



**QUILPIE SHIRE COUNCIL DWQMP ANNUAL
REPORT
2021-22 FINANCIAL YEAR
Drinking Water Service Provider ID 108**

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1.0 INTRODUCTION

This is the Drinking Water Quality Management Plan (DWQMP) Annual Report for Quilpie Shire Council (QSC) for the 2021- 22 financial year. This annual report will assist the Regulator to determine whether the approved DWQMP and any approval conditions have been complied with. It further provides a mechanism for service providers to report publicly on their performance in managing drinking water quality.

QSC is a registered Service Provider with Identification (SPID) number 108. QSC operates under an approved DWQMP to ensure consistent supply of safe quality drinking water in order to protect public health. This is done through proactive identification and minimisation of public health related risks associated with drinking water.

This DWQMP report includes:

- Activities undertaken over the financial year in operating Council's drinking water service
- Drinking water quality summary
- A summary of Council's performance in implementing the approved DWQMP
- Incidents reported to the Regulator
- Customer complaints
- Review outcomes and audit findings.

This report will be made available publicly to Council customers through the website or upon request at the Council offices.

2.0 SUMMARY OF SCHEMES OPERATED

Quilpie Shire is located in south-western QLD and covers an area of 67,482 km² with a permanent population of approximately 665 people. Quilpie Shire consists of the towns of Quilpie, Eromanga and Adavale, however, there are only two operational water schemes in the shire, located in Quilpie and Eromanga. The administration centre of the shire is in Quilpie. The Quilpie scheme sources its water from two Artesian bores, whilst the Eromanga scheme sources water from four sub-Artesian bores. Being sub-Artesian sources, these bores yield low volumes of poor quality non-potable water, subsequently, Eromanga's source water undergoes treatment before it can be reticulated to the community.

Table 1: Summary of Drinking Water Schemes.

Town	Water Source	Treatment	Pop. Served	No. Conns	Demand
Quilpie	Artesian Bore Water	None	595	427	1200 KL/d
Eromanga	Sub-Artesian Bore Water	Reverse osmosis and chlorination	45	43	104 KL/d
Adavale	Not applicable, Council does not provide drinking water to Adavale.		15	Not Applicable.	

3.0 DWQMP IMPLEMENTATION

The implementation of QSC's DWQMP has provided Council with an operational framework to manage the water supply systems of Quilpie and Eromanga. The operational systems implemented have allowed personnel to optimise water quality within the distribution systems of Quilpie and Eromanga. The risk management components of the DWQMP have been a priority for QSC for providing a safe and reliable water source for the local population.

Table 2 below provides a status summary of the Risk Management Improvement Programme, this programme is an integral part of the DWQMP as it identifies the main risk factors and mitigation measures associated with Council's drinking water schemes.

It should be noted that Council's DWQMP was submitted for Amendment in November 2021, however, the Amendment was not approved until after the end of the 2021-22 financial year. Therefore, the old 2018 Amendment will be the point of reference for this report and subsequently, some references may appear to be out of date.

Table 2: Quilpie Shire Council Risk Management Improvement Program Implementation Status.

Scheme	Component	Improvement Actions	Target Date	Actions Taken To Date	Status/Revised Target Date	Responsible Officer
Quilpie	Source Water	Draft Fluoride fact-sheet and distribute annually to the community.	July 2018	Annual notification is distributed to residents (latest notification took place on the 20 th October 2022) via the postal service. A Facebook notification was also sent out at the same time via Quilpie's Facebook page. Notification was sent to the Regulator that this had been done.	Ongoing, item has been carried over to the 2021 Amendment.	Director of Works
Quilpie /Eromanga	Whole of System	Update operation and maintenance procedures to address deficiencies such as operational monitoring data capture, backup staffing to achieve monitoring at required frequencies and safe work methods.	June 2018	Completed.	Completed.	Director of Works
Quilpie/ Eromanga	Whole of System	Update operation and maintenance procedures to include safe practices for maintenance and repair of water mains.	June 2018	Completed.	Completed.	Director of Works
Quilpie/ Eromanga	Whole of System	Develop roles and responsibilities for all stakeholders to address deficiencies in the DWQMP such as operational monitoring, data management and document control.	April 2018	Completed.	Completed.	Director of Works
Quilpie/ Eromanga	Whole of System	Develop a DWQMP Document register and document control.	March 2018	All verification and operational monitoring (and anything else related to water and sewage) are recorded using Council's document control system Infoexpert.	Completed.	Director of Works

Scheme	Component	Improvement Actions	Target Date	Actions Taken To Date	Status/Revised Target Date	Responsible Officer
Quilpie/ Eromanga	Whole of System	Identify key staff that require training, including back-up staff). Develop a training matrix identifying a standard training requirement for all staff involved in drinking water quality management.	June 2019	The South-West Regional Organisation of Council's Water Alliance has agreed to carry out water operator training using Simmonds and Bristow as the training provider to train WTP personnel.	Completed.	Director of Works
Eromanga	Water Treatment Plant	Engage an RO specialise to implement critical maintenance on an ongoing basis.	May 2018	Simmonds and Bristow were engaged to do full refurbishment of the WTP, including full documentation of the operation of the reverse osmosis process.	Completed.	Director of Works

4.0 VERIFICATION MONITORING - WATER QUALITY INFORMATION AND SUMMARY

As stipulated in the 2018 DWQMP Amendment. Council conduct monthly operational monitoring for *E.coli* within their drinking water schemes. Council also undertake weekly Free Chlorine testing at Eromanga to ensure the Chlorine residual is being maintained. Additionally, external verification monitoring of the distribution system and bores is conducted on a quarterly basis within both schemes (note, these frequencies were updated in the 2021 Amendment).

Sections 4.1 and 4.2 below summarises all operational and verification monitoring for Quilpie and Eromanga undertaken during the reporting period, while Section 4.3. discusses any potential water quality issues encountered by Council.

4.1 Operational and Verification Monitoring Results

Table 3: Quilpie Verification Monitoring Distribution and Source Water.

Quilpie	Start Date: 01/07/2021					End Date: 30/06/2022			Guideline Value				
	Parameters	Units	Frequency	Samples Tested	Max	Average	Min	Std Dev	95 th Percentile	Health	Exceedances	Aesthetic	Exceedances
<i>E.coli</i>	CFU/100mL	Quarterly	12	0	0	0	0	0	0	1	0		
Conductivity	µS/cm	Quarterly	14	1000	895	860	53.285						
pH	mg/L	Quarterly	14	8.7	8.52	8.34	0.106	8.68			≥6.5 & ≤ 8.5	9	
True Colour	Hazen	Quarterly	14	8	8	8	0	8			15	0	
Turbidity	NTU	Quarterly	14	1	1	1	0	1			5	0	
Chloride	mg/L	Quarterly	14	92	84.5	82	3.85	92			250	0	
Fluoride	mg/L	Quarterly	14	1.9	1.81	1.8	0.026	1.84	1.5	14			
Total Iron	mg/L	Quarterly	14	0.03	0.012	0.01	0.006	0.024			0.3	0	
Total Manganese	mg/L	Quarterly	14	0.03	0.007	0.003	0.0006	0.014	0.5	0			
Silica (SiO ₂)	mg/L	Quarterly	14	42	41.79	41	0.41	42			80	0	
Sodium	mg/L	Quarterly	14	240	208.57	200	15.05	240			180	14	
Potassium	mg/L	Quarterly	14	2.6	2.39	2.3	0.12	2.6					
Sulphate	mg/L	Quarterly	14	7.9	6.91	5.9	0.74	7.84	500	0	250	0	
Zinc	mg/L	Quarterly	14	0.06	0.06	0.06	0	0.06			3	0	
Aluminium	mg/L	Quarterly	14	0.05	0.039	0.03	0.007	0.05			0.2	0	
Boron	mg/L	Quarterly	14	0.61	0.523	0.49	0.046	0.61	4	0			
Copper	mg/L	Quarterly	14	0.034	0.008	0.003	0.01	0.031	2	0	1	0	
Aesthetic Guideline Exceedance							Health Guideline Exceedance						

Table 4: Quilpie Operational Monitoring.

Quilpie	Start Date: 1/07/2021			End Date: 30/06/2022					Guideline Value	
Parameters	Units	No. of Samples Tested as per DWQMP	No. of Samples Tested	Summary of Results					Health	Exceedances
				Maximum Value	Average Value	Minimum Value	Std Dev	95 th Percentile		
<i>E.coli</i>	CFU/100mL	24	20	0	0	0	0	0	1	0
Aesthetic Guideline Exceedance										
Health Guideline Exceedance										

Table 5: Quilpie *E.coli* Annual Value Compliance Table.

Year	1/07/2021- 30/06/2022											
Month	July	August	September	October	November	December	January	February	March	April	May	June
No. of samples collected	2	2	2	2	4	2	2	2	3	3	3	3
No. of samples collected in which <i>E.coli</i> is detected	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	24	24	24	24	26	26	26	26	27	27	27	27
No. failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 6: Eromanga Verification Monitoring Distribution and Source Water.

Eromanga		Start Date: 01/07/2021				End Date: 30/06/2022			Guideline Value			
Parameters	Units	Frequency	Samples Tested	Max	Average	Min	Std Dev	95 th Percentile	Health	Exceedances	Aesthetic	Exceedances
<i>E. coli</i>	CFU/100mL	Quarterly	11	0	0	0	0	0	1	0		
Conductivity	µS/cm	Quarterly	11	3000	1243.417	410	1059.18	2800				
pH	mg/L	Quarterly	11	7.61	7.05	6.39	0.48	7.6			≥6.5 & ≤ 8.5	2
True Colour	Hazen	Quarterly	11	8	8	8	0	8			15	0
Turbidity	NTU	Quarterly	11	1	1	1	0	1			5	0
Chloride	mg/L	Quarterly	11	710	304	87	244.9	655			250	5
Fluoride	mg/L	Quarterly	11	0.39	0.19	0.05	0.15	0.39	1.5	0		
Total Iron	mg/L	Quarterly	11	0.01	0.01	0.01	0	0.01			0.3	0
Total Manganese	mg/L	Quarterly	11	0.001	0.001	0.001	0	0.001	0.5	0		
Silica (SiO ₂)	mg/L	Quarterly	11	79	40.45	13	28.23	75.5			80	0
Sodium	mg/L	Quarterly	11	450	192	59	146.8	405			180	5
Potassium	mg/L	Quarterly	11	6.3	2.83	0.8	2.21	5.9				
Sulphate	mg/L	Quarterly	11	290	121.36	17	111.59	265	500	0	250	1
Nitrate	mg/L	Quarterly	11	18	9.29	5	4.92	18	50	0		
Zinc	mg/L	Quarterly	11	0.06	0.06	0.06	0	0.06			3	0
Aluminium	mg/L	Quarterly	11	0.03	0.03	0.03	0	0.03			0.2	0
Boron	mg/L	Quarterly	11	0.27	0.22	0.2	0.03	0.27	4	0		
Copper	mg/L	Quarterly	11	0.044	0.016	0.003	0.02	0.043	2	0	1	0
Aesthetic Guideline Exceedance						Health Guideline Exceedance						

Table 7: Eromanga Operational Monitoring.

Eromanga		Start Date: 1/07/2021		End Date: 30/06/2022					Guideline Value			
Parameters	Units	No. of Samples Tested as per DWQMP	No. of Samples Tested	Summary of Results					Health	Exceedances	Aesthetic	Exceedances
				Maximum	Average	Minimum	Std Dev	95 th Percentile				
<i>E.coli</i>	CFU/100mL	24	18	0	0	0	0	0	1	0		
Free Chlorine	mg/L	52	62	1	0.51	0.06	0.205	0.826			>0.2, <3	3
Aesthetic Guideline Exceedance												
Health Guideline Exceedance												

Table 8: Eromanga *E.coli* Annual Value Compliance Table.

Year	1/07/2021 - 30/06/2022											
	July	August	September	October	November	December	January	February	March	April	May	June
No. of samples collected	2	2	0	2	2	2	2	2	3	3	3	3
No. of samples collected in which <i>E.coli</i> is detected	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	24	24	22	22	22	22	22	22	23	24	25	26
No. failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

4.2 Summary of Results

Quilpie Verification Monitoring:

Within Quilpie's drinking water, the following ADWG aesthetic exceedances were reported:

- pH (9 exceedances from 14 samples)
- Sodium (14 exceedances from 14 samples)

The following ADWG health exceedances were reported:

- Fluoride (14 exceedances from 14 samples)*

***Note:** Elevated Fluoride levels detected in Quilpie's drinking water has been identified as a hazard in Council's DWQMP, this is further discussed in Section 5 below.

Eromanga Verification Monitoring:

Within Eromanga's drinking water, the following ADWG aesthetic exceedances were reported:

- pH (2 exceedances from 11 samples)
- Chloride (5 exceedances from 11 samples)
- Sodium (5 exceedances from 1 samples)
- Sulphate (1 exceedance from 11 samples)

There were no ADWG health exceedances reported in the Eromanga scheme during the reporting period.

Quilpie and Eromanga Operational Monitoring:

There were no ADWG aesthetic or health operational monitoring exceedances reported in the Quilpie or Eromanga schemes during the reporting period.

4.3 Summary of Water Quality Within the Schemes

Since the implementation of chlorination within the Eromanga scheme, the Quilpie and Eromanga drinking water generally meets the aesthetic and health ADWG values. For the aesthetic exceedances of Chloride, Sulphate and Sodium, no ADWG health-based target is considered necessary as elevated levels are generally only associated with taste issues and therefore, do not pose any adverse threats to public health. Similarly, drinking water that does not sit within the ADWG pH aesthetic range of 6.5 and 8.5 may result in a bitter taste and pipe scaling but is not considered unsafe.

Quilpie's elevated Fluoride levels are discussed further in Section 5.

E.coli Verification and Operational Monitoring:

Bacteriological sampling within the Quilpie and Eromanga schemes recorded no positive *E.coli* results for the reporting period (Tables 5 & 8), subsequently, both schemes were compliant with the 98% *E.coli* value for the 2021-22 financial year.

5.0 INCIDENTS REPORTED TO THE REGULATOR

Table 9: Incidents Reported to the Regulator.

Incident Date	Scheme	Issue	Preventive Actions	Investigation Report
1/09/2021 11/11/2021 7/04/2022 9/06/2022	Quilpie	Fluoride in exceedance of ADWG health guideline value	Public notification and ongoing monitoring to ensure values are stable and remain only slightly above the ADWG health limit.	N/A, ongoing incident

QSC has one ongoing incident (DWI-7-108-00003) for the naturally elevated levels of fluoride within Quilpie's drinking water. Elevated fluoride levels are associated with the natural geology of the area and average around 1.8mg/L. Treatment to reduce fluoride levels in the drinking water is not financially feasible, considering that the concentration is only slightly above the ADWG health value of 1.5mg/L. Despite the frequent exceedance of fluoride levels, verification monitoring four times a year has been deemed suitable for the Quilpie scheme as historical data has identified fluoride concentrations to be within a consistent range. The main issue associated with elevated fluoride levels in Quilpie is dental fluorosis primarily affecting children under the age of 6. At this stage, Council's primary management strategy is to provide annual public notification to residents in the form of a fluoride fact-sheet to help the community understand the potential impacts of elevated fluoride in the drinking water. This notification is distributed through the postal service and the Council Facebook page. The Fluoride fact-sheet can also be found on Council's website which is accessible to the public all year round.

6.0 CUSTOMER COMPLAINTS

There was only one customer complaint made to Council during the 2021-22 financial year.

Table 10: QSC 2021-22 Financial Year Customer Complaints.

Scheme	Health Concern	Dirty Water	Taste and Odour	Other
Quilpie	1	0	0	0
Eromanga	0	0	0	0
Total	1	0	0	0

This complaint occurred in November 2021 and was in regards to reports of several individuals becoming sick from water borne diseases, notably Giardia. On becoming aware of the issue, Council immediately contacted Darling Downs Public Health Unit to determine how to proceed with the investigation into the complaint. Council were advised by the Public Health Unit that due to the heat of Quilpie's bore water (78°C), it was highly unlikely that these cases arose from the bore water. Instead, they suggested that the cases most likely came from cold water sources (e.g. rainwater tanks). On advice from the Public Health Unit, Council undertook additional verification monitoring the week following this complaint, including the testing of resident's rainwater tanks (where access was permitted). This isolated the issue to two rainwater tanks. Residents of these rainwater tanks were notified and advised by Council to drain their tanks. The complaint was not elevated to a Drinking Water Event as the Darling Downs Public Health Unit did not think it was necessary considering that it was extremely unlikely that the water borne diseases originated from Quilpie's source water.

7.0 DWQMP REVIEW OUTCOMES

The last DWQMP Review was conducted in February 2022. Council were already in the process of Amending their DWQMP when this Review was completed and therefore, the Review did not identify any further need to update the DWQMP. The Amendment was approved in October 2022. The next Review is scheduled for completion by the 31st March 2024.

8.0 DWQMP AUDIT FINDINGS

An audit was completed in September 2021. The major audit findings are summarised in Table 10 below. Audit findings and recommendations were incorporated into the 2021 DWQMP Amendment. Therefore, no further Amendment to the DWQMP is required by Council.

Table 11: DWQMP Audit summary of major non-conformances.

Item	Non-conformance	Action	Status of actions	Responsible Officer / Position
Preventative measures for drinking water quality management.	No formal mains repair procedure was able to be produced during the audit.	This was addressed in the procedure review undertaken by Simmonds & Bristow.	Complete.	Director of Works
Preventative measures for drinking water quality management.	There is no proactive monitoring for unauthorised connections or backflow events that would appear to warrant the reduction in risk from a High (10) to a Low (3).	All items in the Risk Assessment were updated in the 2022 Amendment.	Complete.	Director of Works
Operational procedures and process control	Operational monitoring for <i>E.coli</i> is not being undertaken at the frequency specified in the DWQMP.	Council have reviewed their operational monitoring requirements and are now undertaking monitoring as stipulated in the DWQMP.	Complete.	Director of Works
Verification of drinking water quality	The verification monitoring programme is not implemented as stated in the DWQMP.	Council have reviewed their verification monitoring requirements and are now undertaking monitoring as stipulated in the DWQMP.	Complete.	Director of Works
Documentation and reporting	Key documents and records were not able to be produced during the audit.	Council have reviewed their document management system and now store all data and records in their document control system Infoexpert.	Complete.	Director of Works
Review and continual improvement	Several RMIP items were not completed by their due date.	Timeframes for all RMIP items were reviewed and updated in the 2022 Amendment.	Ongoing.	Director of Works

Table 12: DWQMP Audit summary of major improvement actions.

Item	Improvement Action	Action	Status of actions	Responsible Officer / Position
Assessment of the drinking water supply scheme	Confirm the pore size of the cartridge filters and clarify in the DWQMP.	This was updated in the 2022 DWQMP Amendment.	Complete.	Director of Works
Assessment of the drinking water supply scheme	Summarise <i>E.coli</i> monitoring results (internal and external) and present in the next update to the DWQMP.	This was updated in the 2022 DWQMP Amendment.	Complete.	Director of Works
Preventive measures for drinking water quality management	At the next risk assessment review, carefully consider the logic associated with lowering the likelihood vs. consequence associated with a particular hazard.	All items in the Risk Assessment were updated in the 2022 Amendment.	Complete.	Director of Works
Preventive measures for drinking water quality management	Implement a chlorine disinfection CCP at the Eromanga WTP with an appropriate critical limit that ensures sufficient disinfection of chlorine sensitive pathogens.	Simmonds & Bristow are currently undertaking a review of the Eromanga WTP operation and maintenance procedures.	Ongoing.	Director of Works
Operational Procedures and Process Control	Consider a review and formal documentation of informal procedures at the Eromanga WTP and development of any missing procedures.	Simmonds & Bristow are currently undertaking a review of the Eromanga WTP operation and maintenance procedures.	Ongoing.	Director of Works
Operational Procedures and Process Control	Resolve the communications issues with the Eromanga WTP so that it can be effectively monitored from Quilpie.	Simmonds & Bristow are currently undertaking a review of the Eromanga WTP operation and maintenance procedures.	Ongoing.	Director of Works
Operational Procedures and Process Control	Implement the Eromanga WTP inspection and maintenance schedules once they are provided, maintain records of inspections and maintenance and periodically review results internally.	Simmonds & Bristow are currently undertaking a review of the Eromanga WTP operation and maintenance procedures.	Ongoing.	Director of Works