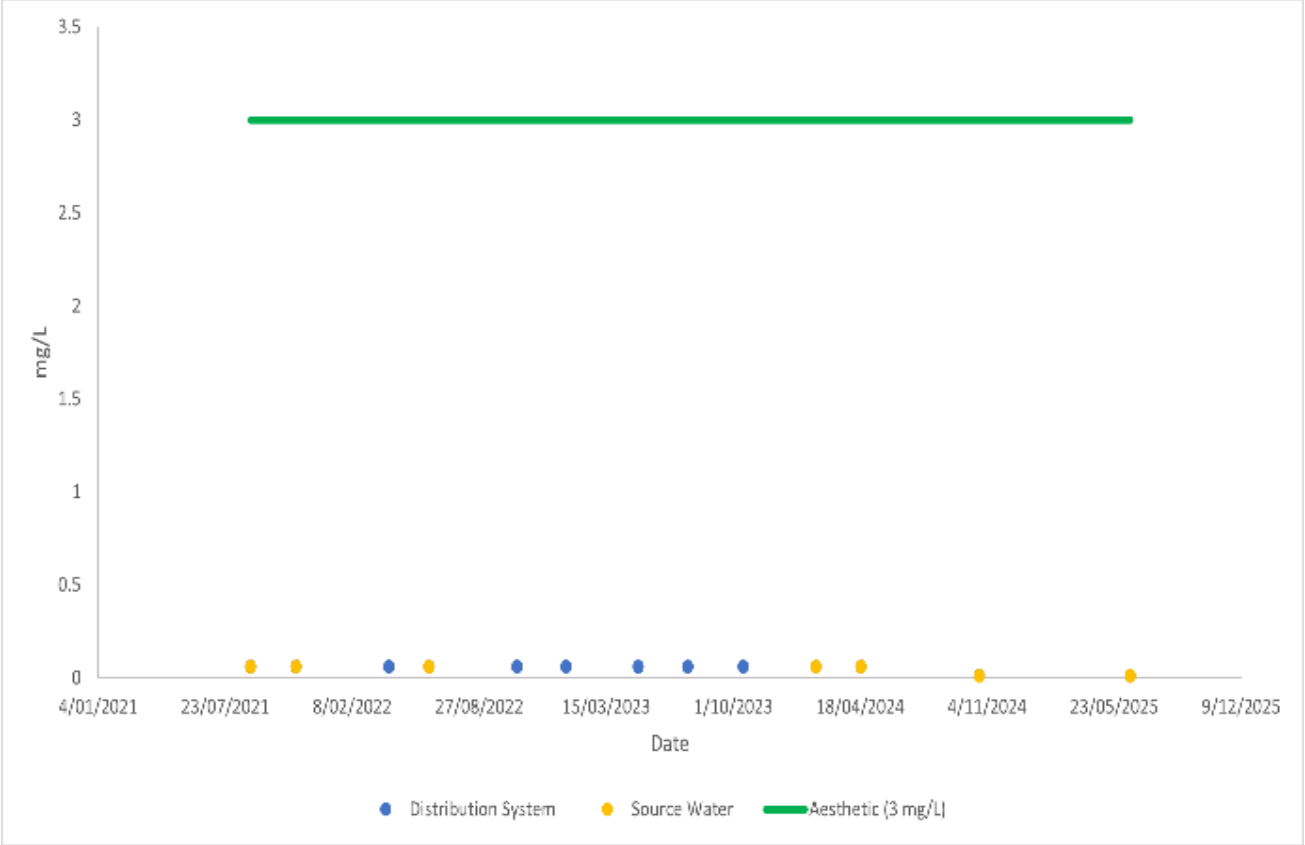


Figure 13: Zinc trends for the Quilpie scheme (2021- 2025).

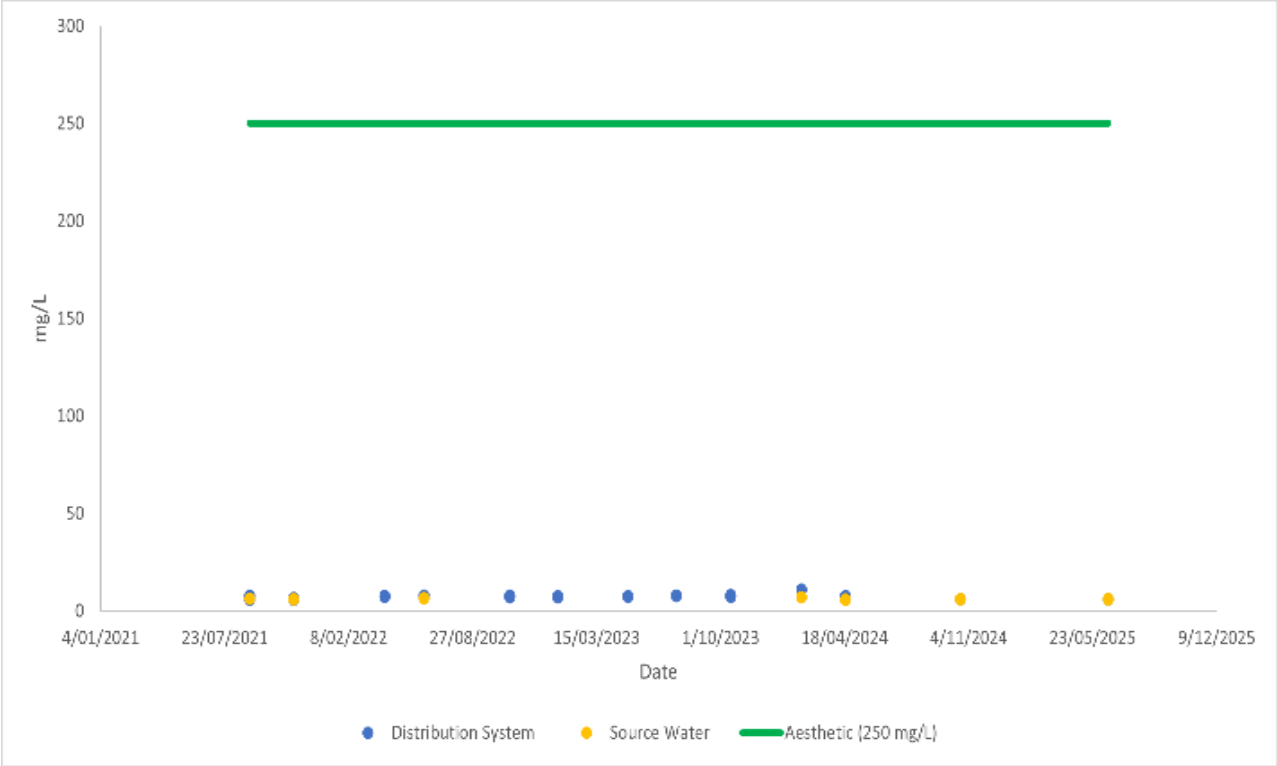


Figure 14: Sulphate trends for the Quilpie scheme (2021- 2025).

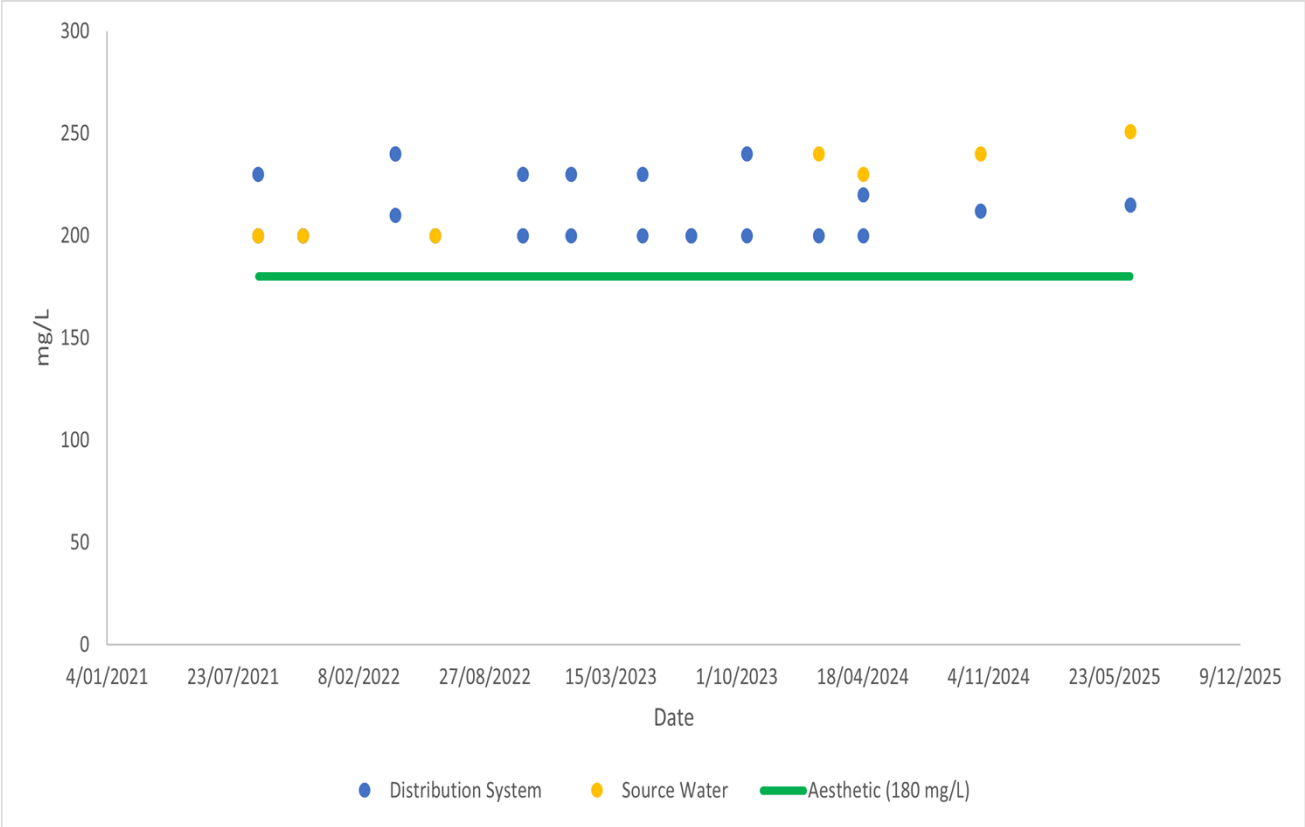


Figure 15: Sodium trends for the Quilpie scheme (2021- 2025).

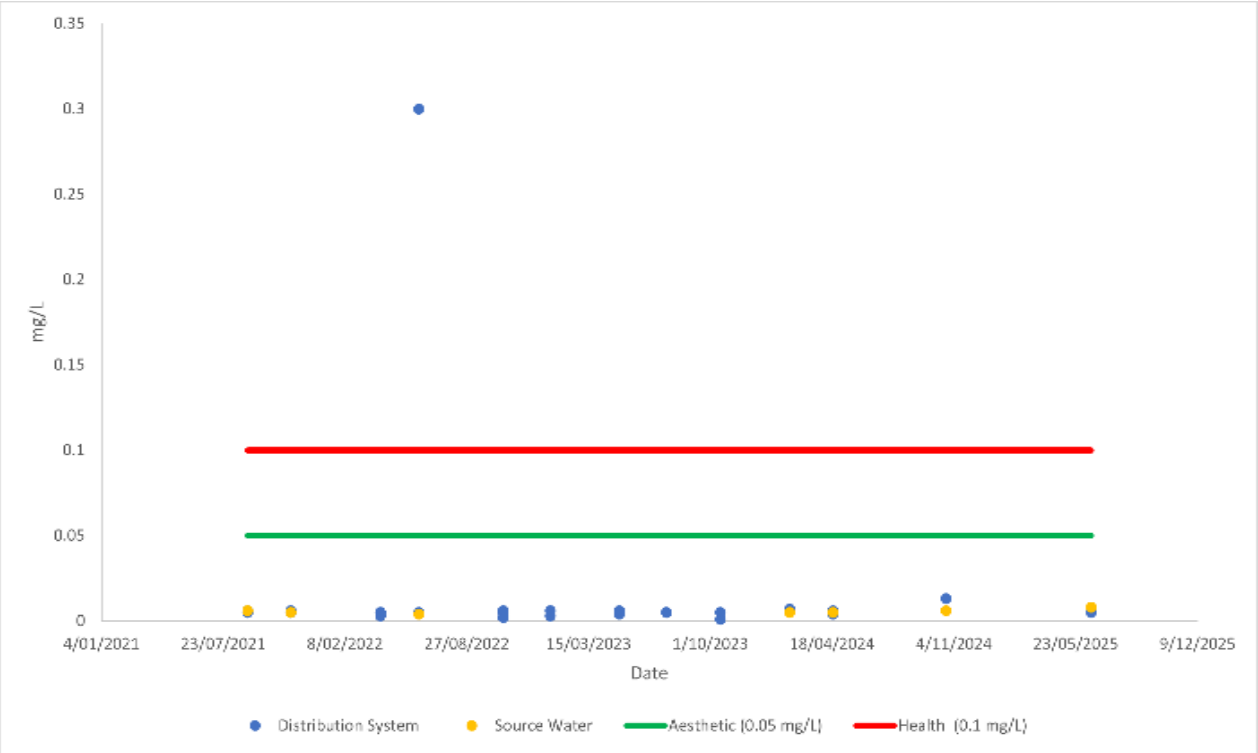


Figure 16: Manganese trends for the Quilpie scheme (2021- 2025).

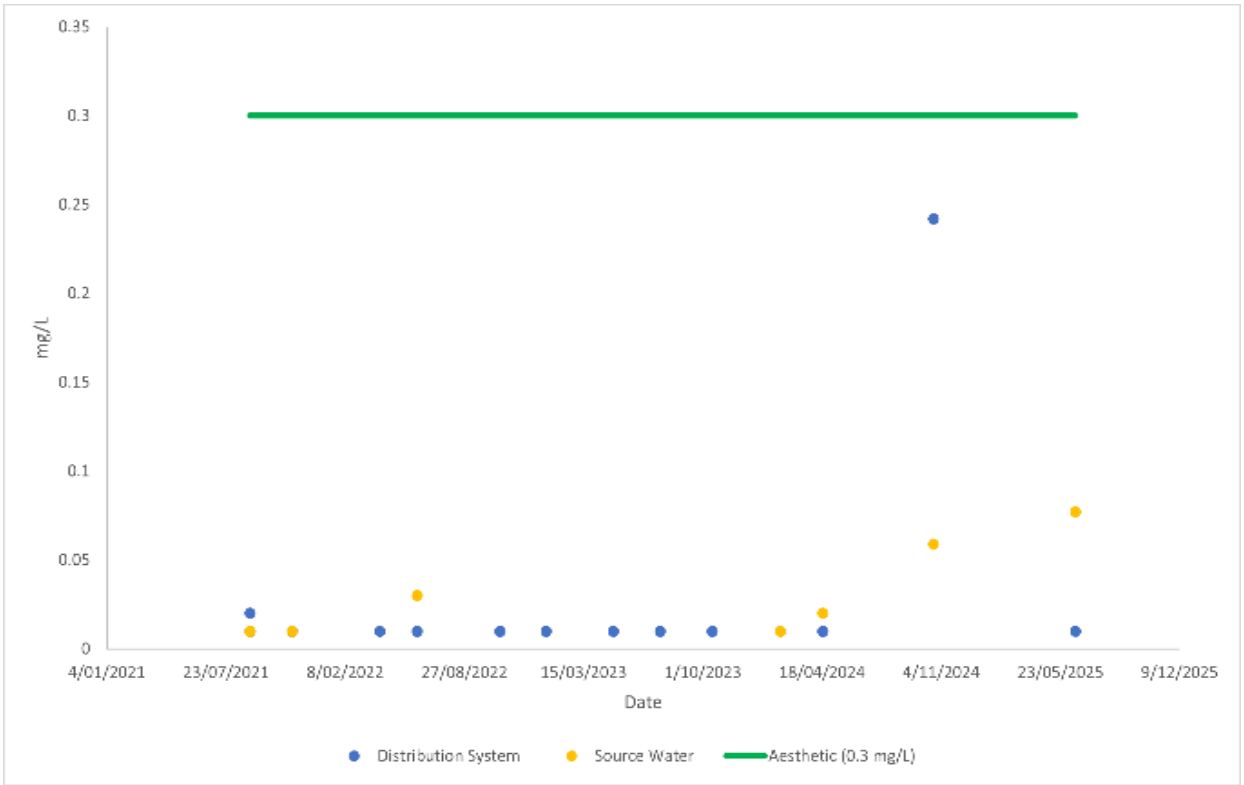


Figure 17: Iron trends for the Quilpie scheme (2021- 2025).

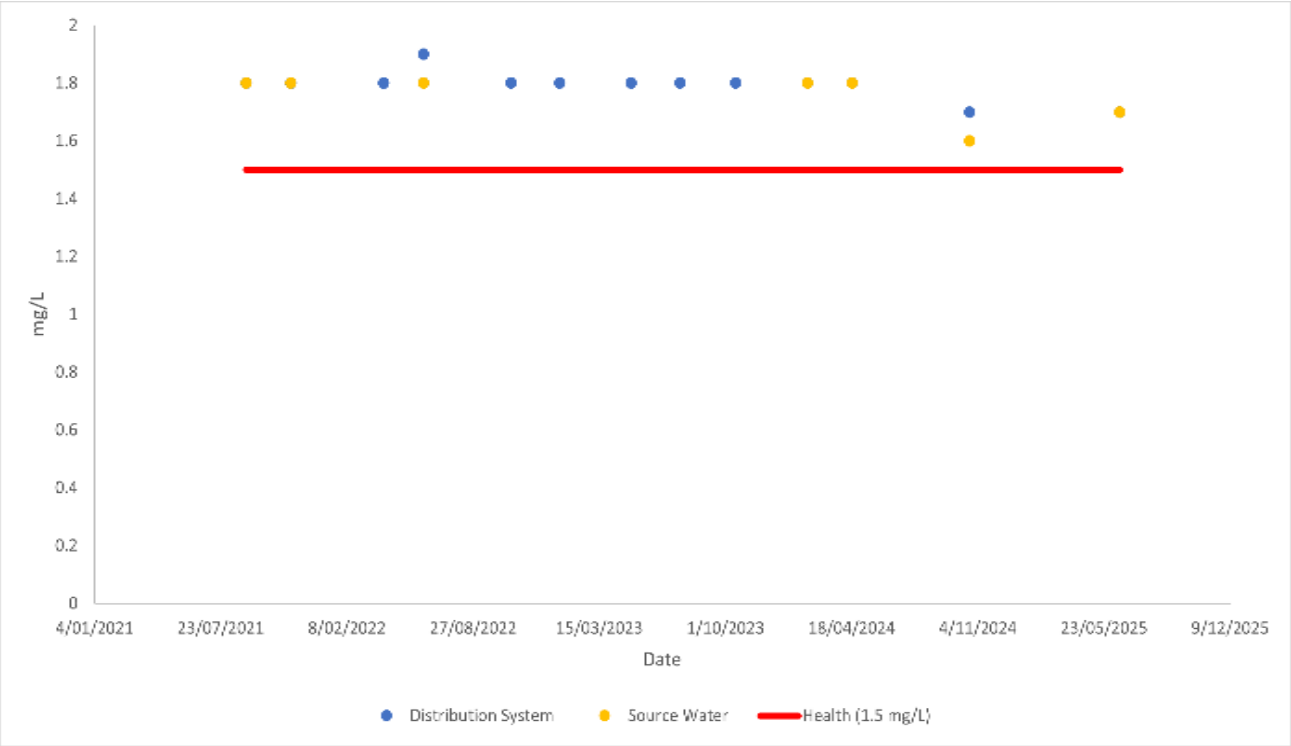


Figure 18: Fluoride trends for the Quilpie scheme (2021- 2025).

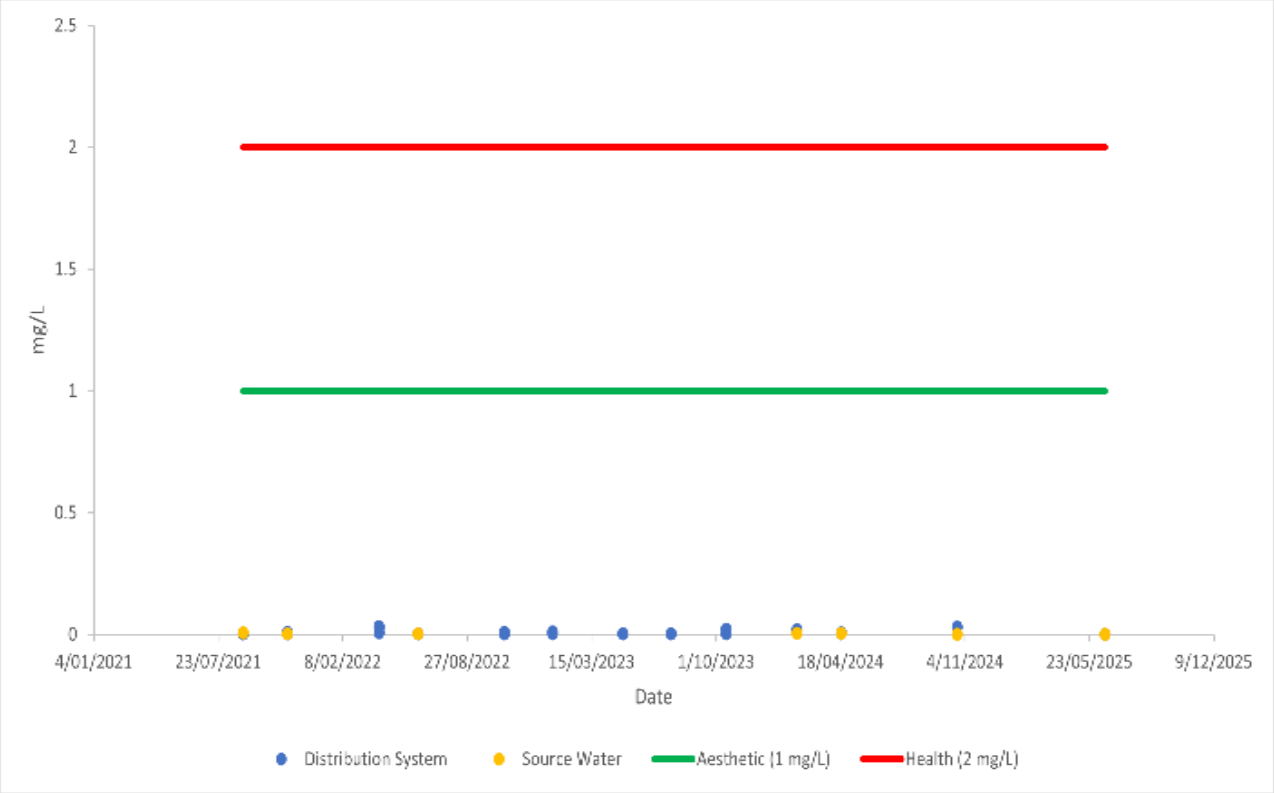


Figure 19: Copper trends for the Quilpie scheme (2021- 2025).

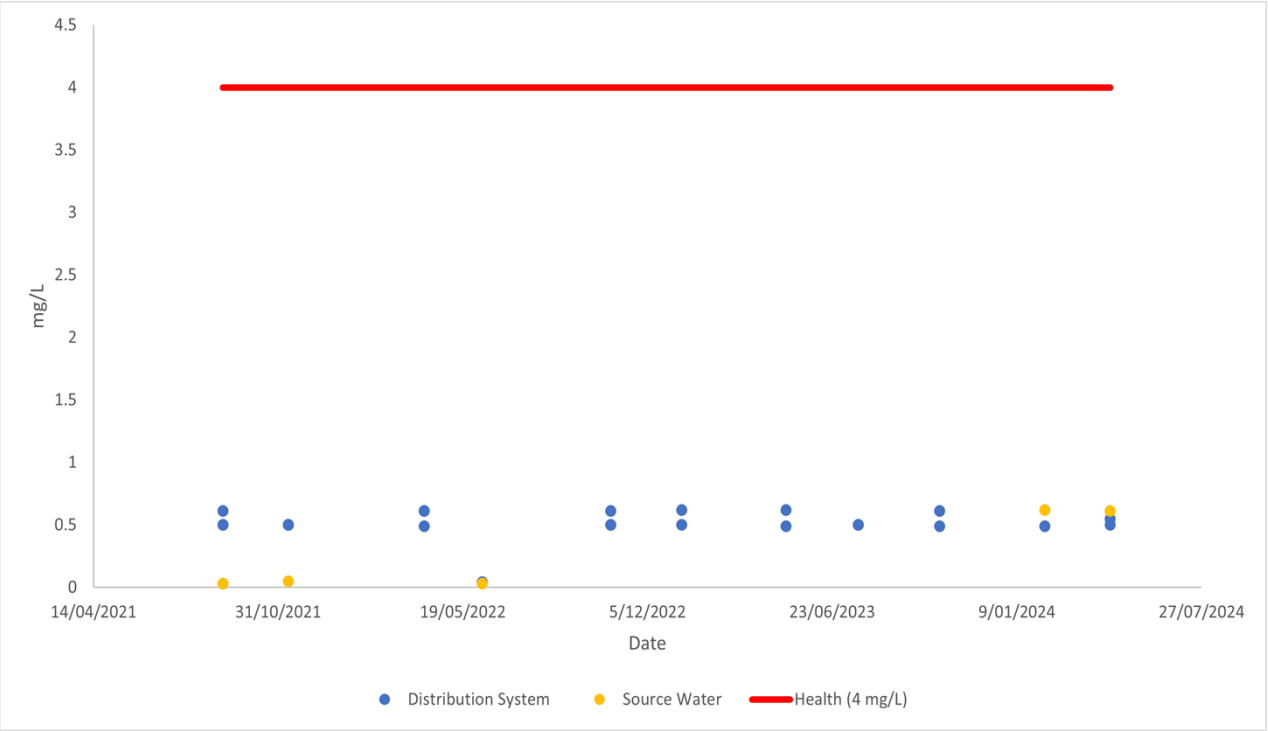


Figure 20: Boron trends for the Quilpie scheme (2021- 2024).

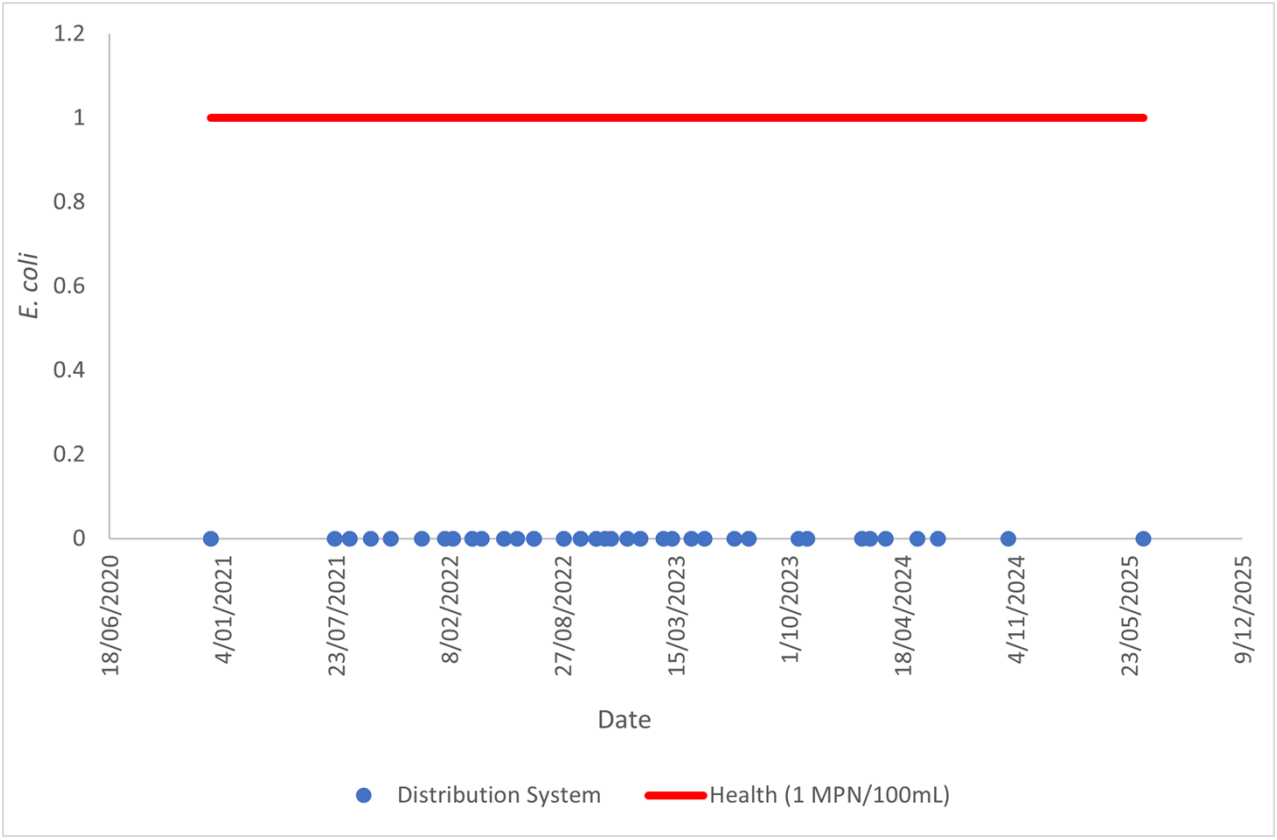


Figure 21: *E. coli* trends for the Quilpie scheme (2020- 2025).

APPENDIX C

EROMANGA DRINKING WATER QUALITY TRENDED DATA

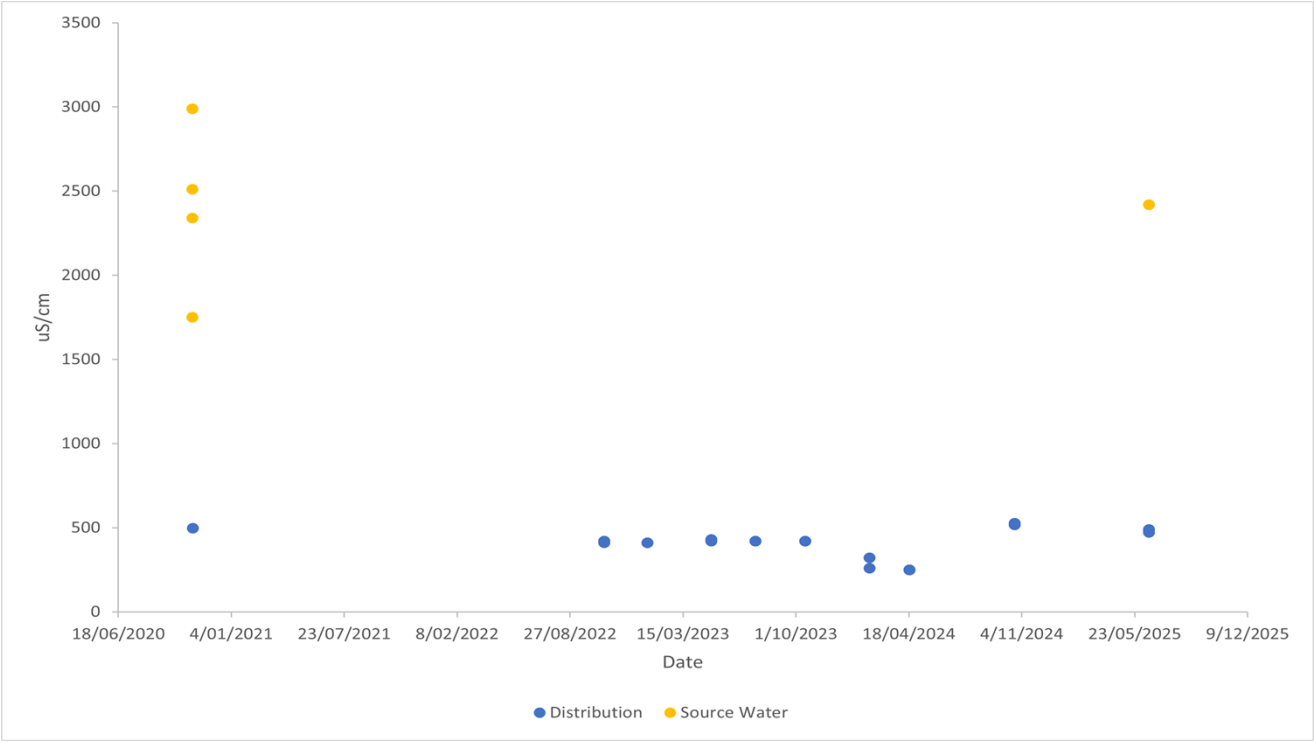


Figure 22: Conductivity trends for the Eromanga scheme (2020- 2025).

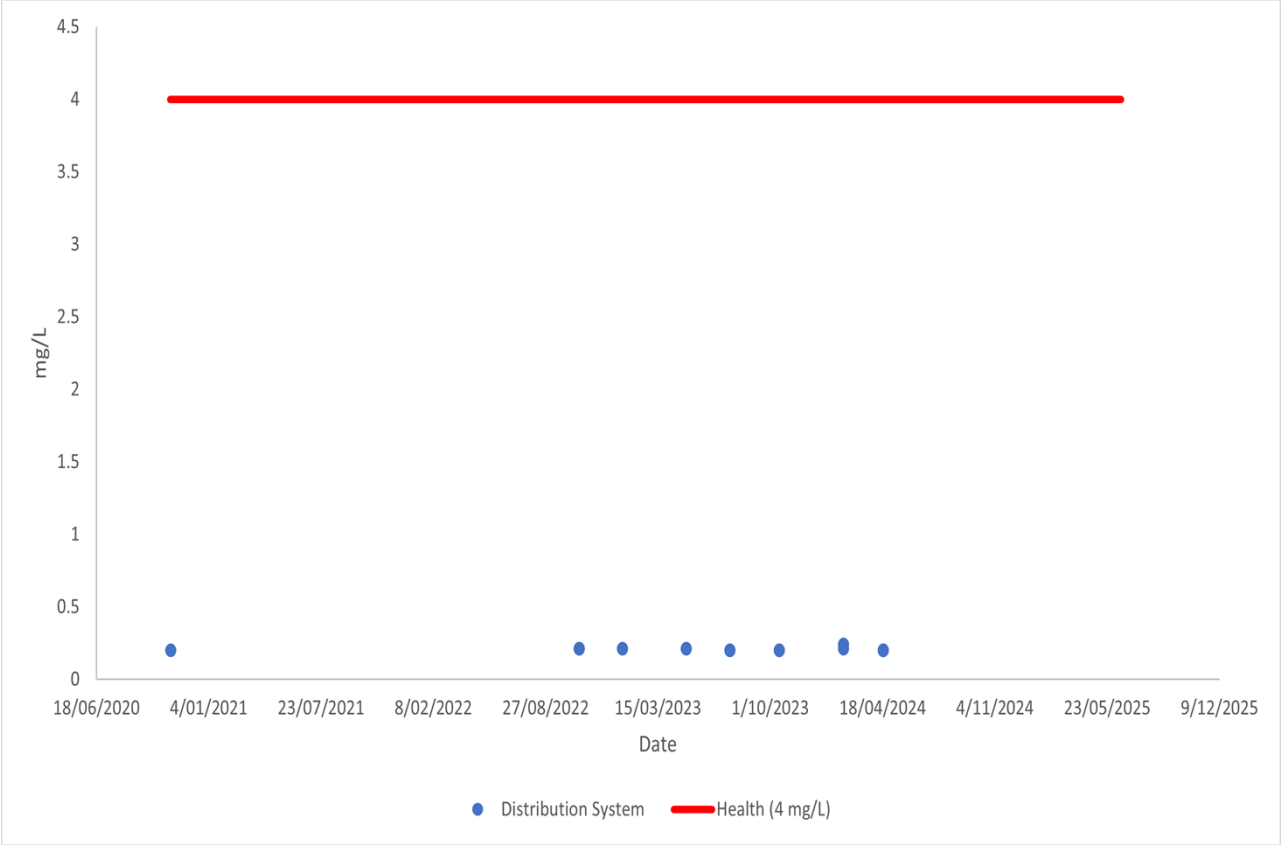


Figure 23: Boron trends for the Eromanga scheme (2020- 2024).

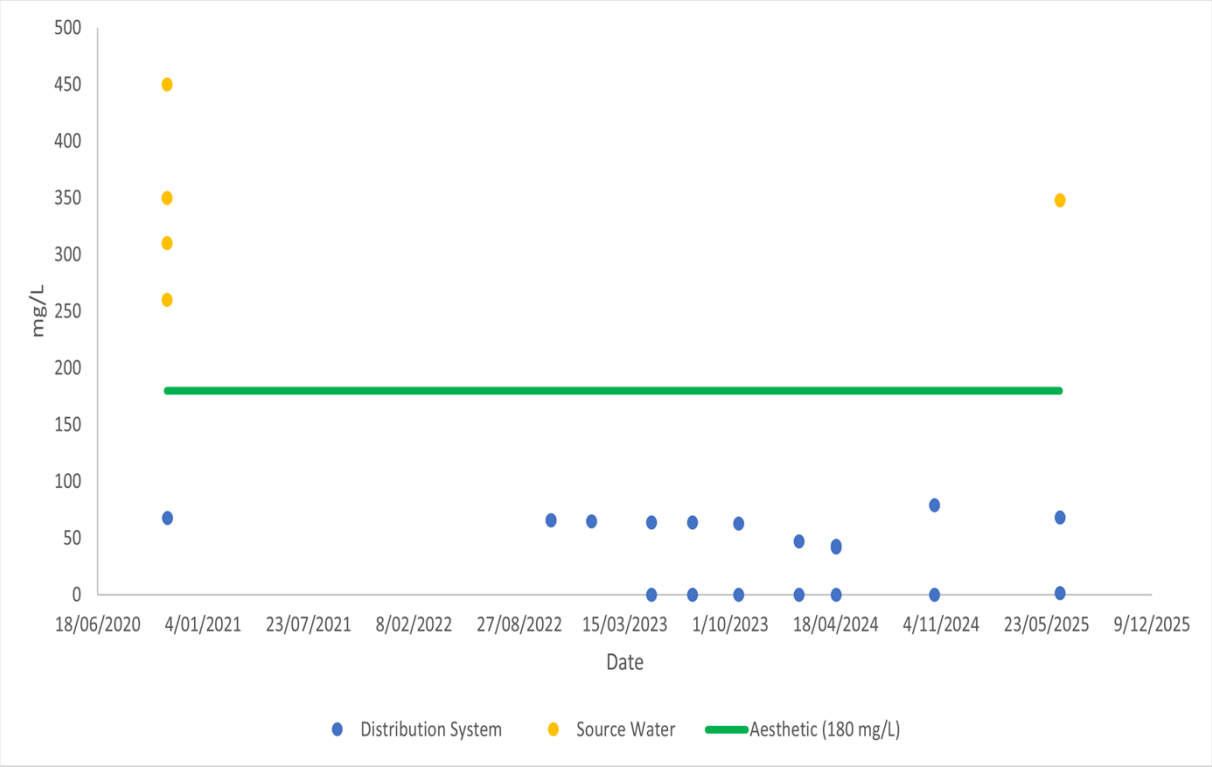


Figure 24: Sodium trends for the Eromanga scheme (2020- 2025).

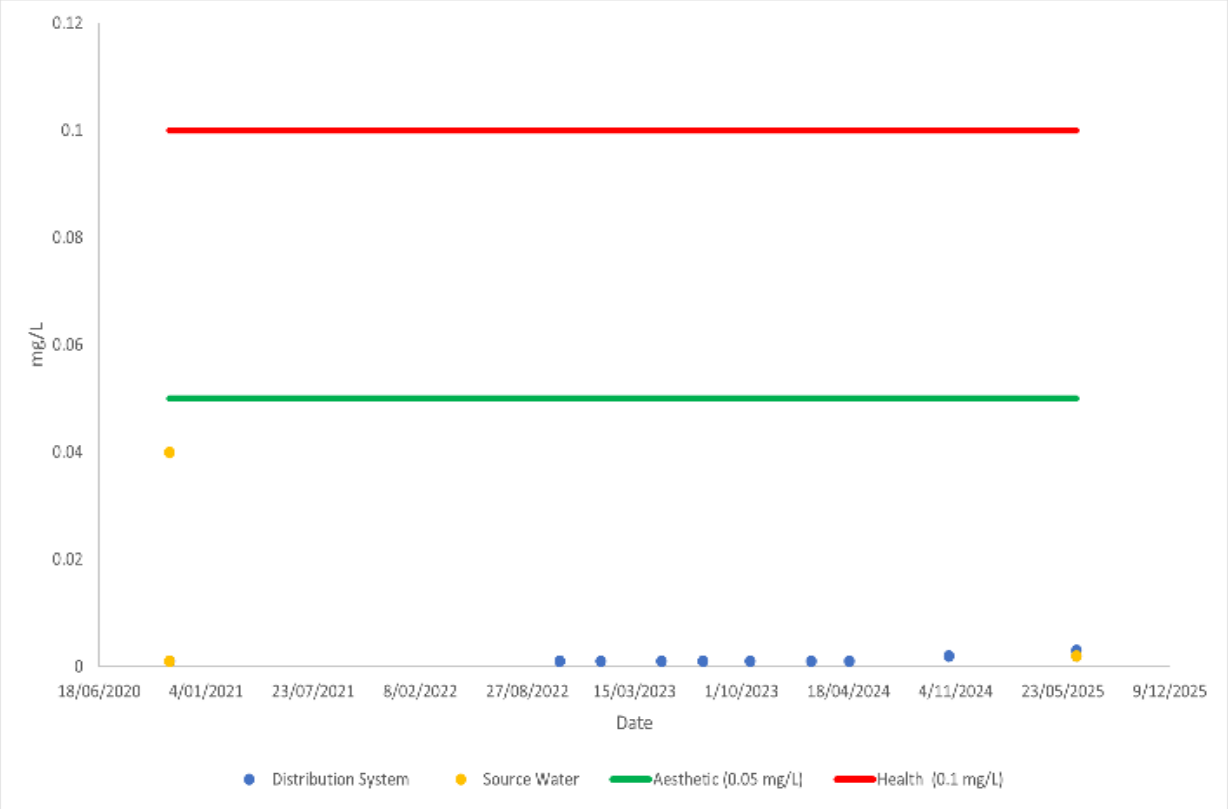


Figure 25: Manganese trends for the Eromanga scheme (2020- 2025).

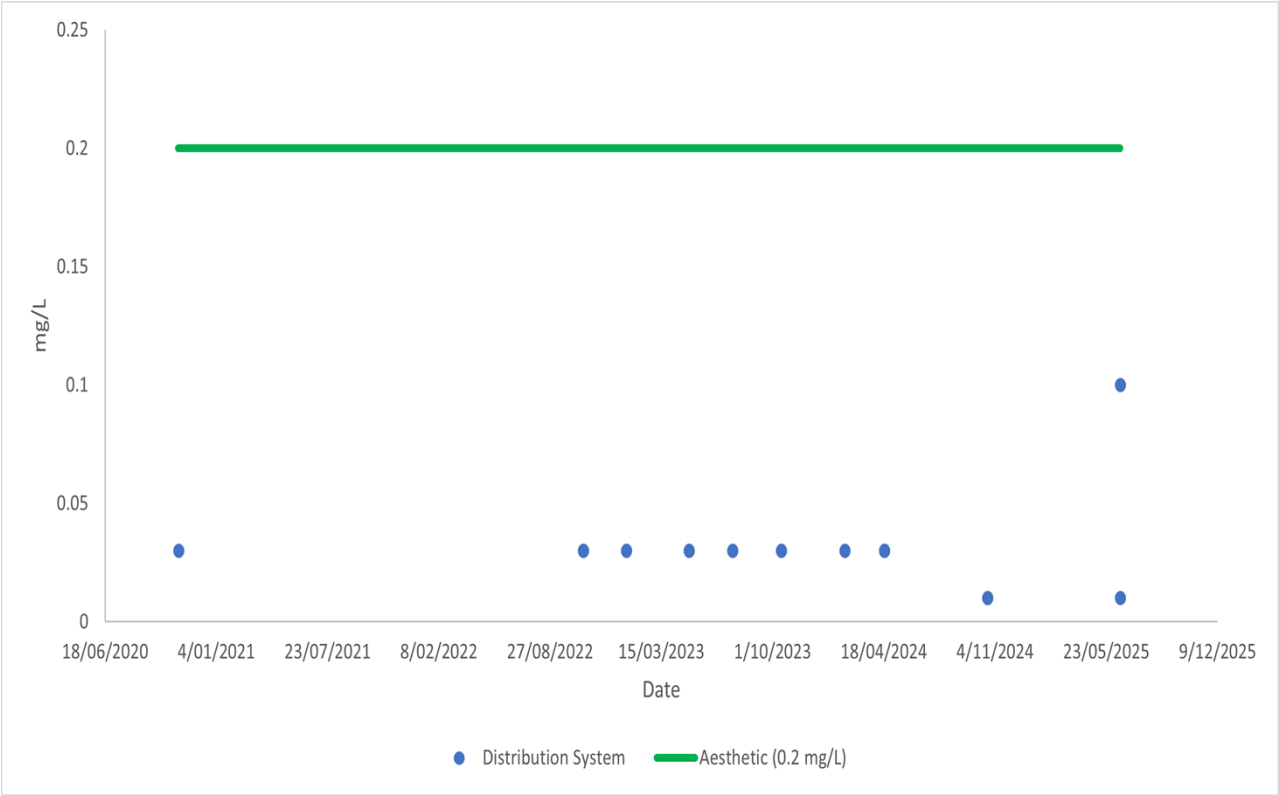


Figure 26: Aluminium trends for the Eromanga scheme (2020- 2025).

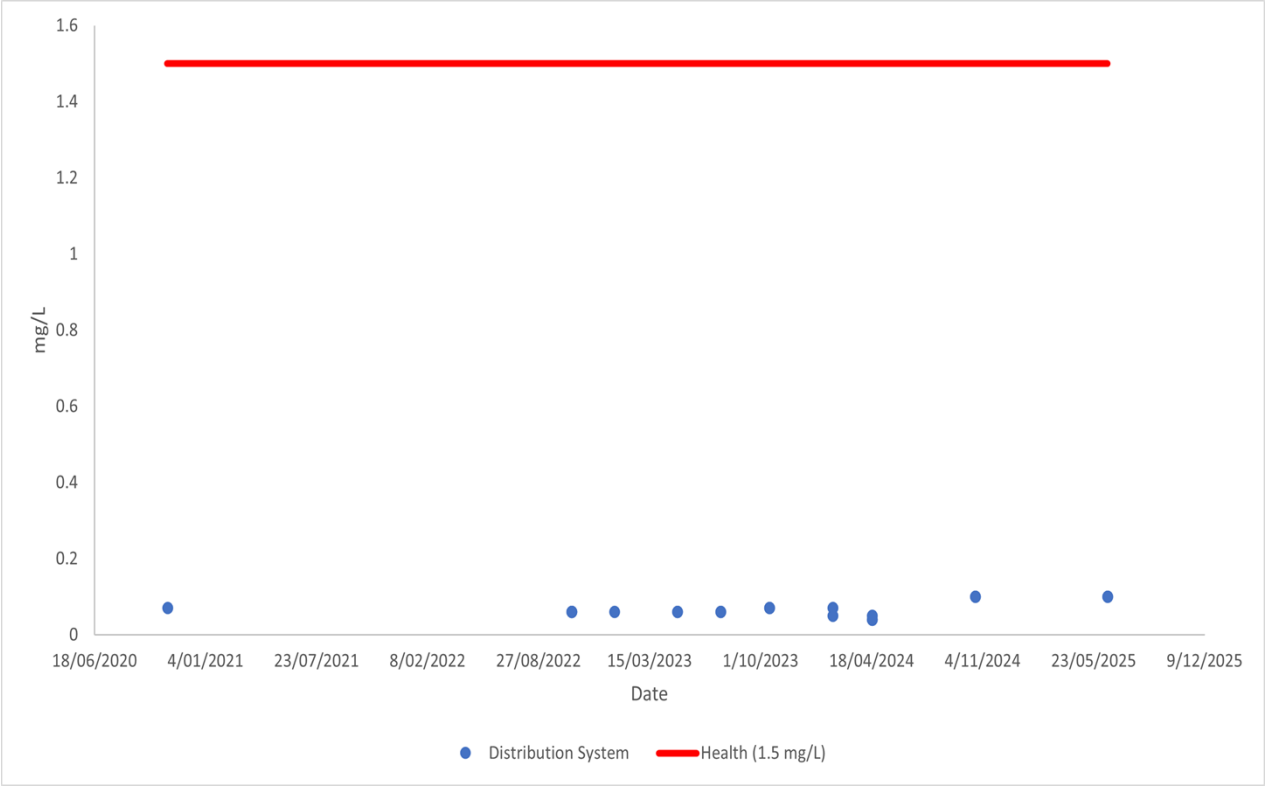


Figure 27: Fluoride trends for the Eromanga scheme (2020- 2025).

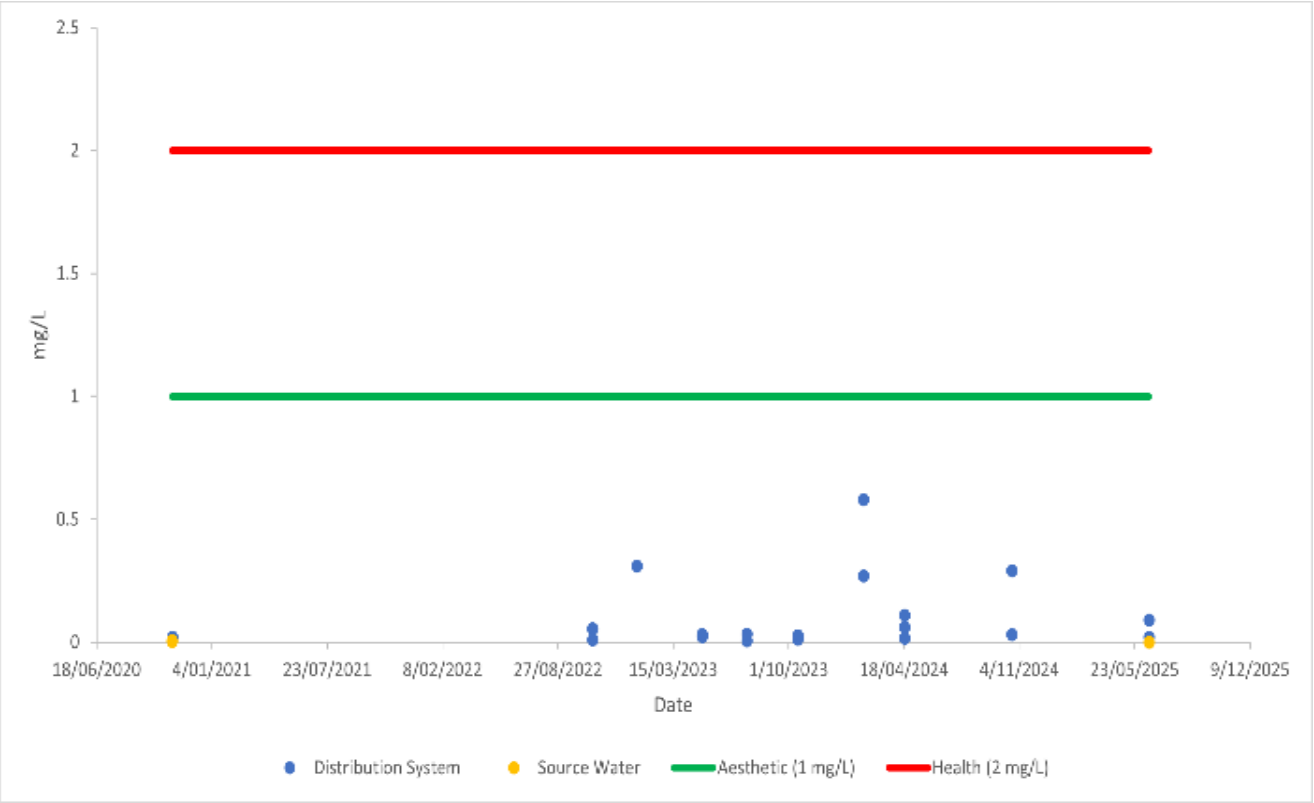


Figure 28: Copper trends for the Eromanga scheme (2020- 2025).

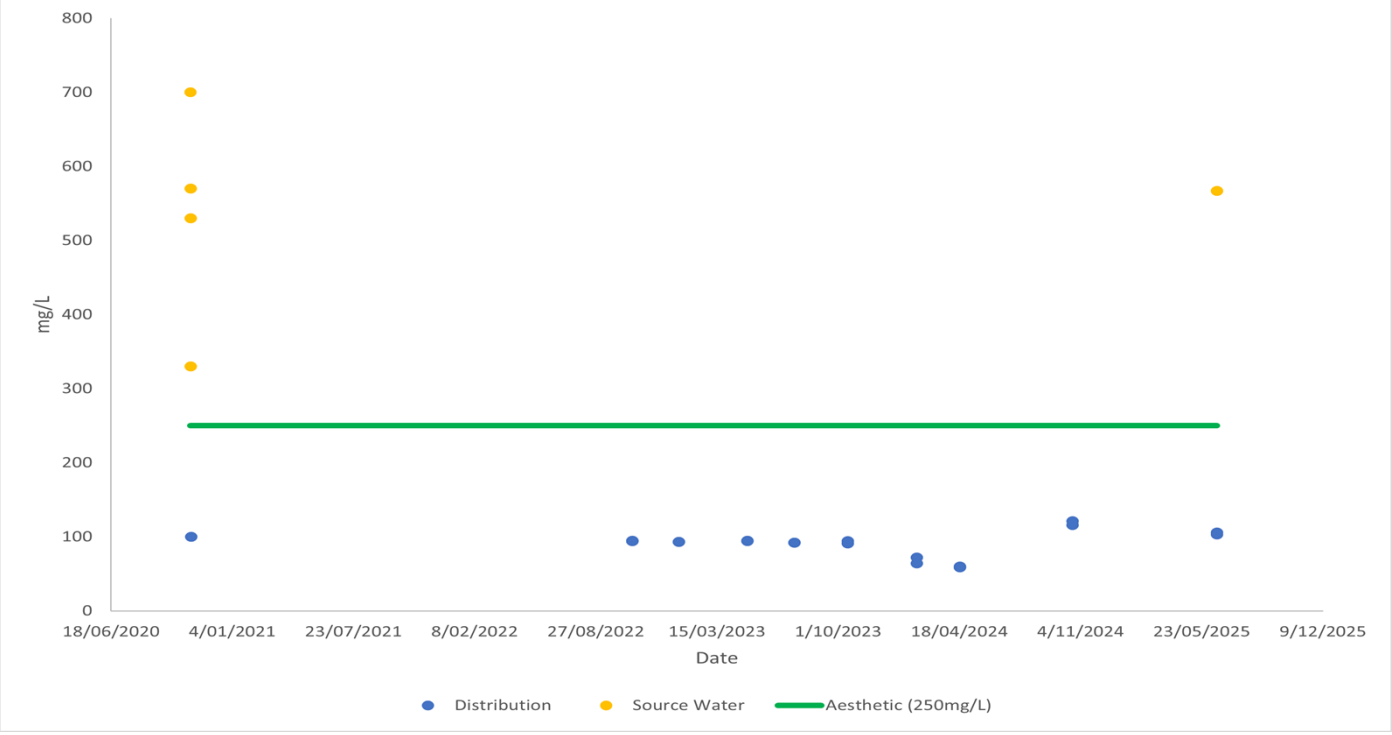


Figure 29: Chloride trends for the Eromanga scheme (2020- 2025).

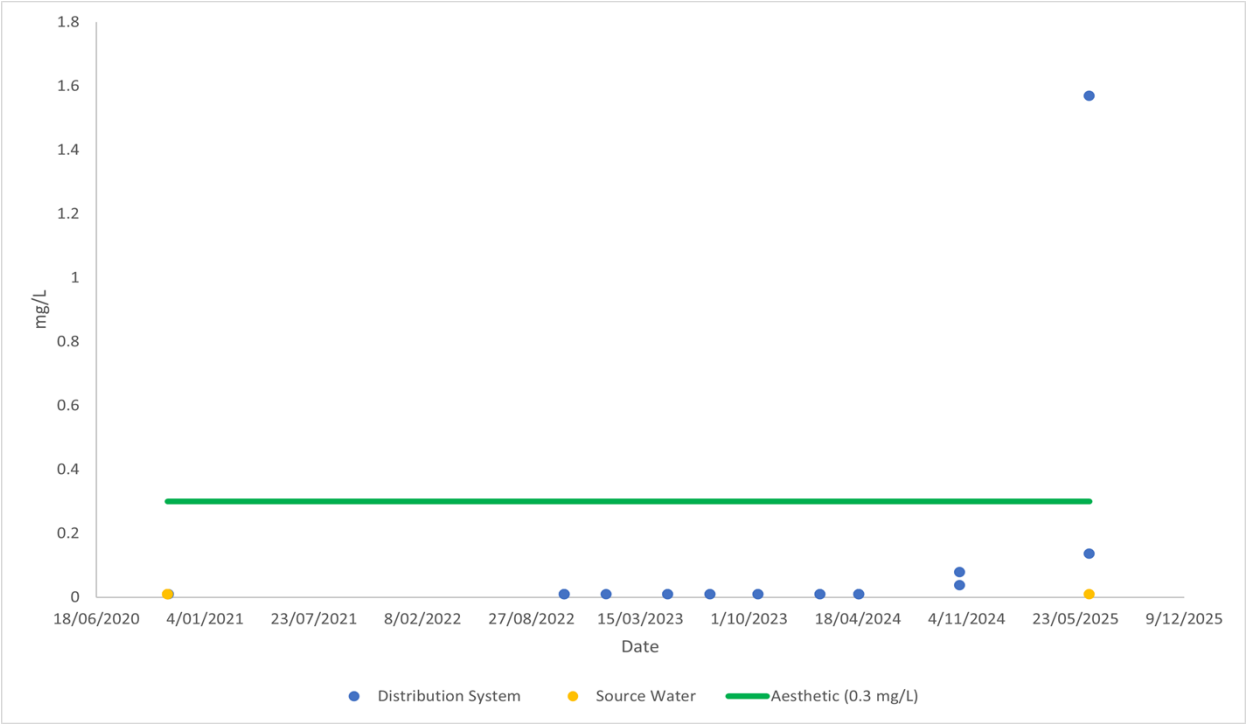


Figure 30: Iron trends for the Eromanga scheme (2020- 2025).

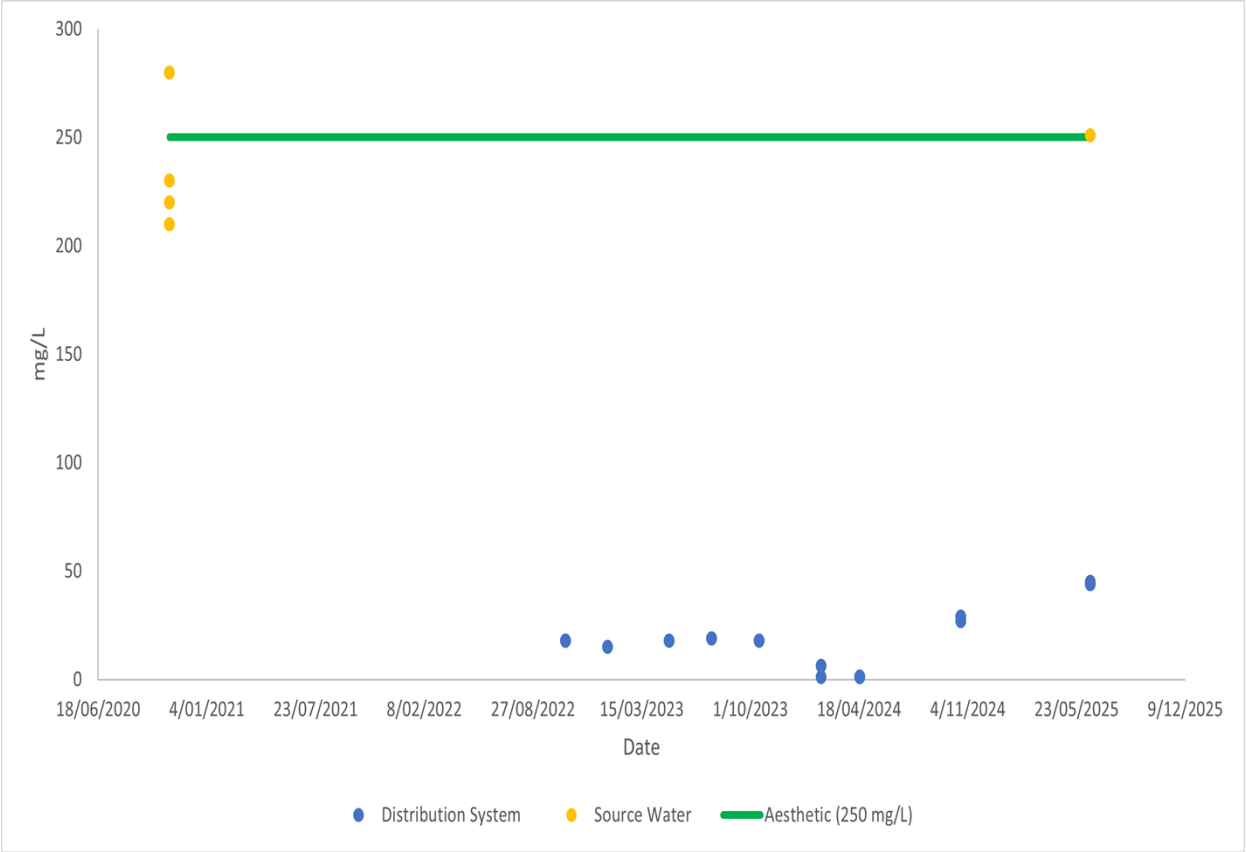


Figure 31: Sulphate trends for the Eromanga scheme (2020- 2025).

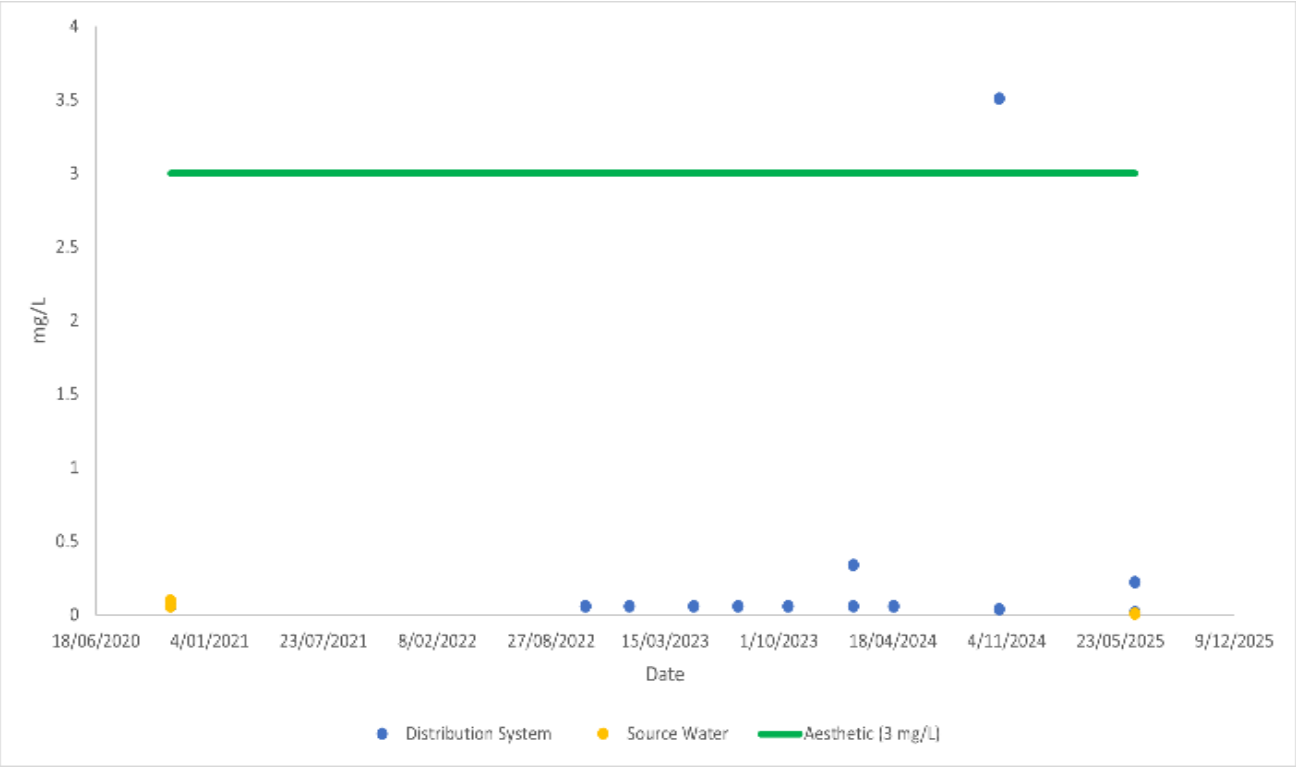


Figure 32: Zinc trends for the Eromanga scheme (2020- 2025).

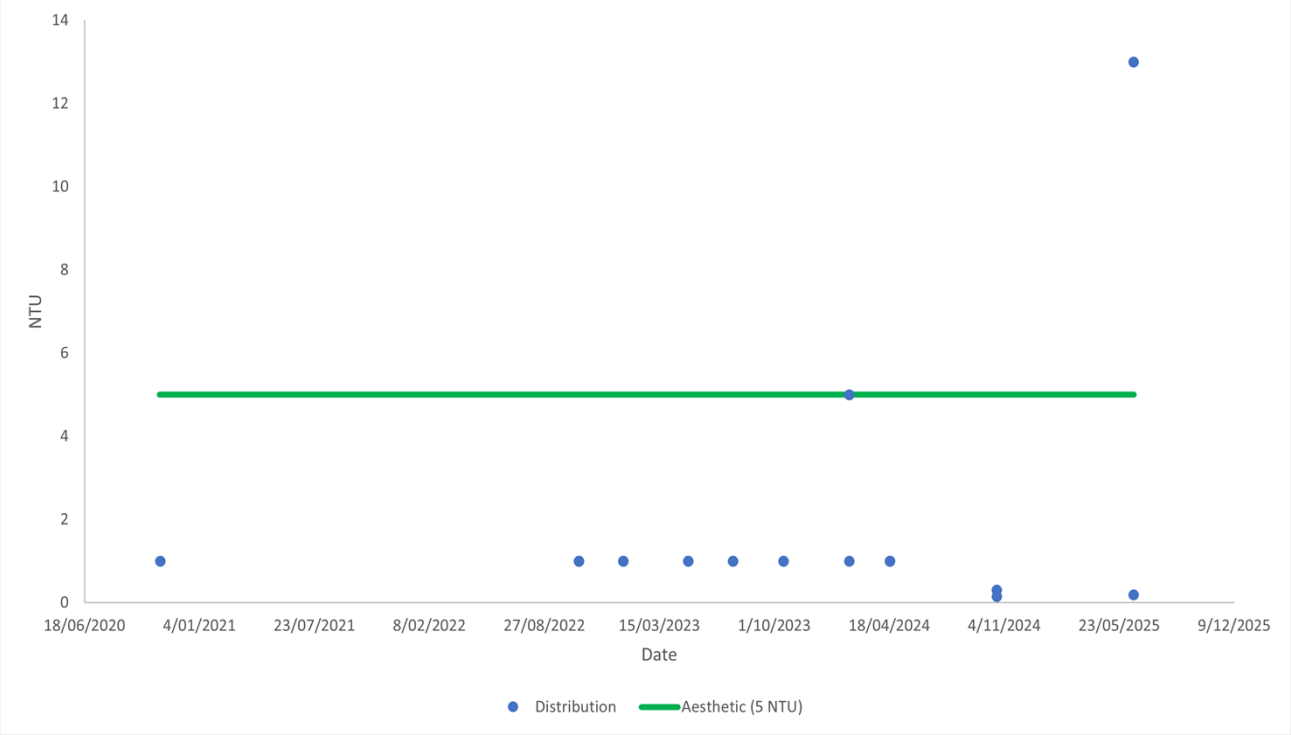


Figure 33: Turbidity trends for the Eromanga scheme (2020- 2025).

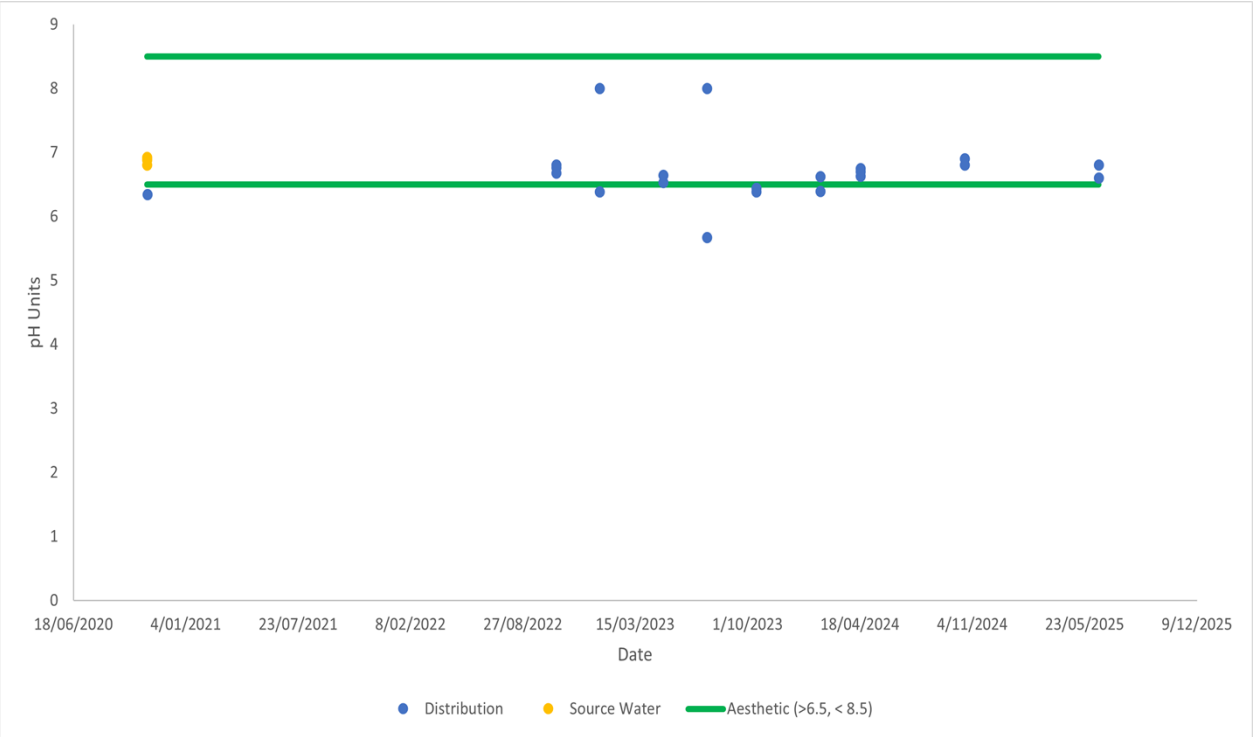


Figure 34: pH trends for the Eromanga scheme (2020- 2025).

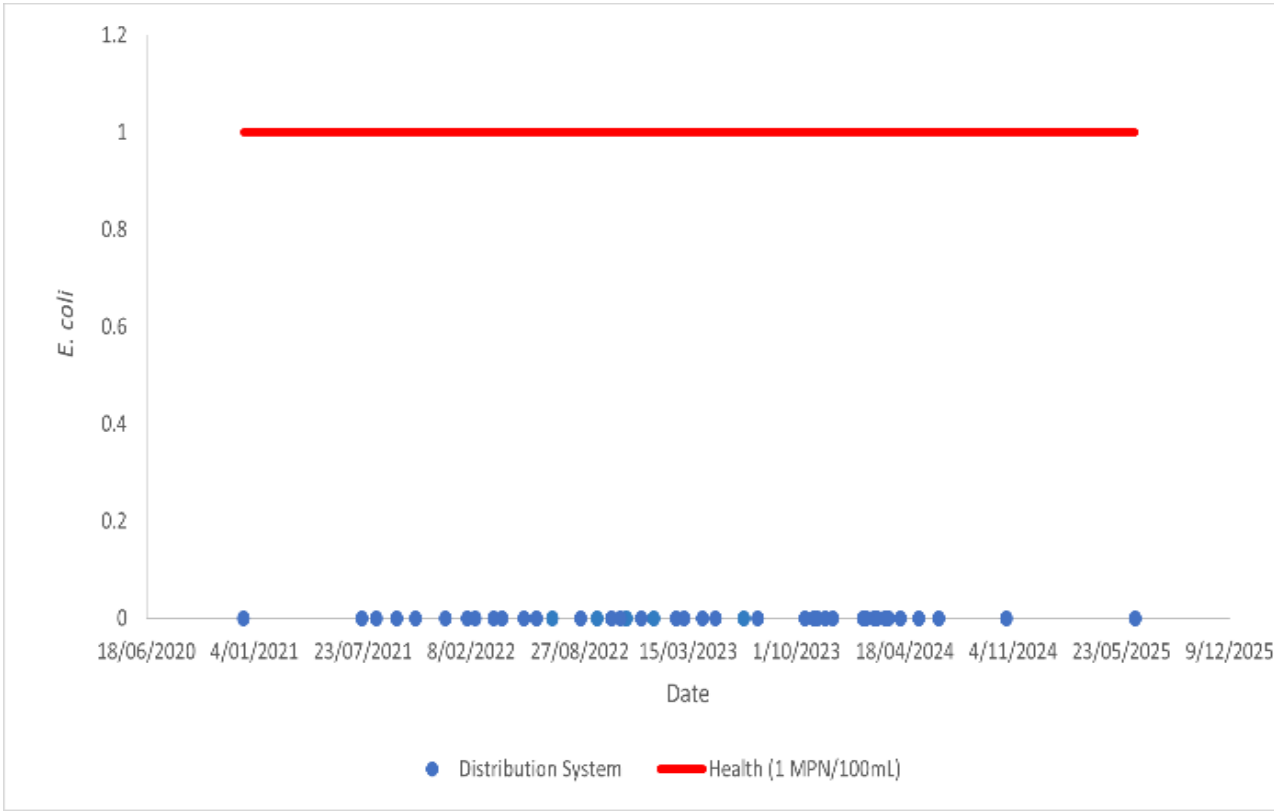


Figure 35: *E. coli* trends for the Eromanga scheme (2020- 2025).

APPENDIX D

QUILPIE FLUORIDE FACT SHEET

Naturally occurring fluoride in Quilpie's drinking water

Fluoride is a natural mineral found in water, soil, plants, rocks, air and some foods. It helps protect our teeth from decay, and drinking water with small amounts of fluoride can reduce tooth decay for people of all ages.

What is the drinking water standard for fluoride?

The Australian Drinking Water Guidelines recommend a maximum of 1.5 milligrams per litre (mg/L) of fluoride in drinking water.

To picture this, it's about the same as one twentieth of a teaspoon of fluoride in a whole bathtub of water.

Many towns in Western Queensland use groundwater from bores, and these sources can naturally contain higher levels of fluoride.

Testing shows that Quilpie's drinking water contains about 1.7 mg/L of naturally occurring fluoride – slightly above the recommended limit.

Most standard water treatment processes and household water filters do not remove fluoride.

What are the risks of elevated levels of fluoride in drinking water?

Side effects associated with elevated levels fluoride in drinking water include:

- dental fluorosis (the most common)
- skeletal fluorosis (very rare and only seen with extremely high fluoride levels).

What is dental fluorosis?

Dental fluorosis affects the appearance of developing teeth. It's mostly a cosmetic issue, not a disease.

It usually appears as faint lines or streaks on the enamel.

In rare, more severe cases, there may be pitting or brown staining of the enamel.

Dental fluorosis can occur when children consume too much fluoride while their teeth are still forming – generally up to about 6 to 8 years of age. Teeth that have already erupted are not at risk.

The chance of fluorosis increases as fluoride levels rise, although it can occasionally occur even at lower levels.

Bathing or showering in water with higher fluoride levels does not cause fluorosis.

How to reduce the risk of dental fluorosis?

If your drinking water contains more than 1.5mg/L of naturally occurring fluoride, you can help protect your child's developing teeth by:

- offering bottled drinking water to children up to around 6 years old (but avoid replacing water with sugary drinks).
- avoiding fluoride supplements such as tablets or drops.
- brushing children's teeth without toothpaste until they are 18 months of age, unless advised otherwise by a dentist.
- offering a low fluoride toothpaste (500-550 ppm or 0.05-0.055% w/w) for children aged 18 months to 6 years old, using only a pea-sized amount and encouraging spitting, not swallowing.
- using standard fluoride toothpaste (1000-1500 ppm or 0.1-0.15% w/w) for children aged 6 years and older, using only a pea-sized amount and encouraging spitting, not swallowing.
- keeping an eye on other fluoride sources in their diet (e.g., tea, seafood).
- breastfeeding where possible and using bottled water when preparing infant formula.

Need help or more information?

- Darling Downs Public Health Unit: (07) 4699 8240
- your dental professional
- Queensland Health Oral Health: www.health.qld.gov.au/oralhealth
- 13 HEALTH (13 43 25 84) for confidential health advice 24 hours a day, seven days a week
- Email: oral_health@health.qld.gov.au

This information only applies to areas where naturally occurring fluoride levels are above 1.5mg/L.

Disclaimer: Please note that any material printed is regarded as an uncontrolled copy. It is the responsibility of the person printing the document to refer frequently to the latest electronic copies for updates.

Updated July 2026

APPENDIX E

QUILPIE TEMPERATURE STUDY & FACT SHEET

PUBLIC NOTICE

Naturally Elevated Water Temperature

Quilpie sources its drinking water supply from the Great Artesian Basin, which has naturally elevated water temperatures due to the depth at which the water is sourced (~950m). As water is supplied straight from the Quilpie bores into the reticulation system and is not treated, water can frequently exceed safe drinking water temperatures (50°C), particularly in the summer months when ambient temperatures are higher.

Therefore, Council wishes to advise residents of the risk of burns and scalds from the Quilpie water supply, which can be as high as ~68°C in some parts of the reticulation.

To reduce the risk of burns and scalds, Council advises residents to take the following precautions:

- Always check water temperatures by feeling the outside of pipes or testing the flow carefully before showering, bathing or washing hands.
- Supervise children and vulnerable persons closely around running taps and during bath time.
- Use the cold water tap preferentially over the hot water tap to adjust water temperature safely.

Should you have any further questions regarding this matter, please contact:
Quilpie Shire Council – (07) 4656 0500

Yours faithfully,

Justin Hancock
Chief Executive Officer

Quilpie Water Temperatures		17/06/2020		18/06/2020		22/06/2020		23/06/2020		24/06/2020		Average Temperature	
House A	**Time**	**8:01AM**	**2:20PM**	**7:06AM**	**2:35PM**	**8:56AM**	**2:19PM**	**7:25AM**	**2:20PM**	**7:55AM**	**12:14PM**	**AM**	**PM**
P.See	**Temp 2min**	27.4˚C	27.6˚C	24.8˚C	33.6˚c	27.6˚c	19.0˚c	26.0˚C	36.4˚c	30.4˚c	26.6˚c	**27.2˚c**	**28.6˚c**
7Boobook	**Temp 5min**	27.8˚C	29.0˚C	26.8˚C	34.6˚c	28.8˚c	21.8˚c	28.2˚c	40.8˚c	31.8˚c	30.4˚c	**28.7˚c**	**31.3˚c**
House B	**Time**	**8:08AM**	**2:26PM**	**6:58AM**	**2:29PM**	**9:03AM**	**2:12PM**	**7:32AM**	**2:26PM**	**8:01AM**	**12:20PM**	**AM**	**PM**
B.Weeks	**Temp 2min**	20.8˚C	19.6˚C	20.6˚C	20.4˚c	24.4˚c	23.2˚c	22.8˚c	23.8˚c	22.6˚C	21.8˚c	**22.2˚C**	**21.7˚C**
5 Boobook	**Temp 5min**	21.8˚C	20.6˚C	19.6˚C	20.8˚c	25.2˚c	23.8˚c	22.8˚c	23.4˚c	23.8˚c	23.0˚c	**22.6˚c**	**22.3˚c**
House C	**Time**	**8:48AM**	**2:00PM**	**7:28AM**	**2:06PM**	**8:52AM**	**2:03PM**	**7:47AM**	**1:57PM**	**7:41AM**	**11:52AM**	**AM**	**PM**
L. Hamlyn	**Temp 2min**	42.4˚C	48.9˚C	45.4˚C	50.0˚c	49.6˚c	51.2˚c	48.4˚c	49.2˚c	48.8˚c	51.0˚c	**46.9˚c**	**50.0˚c**
9 Dukamurra	**Temp 5min**	50.6˚C	50.4˚C	50.2˚C	50.8˚c	49.6˚c	52.6˚c	50.0˚c	53.0˚c	51.8˚c	52.4˚c	**50.4˚c**	**51.8˚c**
House D	**Time**	**8:18AM**	**2:14PM**	**6:51AM**	**2:42PM**	**8:49AM**	**2:27PM**	**7:17AM**	**2:13PM**	**7:49AM**	**12:06PM**	**AM**	**PM**
C. Mocke	**Temp 2min**	47.2˚	35.2˚C	34.6˚C	47.4˚c	38.2˚c	36.6˚c	44.4˚c	43.6˚c	43.8˚c	33.6˚c	**41.6˚c**	**39.3˚c**
Chipu	**Temp 5min**	30.2˚	38.8˚C	33.6˚C	49.8˚c	39.8˚c	39.2˚c	44.2˚c	43.6˚c	45.2˚c	35.6˚c	**38.6˚c**	**41.4˚c**
House E	**Time**	**8:27AM**	**2:08PM**	**7:13AM**	**2:23PM**	**8:40AM**	**1:45PM**	**7:39AM**	**2:05PM**	**1:17AM**	**11:58AM**	**AM**	**PM**
Doctor	**Temp 2min**	51.4˚C	49.2˚C	48.2˚C	57.6˚C	55.0˚c	58.2˚c	54.8˚c	58.4˚c	50.8˚c	57.2˚c	**52.0˚c**	**56.1˚c**
57 Galah	**Temp 5min**	53.6˚C	55.4˚C	52.8˚C	57.0˚c	55.4˚c	57.4˚c	54.8˚c	58.6˚c	50.6˚c	57.4˚c	**53.4˚c**	**57.2˚c**
House F	**Time**	**8:35AM**	**1:51PM**	**7:21AM**	**2:10PM**	**8:25AM**	**1:52PM**	**7:55AM**	**1:50PM**	**7:25AM**	**11:44AM**	**AM**	**PM**
J. Turner	**Temp 2min**	58.2˚C	55.8˚C	56.2˚C	57.0˚c	55.2˚c	50.8˚c	57.2˚c	61.0˚c	57.0˚c	60.6˚c	**56.8˚c**	**57.0˚c**
53 Galah	**Temp 5min**	58.8˚C	60.2˚C	58.2˚C	59.6˚c	59.4˚c	59.2˚c	57.4˚c	60.8˚c	58.2˚c	61.8˚c	**58.4˚c**	**60.3˚c**
House G	**Time**	**9:13AM**	**1:37PM**	**7:43AM**	**1:57PM**	**8:11AM**	**1:55PM**	**8:09AM**	**1:36PM**	**8:10AM**	**11:31AM**	**AM**	**PM**
B. Andrews	**Temp 2min**	64.8˚C	68.6˚C	56.4˚C	66.4˚c	60.4˚c	65.2˚c	61.0˚c	60.4˚c	58.0˚c	61.6˚c	**60.1˚c**	**64.4˚c**
41 Pegler	**Temp 5min**	65.8˚C	68.4˚C	62.6˚C	68.6˚c	66.8˚c	64.0˚c	60.8˚c	59.0˚c	60.2˚c	68.8˚c	**62.2˚c**	**64.4˚c**
House H	**Time**	**8:57AM**	**1:44PM**	**7:36AM**	**2:04PM**	**8:18AM**	**1:57PM**	**8:02AM**	**1:43PM**	**7:34AM**	**11:38AM**	**AM**	**PM**
D. Burges	**Temp 2min**	60.4˚C	65.6˚C	61.4˚C	62.8˚c	64.2˚c	60.4˚c	64.2˚c	65.2˚c	60.2˚c	62.2˚c	**62.1˚c**	**63.2˚c**
41 Galah	**Temp 5min**	64.2˚C	63.0˚C	63.2˚C	66.2˚c	64.2˚c	61.2˚c	65.0˚c	64.8˚c	61.8˚c	65.4˚c	**63.7˚c**	**64.1˚c**
House I	**Time**	**9:22AM**	**1:30PM**	**7:52AM**	**2:49PM**	**7:59AM**	**2:38PM**	**8:17AM**	**2:36PM**	**8:18AM**	**12:31pm**	**AM**	**PM**
Control	**Temp 2min**	49.8˚C	49.6˚C	58.4˚C	61.6˚c	58.6˚c	60.4˚c	58.8˚c	40.4˚c	59.8˚c	60.0˚c	**57.1˚c**	**54.4˚c**
39 Quarrion	**Temp 5min**	46.8˚C	54.6˚C	59.2˚C	62.2˚c	58.8˚c	61.0˚c	56.6˚c	60.2˚c	58.8˚c	62.5˚c	**56.0˚c**	**60.1˚c**
Ambiant Temperature		**Lo 3˚c**	**Hi 21˚c**	**Lo 6˚c**	**Hi 23˚c**	**Lo 2˚c**	**Hi 18˚c**	**Lo 1˚c**	**Hi 18˚c**	**Lo 1˚c**	**Hi 19˚c**		

Temperatures are taken after 2 minutes and 5 minutes of water running

5°36'55"S 144°15'51"E

26°36'51"S 144°16'23



5°37'24"S 144°15'56"E

26°37'20"S 144°16'28

A product of

Queensland Globe



Legend located on next page

N

0 100 metres

Scale: 1:5059

Printed at: A4

Print date: 17/6/2020

Datum: Geocentric Datum of Australia 1994
Projection: Web Mercator EPSG 102100

For more information, visit https://qldglobe.information.qld.gov.au/help-info/Contact-us.html

ıcludes material © State of Queensland 2020. ou are responsible for ensuring that the map is uitable for your purposes. The State of ueensland makes no representation or arranties in relation to the map contents and isclaims all liability.

nagery includes material © CNES reproduced nder license from Airbus DS, all rights reserved © IAT © Earth-i, all rights reserved, 2019

Queensland Government

Department of Natural Resources, Mines and Energ

APPENDIX F

EROMANGA OCPs & CCPs

<table>
<tr><th colspan="4">Operational Control Point 1 – Free Chlorine Residual, Eromanga Distribution System</th></tr>
<tr><th>What is Measured?</th><th>Where/how is it measured?</th><th>What is the Control Point?</th><th>What are the Hazards?</th></tr>
<tr><td>Free chlorine residual at the RO plant and Eromanga distribution system.</td><td>Fortnightly grab samples:

- RO Plant
- Eromanga Pub
- Eromanga Hall
- Neil Street</td><td>Chlorine within the distribution system.</td><td>Bacteria

Virus</td></tr>
<tr><td colspan="4">Target Value: 0.5 mg/L

- Routine sampling of free chlorine residual at the RO plant and within the distribution system.</td></tr>
<tr><td colspan="4">Alert Level: <0.5 mg/L or >3mg/L</td></tr>
<tr><td colspan="4">- Check hand held chlorine meter is calibrated and check glassware is clean and scratch free.
- Inspect chlorine dosing systems – ensure pumps are calibrated, there is sufficient sodium hypochlorite and that there are no issues with the dosing lines. Adjust chlorine dose rate as required.
- Confirm clean water tank free chlorine residual (CCP1).
- Commence flushing at the downstream hydrant for ~10 minutes. Re-test for free chlorine residual.
- If target free chlorine level has been re-established then continue scheme operation as normal.</td></tr>
</table>

<table>
<tr><th colspan="4">Operational Control Point 2 – Turbidity, Eromanga Distribution System</th></tr>
<tr><th>What is Measured?</th><th>Where/how is it measured?</th><th>What is the Control Point?</th><th>What are the Hazards?</th></tr>
<tr><td>Turbidity at the RO plant and Eromanga distribution system.</td><td>Fortnightly grab samples:

- RO Plant
- Eromanga Pub
- Eromanga Hall
- Neil Street</td><td>Filtration at the RO plant.</td><td>Bacteria

Virus</td></tr>
<tr><td colspan="4">Target Value: <1 NTU

- Routine sampling of turbidity from the clean water tank and Eromanga distribution system.</td></tr>
<tr><td colspan="4">Alert Level: >1 NTU</td></tr>
<tr><td colspan="4">- Calibrate hand held turbidity meter and check glassware is clean and free of scratches.
- Inspect upstream processes (i.e. media filters and cartridge filter pressure).
- Confirm clean water tank free chlorine residual and that the U.V system is operational.
- Change filters if needed, flush clean water tank or contact external contractor.
- If the target turbidity level has been re-established then continue scheme operation as normal.</td></tr>
</table>

<table>
<tr><th colspan="4">Operational Control Point 3 – pH, Eromanga Distribution System</th></tr>
<tr><th>What is Measured?</th><th>Where/how is it measured?</th><th>What is the Control Point?</th><th>What are the Hazards?</th></tr>
<tr><td>pH at the RO plant and Eromanga distribution system.</td><td>Fortnightly grab samples:

- RO Plant
- Eromanga Pub
- Eromanga Hall
- Neil Street</td><td>pH at the RO plant.</td><td>Scaling</td></tr>
<tr><td colspan="4">Target Value: 6.8 – 7.4

- Routine sampling of turbidity from the clean water tank and Eromanga distribution system.</td></tr>
<tr><td colspan="4">Alert Level: <6.5 & >8</td></tr>
<tr><td colspan="4">- Calibrate hand held pH meter and check glassware is clean and free of scratches.
- Inspect acid dosing systems – ensure pumps are calibrated, there is sufficient acid and that there are no issues with the dosing lines. Adjust dose rate as required.
- Inspect upstream processes (i.e. RO and filtration).
- Flush clean water tank if needed or contact external contractor.
- If the target pH level has been re-established then continue scheme operation as normal.</td></tr>
</table>

<table>
<tr><th colspan="4">Critical Control Point 1 – Free Chlorine Residual, Eromanga RO Plant</th></tr>
<tr><th>What is Measured?</th><th>Where/how is it measured?</th><th>What is the Control Point?</th><th>What are the Hazards?</th></tr>
<tr><td>Free chlorine within the clean water tank.</td><td>Grab samples - online monitoring not currently connected to SCADA.</td><td>Chlorine dosing at the RO Plant (clean water tank).</td><td>Bacteria

Virus</td></tr>
<tr><td colspan="4">Target Value: 1mg/L

- Weekly site inspections (including confirming chlorine dose rate and instrument checks).</td></tr>
<tr><th colspan="2">Alert Level: <0.5mg/L or <3mg/L</th><th colspan="2">Critical Limit: <0.2mg/L or >5mg/L</th></tr>
<tr><td colspan="2">- Take grab sample to confirm online monitoring (if required).
- Check hand held chlorine meter is calibrated and check glassware is clean and scratch free.
- Inspect chlorine dosing systems – ensure pumps are calibrated, there is sufficient sodium hypochlorite and that there are no issues with the dosing lines. Adjust chlorine dose rate as required.
- Check treatment processes to ensure they’re working properly (e.g. RO, U.V and filtration).
- If target free chlorine residual has been re-established then continue operation as normal. If free chlorine is still high/low consider escalating to critical limit response.</td><td colspan="2">- Take grab sample to confirm online monitoring (if required).
- Check alert level actions. If issue still persists contact external contractor.
- Ensure that the free chlorine residual throughout the town is being maintained above the lower critical limit (0.2 mg/L).
- Inform Director of Infrastructure Services.
- If free chlorine residual cannot be maintained, commence E.coli monitoring, consider Boil Water Alert and contact the Water Supply Regulator (P: 1300 596 709).
- If notification to Water Supply Regulator has been made complete all incident reporting forms.</td></tr>
</table>

<table>
<tr><th colspan="4">Critical Control Point 2 – Conductivity, Eromanga RO Plant</th></tr>
<tr><th>What is Measured?</th><th>Where/how is it measured?</th><th>What is the Control Point?</th><th>What are the Hazards?</th></tr>
<tr><td>Conductivity of treated water.</td><td>Grab samples - online monitoring not currently connected to SCADA.</td><td>Reverse Osmosis membranes.</td><td>Membrane breach.</td></tr>
<tr><td colspan="4">Target Value: ~400 µs/cm

- Weekly site inspections (including confirming conductivity and instrument checks).</td></tr>
<tr><td colspan="2">Alert Level: >800 µs/cm or <300 µs/cm</td><td colspan="2">Critical Limit: >1000 µs/cm or <200 µs/cm</td></tr>
<tr><td colspan="2">- Clean or replace RO membranes.
- Check instrument calibration and upstream RO processes.
- Check treatment processes to ensure they’re working properly (e.g. U.V, filtration and chlorine dosing).
- If target conductivity has been re-established then continue operation as normal. If conductivity is still high/low consider escalating to critical limit response.</td><td colspan="2">- Clean or replace RO membranes.
- Check instrument calibration and upstream RO processes.
- Reduce blend valve opening %.
- Check HMI faults page and conduct maintenance if required or engage external contractor.
- Check treatment processes to ensure they’re working properly (e.g. U.V, filtration and Chlorine dosing).
- Inform Director of Infrastructure Services and contact the Water Supply Regulator (P: 1300 596 709).
- If notification to Water Supply Regulator has been made complete all incident reporting forms.</td></tr>
</table>