Drinking Water Quality Management Plan (DWQMP) report

2023-24

Maranoa Regional Council

SPID: 494

Cnr Bungil & Quintin Streets
Roma QLD 4455
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Glossary of terms

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

1. Introduction

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

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

This template has been prepared in accordance with the *Water Industry Regulatory Reform – drinking water quality management plan report factsheet* published by the Department of Energy and Water Supply, Queensland, accessible at www.dews.qld.gov.au.

2. Actions taken to implement the DWQMP

Operational limits have been set and are monitored by field crews. Verification monitoring is also carried out by our laboratory staff on a routine basis. Results that are out of operational limits are referred to supervisors for corrective action.

Progress in implementing the risk management improvement program

Refer to the Appendices for a summary of progress in implementing each of the Improvement Program actions.

Key Improvement items are tagged for capital upgrade consideration each financial year or applied for when suitable external funding becomes available. Operational improvements are conducted within existing operational budgets based on their priority.

Revisions made to the operational monitoring program to assist in maintaining the compliance with water quality criteria[1] in verification monitoring.

The current approved plan is in effect with copies dispatched to all operational staff, and regular discussion with field staff to make them aware of the requirements under the plan.

Amendments made to the DWQMP

This year the amendments proposed to be made to the plan involve updating the organizational structure, updating the risk management matrix with current processes and procedures, updating of schematic plans and updating operational data.

3. Compliance with water quality criteria for drinking water

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

Amby

Parameter	Unit	Limit	No of Samples	No of Non-conforming	Max
E. coli	MPN/100mL	<1	63	5	>200.50
coliforms	MPN/100mL	N/A	63	N/A	N/A
pH	pH	6.5 – 8.5	49	39	9.4
Chlorine (Free)	mg/L	< 5.0	46	0	1.49
Chlorine (Total)	mg/L	< 5.0	41	0	1.69

Injune

Parameter	Unit	Limit	No of Samples	No of Non-conforming	Max
E. coli	MPN/100mL	<1	80	0	0
coliforms	MPN/100mL	N/A	80	N/A	N/A
pH	pH	6.5 – 8.5	71	0	8.4
Chlorine (Free)	mg/L	< 5.0	53	0	1.16
Chlorine (Total)	mg/L	< 5.0	53	0	1.18

Jackson

Parameter	Unit	Limit	No of Samples	No of Non-conforming	Max
E. coli	MPN/100mL	<1	25	0	0
coliforms	MPN/100mL	N/A	25	N/A	N/A
pH	pH	6.5 – 8.5	25	25	9.2
Chlorine (Free)	mg/L	< 5.0	25	1	24.2
Chlorine (Total)	mg/L	< 5.0	25	1	24.4

Mitchell

Parameter	Unit	Limit	No of Samples	No of Non-conforming	Max
E. coli	MPN/100mL	<1	96	0	0
coliforms	MPN/100mL	N/A	96	N/A	N/A
pH	pH	6.5 – 8.5	96	90	9.4
Chlorine (Free)	mg/L	< 5.0	81	0	4.7
Chlorine (Total)	mg/L	< 5.0	71	0	4.9

Muckadilla

Parameter	Unit	Limit	No of Samples	No of Non-conforming	Max
E. coli	MPN/100mL	<1	27	0	0
coliforms	MPN/100mL	N/A	27	N/A	N/A
pH	pH	6.5 – 8.5	27	27	9.2
Chlorine (Free)	mg/L	< 5.0	18	0	2.03
Chlorine (Total)	mg/L	< 5.0	18	0	2.18

Mungallala

Parameter	Unit	Limit	No of Samples	No of Non-conforming	Max
E. coli	MPN/100mL	<1	44	2	9
coliforms	MPN/100mL	N/A	44	N/A	N/A
pH	pH	6.5 – 8.5	39	0	8.3
Chlorine (Free)	mg/L	< 5.0	26	0	3.4
Chlorine (Total)	mg/L	< 5.0	24	0	3.9

Roma

Parameter	Unit	Limit	No of Samples	No of Non-conforming	Max
E. coli	MPN/100mL	<1	919	2	1
coliforms	MPN/100mL	N/A	919	N/A	N/A
pH	pH	6.5 – 8.5	914	596	9.2
Chlorine (Free)	mg/L	< 5.0	803	0	2.09
Chlorine (Total)	mg/L	< 5.0	803	0	2.17

Surat

Parameter	Unit	Limit	No of Samples	No of Non-conforming	Max
E. coli	MPN/100mL	<1	115	1	1
coliforms	MPN/100mL	N/A	115	N/A	N/A
pH	pH	6.5 – 8.5	115	0	8.3
Chlorine (Free)	mg/L	< 5.0	79	0	3.29
Chlorine (Total)	mg/L	< 5.0	79	0	3.34

Wallumbilla

Parameter	Unit	Limit	No of Samples	No of Non-conforming	Max
E. coli	MPN/100mL	<1	48	0	0
coliforms	MPN/100mL	N/A	48	N/A	N/A
pH	pH	6.5 – 8.5	44	12	8.8
Chlorine (Free)	mg/L	< 5.0	46	0	1.44
Chlorine (Total)	mg/L	< 5.0	46	0	1.75

Yuleba

Parameter	Unit	Limit	No of Samples	No of Non-conforming	Max
E. coli	MPN/100mL	<1	82	0	0
coliforms	MPN/100mL	N/A	82	N/A	N/A
pH	pH	6.5 – 8.5	78	21	8.7
Chlorine (Free)	mg/L	< 5.0	63	0	1.9
Chlorine (Total)	mg/L	< 5.0	63	0	2.1

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

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

This discrepancy between obtaining positive E.coli results yet not notifying the Regulator has been addressed through the audit. There was a misunderstanding that if a positive reading was obtained from a offline bore or other source that was not supplying the drinking water network then reporting was not necessary. Also if a very low positive result was recorded but then an immediate retested sample achieved a negative result then the regulator was not notified.

This is now understood not the correct way to comply with the DWQMP and all positive results regardless of offline source or probable false positives will be reported and acted on.

5. Customer complaints related to water quality

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

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

Table 1 - complaints about water quality, (including per 1,000 customers)

# Complaints (# per 1,000 customers)	Suspected Illness	Discoloured water	Taste and odour	Total
Amby	0 (0.0)	0 (0.0)	**0 (0.0)**	**0 (0.0)**
Injune	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Jackson	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Mitchell	0 (0.0)	**1 (1.05)**	**0 (0.0)**	**1 (1.05)**
Muckadilla	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Mungallala	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Roma	**1 (0.15)**	**13 (1.09)**	**1 (0.15)**	**15 (2.19)**
Surat	0 (0.0)	**0 (0.0)**	**0 (0.0)**	**0 (0.0)**
Wallumbilla	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Yuleba	0 (0.0)	03 (11.1)	**0 (0.0)**	**3 (11.1)**
Total	**1 (0.11)**	**17 (1.80)**	**1 (0.11)**	**19 (2.01)**

Suspected Illness

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

While there were no suspected illnesses reported due to *E. coli*, the townships of Amby and Mungallala both had failed micro bacterial samples where there was *E. coli* detected. This was immediately reported and boiled water alerts were released. A mains flushing program was implemented and it was found both disinfection systems had not been working correctly. These were repaired (TRILITY Water Solutions were contracted for these repairs) and the flushing continued until consecutive samples were deemed compliant, stable chlorine residual was obtained and Council were notified that the alert could be lifted.

During 2023/24, there were no confirmed cases of illness arising from the water supply system. With the reports that were received being for skin irritation attributed to chlorine disinfection in the towns. Chlorine levels were tested at several points of the house in question and found to be within acceptable limits and could not be adjusted lower without compromising chlorine residual in further segments of the network.

Discoloured water

In 2023/24, 17 customer complaints were received. As per standard procedure the areas were flushed to remove the dirty water and to achieve detectable chlorine residuals. These incidents often happen after network breaks or main repairs.

In December 2023 the Surat Water Treatment Plant had an incident where a malfunction in a power point failed to start the flocculant dosage system and this sent untreated (raw) river water into the potable reservoir. This was reported and the township was put on a boiled water alert immediately and cartons of bottled water were handed out to the residents. This boiled water notification was not permitted to be lifted until Council could provide successive samples within the acceptable range for turbidity, pH, total and free chlorine. During this period extensive flushing of mains was conducted and lasted for several weeks leading into January of 2024.

Taste and odour

The taste and odour complaints received are typically related to the smell of sulphur in the water supply bores. Once reported by customers or detected by our employees, Maranoa Regional Council investigates the issue to devise a prompt resolution, which may include flushing the reticulation. Investigation of each complaint found no public health risks, for either microbiological or chemical parameters. These odour complaints reoccur annually and coincide with hotter water being drawn up by the bores due to higher demand during summer.

6. Findings and recommendations of the DWQMP auditor

There was an audit undertaken via VIRIDIS Consultants in July 2021.

Accuracy of Monitoring and Performance Data

Compliance grade by component:

□ Verification data generated	Compliant
□ Data Accuracy in the DWQMP (annual) Reports	Minor Non-compliance
□ Data Accuracy in periodic reports	No Requirement

A minor non-compliance was identified. E. coli sampling was completed but not recorded in January 2020, however, the rolling annual value for E. coli still included sample numbers. This would have been an error, however, impacts on accuracy of data reported in the Annual Report 19-20.

Compliance with the Plan

Compliance grade by component:

□ Implementation of preventive measures	Compliant
□ Implementation of operational and maintenance procedures	Minor Non-compliance
□ Implementation of process for managing incidents and emergencies	Compliant
□ Implementation of operational and verification monitoring programs	Major Non-compliance
□ Implementation of the risk management improvement program	Compliant
□ Maintaining records	Compliant

Council generally complied with their DWQMP. However, a major non-compliance was identified with the implementation of the verification monitoring plan. Microbiological sampling and testing were completed but not recorded in January 2020, which was a major gap. A minor non-compliance was also identified. This was related to the need to review and make consistent, the frequency of reservoir inspections undertaken inhouse, and the need to review the whole process on water mains repair.

Compliance with Approval Conditions

Compliance grade by component:

□ Reporting incidents	Minor Non-compliance
□ Adhering to provisions and conditions	Compliant

A minor non-compliance was identified. There is a need to review the incident reporting procedures to clarify that any E. coli detection in treated water (even if it is a suspected error) should be reported to the Regulator.

Relevance of the Plan

Compliance grade by component:

□ Service description and details of infrastructure	Minor Non-compliance
□ Catchment characteristics and water quality information	Compliant
□ Risk assessment and risk management	Major Non-compliance
□ Operational and verification monitoring	Minor Non-compliance

Council has in place several adequate risk management measures. There were a few gaps which were identified. These have led to a major non-conformance. The gaps include the filtered water turbidity critical limit for Surat scheme, need to calculate C.t for all schemes, need to review and document the process on chemical quality assurance, and the need to review the risk assessment for Roma scheme as there have been changes to the operating conditions. Two minor non-compliances were also identified. These were related to the need to update the schematics (and associated infrastructure details) for the schemes to reflect current operating conditions, and review of the operational monitoring plan for Surat scheme.

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

A review of the DWQMP was conducted following the audit by Qldwater - DASBAC group this year. The purpose of the review was to ensure that the DWQMP remains relevant, having regard to the operation of the drinking water service. The review was conducted by:

- Wayne Mills (Manager – WS&G)
- Mathew Liston (Compliance, Reporting and Project Officer – WS&G)

The review made the following findings:

- DWQMP non-compliant with current requirements – full overhaul of document.
- Schematic layouts to be altered and clearly defined.
- Update the RMIP completed items and add newly identified items.
- Updated contact listing (staff, external, regulatory and suppliers)
- Refresher training of field staff and their knowledge of the DWQMP

Issues raised in document audit are currently being addressed

Appendix A – Summary of compliance with water quality criteria

The results from the verification monitoring program have been compared against the levels of the water quality criteria specified by the Regulator in the *Water Quality and Reporting Guideline for a Drinking Water Service*.
The reported statistics do not include results derived from repeat samples, or from emergency or investigative samples undertaken in response to an elevated result.

Table 2 - Verification monitoring results

Scheme name	Scheme component	Parameter	Frequency of sampling	Total No. samples collected	Laboratory name
Amby	Bore	Standard Chemical & Heavy Metals	Annual	3	QHFSS
Injune	Bores	Standard Chemical & Heavy Metals	Annual	3	QHFSS
Jackson	Bore	Standard Chemical & Heavy Metals	Annual	1	QHFSS
Mitchell	Bores	Standard Chemical & Heavy Metals	Annual	1	QHFSS
Muckadilla	Bore	Standard Chemical & Heavy Metals	Annual	2	QHFSS
Mungallala	Bore	Standard Chemical & Heavy Metals	Annual	2	QHFSS
Roma	Bores	Standard Chemical & Heavy Metals	Annual	9	QHFSS
Surat	River	Standard Chemical, Heavy Metals, THMs and Pesticides	Annual	2	QHFSS
Wallumbilla	Bore	Standard Chemical & Heavy Metals	Annual	2	QHFSS
Yuleba	Bore	Standard Chemical & Heavy Metals	Annual	1	QHFSS

Heavy Metals Analysis

		Aluminium	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Nickel	Zinc
Unit		**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Limit of Reporting		**0.003**	**0.0001**	**0.0001**	**0.0001**	**0.001**	**0.005**	**0.0001**	**0.0001**	**0.0001**	**0.001**
Health Limit		**N/A**	**0.01**	**0.002**	**0.05**	**2**	**N/A**	**0.01**	**0.5**	**0.02**	**N/A**
Aesthetic Limit		**0.2**	**N/A**	**N/A**	**N/A**	**1**	**0.3**	**N/A**	**0.1**	**N/A**	**3**
Amby	Bore 1	0.017	0.0003	<0.0001	<0.0001	<0.001	0.057	<0.0001	0.0077	<0.0001	0.001
Injune	Bore 2	0.051	0.0001	<0.0001	<0.0001	0.002	0.97	0.0007	0.0054	0.0005	0.098
	Bore 3	<0.003	<0.0001	<0.0001	<0.0001	<0.001	0.51	<0.0001	0.013	<0.0001	0.003
	Bore 4	<0.003	<0.0001	<0.0001	<0.0001	<0.001	0.19	<0.0001	0.006	<0.0001	0.074
Jackson	Bore 1	0.004	<0.0001	0.0002	<0.0001	0.001	0.002	0.0001	0.0063	<0.0001	0.004
Mitchell	Bore 1	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline
	Bore 2	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline
	Bore 3	0.042	0.0013	<0.0001	<0.0001	0.002	<0.005	0.0003	0.0015	<0.0001	0.003
Muckadilla	Bore 1	0.013	0.0001	<0.0001	<0.0001	<0.001	0.04	<0.0001	0.0074	<0.0001	<0.001
Mungallala	Bore 1	<0.003	<0.0001	<0.0001	<0.0001	<0.001	0.73	<0.0001	0.071	0.0001	0.003
Roma	Bore 2	0.009	0.0001	<0.0001	<0.0001	<0.001	0.017	<0.0001	0.0045	<0.0001	0.001
	Bore 3	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline
	Bore 7	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline
	Bore 9	0.008	0.0002	<0.0001	<0.0001	0.005	1.2	0.0004	0.0087	<0.0001	0.004
	Bore 11	0.010	0.0002	<0.0001	<0.0001	<0.001	0.035	<0.0001	0.0051	<0.0001	<0.001
	Bore 12	0.007	0.0001	<0.0001	<0.0001	0.025	0.030	0.0006	0.0054	<0.0001	0.005
	Bore 13	0.005	0.0001	<0.0001	<0.0001	0.04	0.033	0.0004	0.01	<0.0001	<0.001
	Bore 14	0.006	0.0001	<0.0001	<0.0001	0.002	0.066	0.0002	0.0088	<0.0001	0.098
	Bore 15	0.008	<0.0001	<0.0001	<0.0001	<0.001	0.012	<0.0001	0.0058	<0.0001	0.001
	Bore 16	0.008	0.0003	<0.0001	<0.0001	0.002	0.018	0.0001	0.005	<0.0001	0.005
	Bore 17	0.009	0.0002	<0.0001	<0.0001	<0.001	0.008	0.0001	0.007	<0.0001	0.001
	Bore 18	0.009	0.0002	<0.0001	<0.0001	<0.001	0.025	<0.0001	0.0084	<0.0001	<0.001

	Bore 19	0.008	<0.0001	<0.0001	<0.0001	<0.001	<0.005	<0.0001	0.0073	<0.0001	<0.001
	Bore 20	0.007	<0.0001	<0.0001	<0.0001	<0.001	0.014	0.0002	0.026	<0.0001	0.001
Surat	Treated	0.006	0.0004	<0.0001	<0.0001	0.001	<0.005	0.0002	0.0003	0.0007	0.008
Wallumbilla	Bore 1	0.003	<0.0001	<0.0001	<0.0001	0.004	0.016	0.0002	0.0063	<0.0001	0.001
	Bore 3	0.004	0.0002	<0.0001	0.0002	<0.001	1.1	<0.0001	0.041	0.0001	0.002
Yuleba	Bore 1	0.006	0.0002	<0.0001	<0.0001	0.002	0.041	0.0003	0.0036	<0.0001	0.007

Standard Chemical Analysis – Mitchell Reservoir Bore 3

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)
Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: C Avancena

Laboratory Reference	: SSP0088706
Client Order No.	: WO#11287/90/91
Date Received	: 17-May-2024
Laboratory Number	: 24NA4450
Batch No	: 893-09

Client Reference	: **MIT -4**
Date Sampled	: **16-May-2024**
Sample Source	: **Bore**
Sample Point	: **Mitchell, Bore 3**
Further Information:	:

Submitting Authority	: **Maranoa Regional Council**
Reason for Analysis	: **Compliance**
Water Treatment	: **Untreated**

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
18320	Conductivity @ 25°C	µs/cm	**640**		
18320	pH	at 21°C	**9.13**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**2.4**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**2.4**		
18320	Alkalinity	mg $CaCO_3$/L	**200**		
18209	Residual Alkali*	meq/L	**4.0**		
18195	Silica	mg/L	**31**		80
18209	Total Dissolved Ions*	mg/L	**455**		
18209	Total Dissolved Solids*	mg/L	**380**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**9.2**		
18209	Saturation Index*		**-0.1**		
18209	Mole Ratio*		**0.8**		
18209	Sodium Absorpt. Ratio*		**40**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
	CATIONS				
18195	Sodium	mg/L	**140**		180
18195	Potassium	mg/L	**0.46**		
18195	Calcium	mg/L	**0.9**		
18195	Magnesium	mg/L	**< 0.03**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**214**		
18209	Carbonate*	mg/L	**17**		
18209	Hydroxide*	mg/L	**0.2**		
35047	Chloride	mg/L	**61**		250
35047	Fluoride	mg/L	**0.31**	1.5	
35047	Nitrate	mg/L	**0.05**	50	
35047	Sulphate	mg/L	**19**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**< 0.01**		0.3
18195	Manganese	mg/L	**0.003**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**0.05**		0.2
18195	Boron	mg/L	**0.04**	4	
18195	Copper	mg/L	**0.005**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 1129.00 TC 6.26 TA 6.22 Imb 0.03 A I/C 0.54

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates that the value for pH exceeds the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

NATA Accredited Laboratory 41 Accredited for compliance with ISO/IEC 17025 - Testing.
WORLD RECOGNISED ACCREDITATION

24NA4450

M. Goldthorpe

Nigel Goldthorpe
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07-Jun-2024

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Standard Chemical Analysis – Amby Bore 1

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)
Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: C Avancena

Laboratory Reference	: SSP0088706
Client Order No.	: WO#11287/90/91
Date Received	: 17-May-2024
Laboratory Number	: 24NA4451
Batch No	: 893-10

Client Reference	: **AMB -1**
Date Sampled	: **16-May-2024**
Sample Source	: **Bore**
Sample Point	: **Amby**
Further Information:	:

Submitting Authority	: **Maranoa Regional Council**
Reason for Analysis	: **Compliance**
Water Treatment	: **Untreated**

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
18320	Conductivity @ 25°C	µs/cm	**680**		
18320	pH	at 21°C	**9.18**	6.5 - 8.5	
18209	Total Hardness*	mg $CaCO_3$/L	**2.9**	200	
18209	Temporary Hardness*	mg $CaCO_3$/L	**2.9**		
18320	Alkalinity	mg $CaCO_3$/L	**200**		
18209	Residual Alkali*	meq/L	**4.0**		
18195	Silica	mg/L	**22**	80	
18209	Total Dissolved Ions*	mg/L	**477**		
18209	Total Dissolved Solids*	mg/L	**390**	600	
18206	True Colour	Hazen	**< 8**	15	
18212	Turbidity	NTU	**< 1**	5	
18209	pH Sat.* (calc. for $CaCO_3$)		**9.1**		
18209	Saturation Index*		**0.1**		
18209	Mole Ratio*		**0.7**		
18209	Sodium Absorpt. Ratio*		**38**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
	CATIONS				
18195	Sodium	mg/L	**150**		180
18195	Potassium	mg/L	**0.58**		
18195	Calcium	mg/L	**1.2**		
18195	Magnesium	mg/L	**< 0.03**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**209**		
18209	Carbonate*	mg/L	**19**		
18209	Hydroxide*	mg/L	**0.2**		
35047	Chloride	mg/L	**59**		250
35047	Fluoride	mg/L	**0.07**	1.5	
35047	Nitrate	mg/L	**< 0.05**	50	
35047	Sulphate	mg/L	**39**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**< 0.01**		0.3
18195	Manganese	mg/L	**0.008**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**< 0.03**		0.2
18195	Boron	mg/L	**0.04**	4	
18195	Copper	mg/L	**0.004**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 1184.00 TC 6.56 TA 6.55 Imb 0.01 A I/C 0.55

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates that the value for pH exceeds the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

NATA Accredited Laboratory 41 Accredited for compliance with ISO/IEC 17025 - Testing.

24NA4451

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Standard Chemical Analysis – Mungallala Bore 1

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)
Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: C Avancena

Laboratory Reference : SSP0088706
Client Order No. : WO#11287/90/91
Date Received : 17-May-2024
Laboratory Number : 24NA4447
Batch No : 893-06

Client Reference : **MUN-1**
Date Sampled : **16-May-2024**
Sample Source : **Bore**
Sample Point : **Mungallala**
Further Information: :

Submitting Authority : **Maranoa Regional Council**
Reason for Analysis : **Compliance**
Water Treatment : **Untreated**

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
18320	Conductivity @ 25°C	µs/cm	**720**		
18320	pH	at 21°C	**7.22**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**98**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**98**		
18320	Alkalinity	mg $CaCO_3$/L	**120**		
18209	Residual Alkali*	meq/L	**0.4**		
18195	Silica	mg/L	**22**		80
18209	Total Dissolved Ions*	mg/L	**466**		
18209	Total Dissolved Solids*	mg/L	**420**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**2**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**7.9**		
18209	Saturation Index*		**-0.7**		
18209	Mole Ratio*		**2.9**		
18209	Sodium Absorpt. Ratio*		**4.6**		
18209	Figure of Merit Ratio*		**0.4**		

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
	CATIONS				
18195	Sodium	mg/L	**110**		180
18195	Potassium	mg/L	**6.4**		
18195	Calcium	mg/L	**32**		
18195	Magnesium	mg/L	**4.2**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**143**		
18209	Carbonate*	mg/L	**0.2**		
18209	Hydroxide*	mg/L	**0.0**		
35047	Chloride	mg/L	**91**		250
35047	Fluoride	mg/L	**0.11**	1.5	
35047	Nitrate	mg/L	**0.05**	50	
35047	Sulphate	mg/L	**83**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**< 0.01**		0.3
18195	Manganese	mg/L	**0.075**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**< 0.03**		0.2
18195	Boron	mg/L	**0.07**	4	
18195	Copper	mg/L	**0.005**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 1216.00 TC 6.70 TA 6.66 Imb 0.04 A I/C 0.54

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates the values do not exceed the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

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WORLD RECOGNISED ACCREDITATION

24NA4447

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Standard Chemical Analysis – Injune bore 2

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)
Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: M Liston

Laboratory Reference : SSP0088133
Client Order No. : LISTON_M
Client Batch Reference : WO#11285/10942
Date Received : 05-Apr-2024
Laboratory Number : 24NA3014
Batch No : 881-22

Client Reference : **INJ-01**
Date Sampled : **03-Apr-2024**
Sample Source : **Bore**
Sample Point : **Injune Bore 2**
Further Information :

Submitting Authority : **Maranoa Regional Council**
Reason for Analysis : **Compliance**
Water Treatment : **Untreated**

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
18320	Conductivity @ 25°C	µs/cm	**340**		
18320	pH	at 22°C	**8.29**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**6.3**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**6.3**		
18320	Alkalinity	mg $CaCO_3$/L	**160**		
18209	Residual Alkali*	meq/L	**3.0**		
18195	Silica	mg/L	**11**		80
18209	Total Dissolved Ions*	mg/L	**288**		
18209	Total Dissolved Solids*	mg/L	**210**		600
18206	True Colour	Hazen	**9**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**8.9**		
18209	Saturation Index*		**-0.6**		
18209	Mole Ratio*		**1.0**		
18209	Sodium Absorpt. Ratio*		**14**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
	CATIONS				
18195	Sodium	mg/L	**80**		180
18195	Potassium	mg/L	**0.86**		
18195	Calcium	mg/L	**2.5**		
18195	Magnesium	mg/L	**0.03**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**186**		
18209	Carbonate*	mg/L	**2.7**		
18209	Hydroxide*	mg/L	**0.0**		
35047	Chloride	mg/L	**15**		250
35047	Fluoride	mg/L	**0.10**	1.5	
35047	Nitrate	mg/L	**0.07**	50	
35047	Sulphate	mg/L	**1.7**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**0.46**		0.3
18195	Manganese	mg/L	**0.001**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**< 0.03**		0.2
18195	Boron	mg/L	**< 0.02**	4	
18195	Copper	mg/L	**< 0.003**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 645.00 TC 3.61 TA 3.59 Imb 0.01 A I/C 0.57

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates that the value for Iron exceeds the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

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WORLD RECOGNISED ACCREDITATION

24NA3014

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Standard Chemical Analysis – Injune Bore 3

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)
Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: M Liston

Laboratory Reference : SSP0088133
Client Order No. : LISTON_M
Client Batch Reference : WO#11285/10942
Date Received : 05-Apr-2024
Laboratory Number : 24NA3015
Batch No : 881-23

Client Reference : **INJ-02**
Date Sampled : **03-Apr-2024**
Sample Source : **Bore**
Sample Point : **Injune Bore 3**
Further Information: :

Submitting Authority : **Maranoa Regional Council**
Reason for Analysis : **Compliance**
Water Treatment : **Untreated**

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
18320	Conductivity @ 25°C	µs/cm	**370**		
18320	pH	at 22°C	**8.02**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**9.0**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**9.0**		
18320	Alkalinity	mg $CaCO_3$/L	**160**		
18209	Residual Alkali*	meq/L	**2.9**		
18195	Silica	mg/L	**15**		80
18209	Total Dissolved Ions*	mg/L	**305**		
18209	Total Dissolved Solids*	mg/L	**230**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**8.7**		
18209	Saturation Index*		**-0.7**		
18209	Mole Ratio*		**1.5**		
18209	Sodium Absorpt. Ratio*		**12**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
	CATIONS				
18195	Sodium	mg/L	**84**		180
18195	Potassium	mg/L	**1.2**		
18195	Calcium	mg/L	**3.5**		
18195	Magnesium	mg/L	**0.04**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**186**		
18209	Carbonate*	mg/L	**1.1**		
18209	Hydroxide*	mg/L	**0.0**		
35047	Chloride	mg/L	**21**		250
35047	Fluoride	mg/L	**0.10**	1.5	
35047	Nitrate	mg/L	**0.07**	50	
35047	Sulphate	mg/L	**7.3**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**0.24**		0.3
18195	Manganese	mg/L	**0.010**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**0.06**		0.2
18195	Boron	mg/L	**< 0.02**	4	
18195	Copper	mg/L	**< 0.003**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 696.00 TC 3.86 TA 3.84 Imb 0.02 A I/C 0.56

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates the values do not exceed the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

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24NA3015

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Standard Chemical Analysis – Injune Bore 4

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)
Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: M Liston

Laboratory Reference : SSP0088133
Client Order No. : LISTON_M
Client Batch Reference : WO#11285/10942
Date Received : 05-Apr-2024
Laboratory Number : 24NA3016
Batch No : 881-24

Client Reference : **INJ-03**
Date Sampled : **03-Apr-2024**
Sample Source : **Bore**
Sample Point : **Injune Bore 4**
Further Information: :

Submitting Authority : **Maranoa Regional Council**
Reason for Analysis : **Compliance**
Water Treatment : **Untreated**

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
18320	Conductivity @ 25°C	µs/cm	**340**		
18320	pH	at 22°C	**8.10**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**7.2**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**7.2**		
18320	Alkalinity	mg $CaCO_3$/L	**150**		
18209	Residual Alkali*	meq/L	**2.9**		
18195	Silica	mg/L	**15**		80
18209	Total Dissolved Ions*	mg/L	**289**		
18209	Total Dissolved Solids*	mg/L	**210**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**8.8**		
18209	Saturation Index*		**-0.7**		
18209	Mole Ratio*		**1.3**		
18209	Sodium Absorpt. Ratio*		**13**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
	CATIONS				
18195	Sodium	mg/L	**80**		180
18195	Potassium	mg/L	**0.92**		
18195	Calcium	mg/L	**2.8**		
18195	Magnesium	mg/L	**< 0.03**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**183**		
18209	Carbonate*	mg/L	**1.3**		
18209	Hydroxide*	mg/L	**0.0**		
35047	Chloride	mg/L	**15**		250
35047	Fluoride	mg/L	**0.10**	1.5	
35047	Nitrate	mg/L	**< 0.05**	50	
35047	Sulphate	mg/L	**6.1**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**0.10**		0.3
18195	Manganese	mg/L	**0.006**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**0.06**		0.2
18195	Boron	mg/L	**< 0.02**	4	
18195	Copper	mg/L	**< 0.003**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 647.00 TC 3.63 TA 3.61 Imb 0.02 A I/C 0.57

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates the values do not exceed the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

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WORLD RECOGNISED ACCREDITATION

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Standard Chemical Analysis – Jackson Bore 1

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)

Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: C Avancena

Laboratory Reference : SSP0089579
Client Order No. : MILLS_W
Date Received : 18-Jul-2024
Laboratory Number : 24NA6657
Batch No : 914-05

Client Reference : **JAC-2**
Date Sampled : **11-Jul-2024**
Sample Source :
Sample Point : **Jackson Bore**
Further Information :

Submitting Authority : **Maranoa Regional Council**
Reason for Analysis : **Compliance**
Water Treatment : **Untreated**

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
18320	Conductivity @ 25°C	µs/cm	**1300**		
18320	pH	at 21°C	**8.72**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**5.2**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**5.2**		
18320	Alkalinity	mg $CaCO_3$/L	**570**		
18209	Residual Alkali*	meq/L	**11**		
18195	Silica	mg/L	**21**		80
18209	Total Dissolved Ions*	mg/L	**1090**		
18209	Total Dissolved Solids*	mg/L	**780**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**8.5**		
18209	Saturation Index*		**0.3**		
18209	Mole Ratio*		**0.8**		
18209	Sodium Absorpt. Ratio*		**62**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
	CATIONS				
18195	Sodium	mg/L	**320**		180
18195	Potassium	mg/L	**1.1**		
18195	Calcium	mg/L	**2.0**		
18195	Magnesium	mg/L	**0.07**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**655**		
18209	Carbonate*	mg/L	**22**		
18209	Hydroxide*	mg/L	**0.1**		
35047	Chloride	mg/L	**84**		250
35047	Fluoride	mg/L	**0.23**	1.5	
35047	Nitrate	mg/L	**0.11**	50	
35047	Sulphate	mg/L	**< 0.2**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**< 0.01**		0.3
18195	Manganese	mg/L	**0.005**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**0.03**		0.2
18195	Boron	mg/L	**0.12**	4	
18195	Copper	mg/L	**< 0.003**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 2338.00 TC 14.14 TA 13.87 Imb 0.27 A I/C 0.58

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates that the value for Sodium, Total Dissolved Solids and pH exceeds the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

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Standard Chemical Analysis – Muckadilla Bore 1

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)
Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: M Liston

Laboratory Reference : SSP0087188
Client Order No. : WO#11290
Date Received : 31-Jan-2024
Laboratory Number : 24NA1063
Batch No : 852-16

Client Reference : **MUC-1**
Date Sampled : **25-Jan-2024**
Sample Source : **Bore**
Sample Point : **Muckadilla**
Further Information: : **Bore**

Submitting Authority : **Maranoa Regional Council**
Reason for Analysis : **Compliance**
Water Treatment : **Untreated**

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
18320	Conductivity @ 25°C	µs/cm	**700**		
18320	pH	at 20°C	**8.87**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**3.0**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**3.0**		
18320	Alkalinity	mg $CaCO_3$/L	**290**		
18209	Residual Alkali*	meq/L	**5.7**		
18195	Silica	mg/L	**21**		80
18209	Total Dissolved Ions*	mg/L	**559**		
18209	Total Dissolved Solids*	mg/L	**420**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**9.0**		
18209	Saturation Index*		**-0.1**		
18209	Mole Ratio*		**0.6**		
18209	Sodium Absorpt. Ratio*		**41**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
	CATIONS				
18195	Sodium	mg/L	**160**		180
18195	Potassium	mg/L	**0.81**		
18195	Calcium	mg/L	**1.2**		
18195	Magnesium	mg/L	**< 0.03**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**309**		
18209	Carbonate*	mg/L	**20**		
18209	Hydroxide*	mg/L	**0.1**		
35047	Chloride	mg/L	**44**		250
35047	Fluoride	mg/L	**0.14**	1.5	
35047	Nitrate	mg/L	**0.07**	50	
35047	Sulphate	mg/L	**20**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**0.02**		0.3
18195	Manganese	mg/L	**0.007**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**< 0.03**		0.2
18195	Boron	mg/L	**0.05**	4	
18195	Copper	mg/L	**< 0.003**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 1270.00 TC 7.21 TA 7.40 Imb 0.19 A I/C 0.57

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates that the value for pH exceeds the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

NATA Accredited Laboratory 41 Accredited for compliance with ISO/IEC 17025 - Testing.

24NA1063

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23-Feb-2024

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Standard Chemical Analysis – Roma Bore 9

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)

Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: M Liston

Laboratory Reference	: SSP0087188
Client Order No.	: WO#11290
Date Received	: 31-Jan-2024
Laboratory Number	: 24NA1056
Batch No	: 852-09

Client Reference	: **ROM-3**
Date Sampled	: **30-Jan-2024**
Sample Source	: **Bore**
Sample Point	: **Bore 9**
Further Information:	: **Roma**

Submitting Authority	: **Maranoa Regional Council**
Reason for Analysis	: **Compliance**
Water Treatment	: **Untreated**

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
18320	Conductivity @ 25°C	µs/cm	**1100**		
18320	pH	at 20°C	**8.88**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**4.2**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**4.2**		
18320	Alkalinity	mg $CaCO_3$/L	**320**		
18209	Residual Alkali*	meq/L	**6.4**		
18195	Silica	mg/L	**19**		80
18209	Total Dissolved Ions*	mg/L	**809**		
18209	Total Dissolved Solids*	mg/L	**650**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**8.8**		
18209	Saturation Index*		**0.1**		
18209	Mole Ratio*		**1.0**		
18209	Sodium Absorpt. Ratio*		**53**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
	CATIONS				
18195	Sodium	mg/L	**250**		180
18195	Potassium	mg/L	**0.89**		
18195	Calcium	mg/L	**1.6**		
18195	Magnesium	mg/L	**0.04**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**359**		
18209	Carbonate*	mg/L	**17**		
18209	Hydroxide*	mg/L	**0.1**		
35047	Chloride	mg/L	**110**		250
35047	Fluoride	mg/L	**0.21**	1.5	
35047	Nitrate	mg/L	**< 0.05**	50	
35047	Sulphate	mg/L	**70**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**< 0.01**		0.3
18195	Manganese	mg/L	**0.006**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**< 0.03**		0.2
18195	Boron	mg/L	**0.16**	4	
18195	Copper	mg/L	**< 0.003**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 1906.00 TC 10.94 TA 11.05 Imb 0.12 A I/C 0.57

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates that the value for Sodium, Total Dissolved Solids and pH exceeds the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

NATA Accredited Laboratory 41 Accredited for compliance with ISO/IEC 17025 - Testing.

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23-Feb-2024

24NA1056

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Standard Chemical Analysis – Roma Bore 11

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)
Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: C Avancena

Laboratory Reference	: SSP0088706
Client Order No.	: WO#11287/90/91
Date Received	: 17-May-2024
Laboratory Number	: 24NA4453
Batch No	: 893-12

Client Reference	: **ROM-10**
Date Sampled	: **16-May-2024**
Sample Source	: **Bore**
Sample Point	: **Roma, Bore 11**
Further Information:	:

Submitting Authority	: **Maranoa Regional Council**
Reason for Analysis	: **Compliance**
Water Treatment	: **Untreated**

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
18320	Conductivity @ 25°C	µs/cm	**1200**		
18320	pH	at 21°C	**8.85**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**4.4**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**4.4**		
18320	Alkalinity	mg $CaCO_3$/L	**360**		
18209	Residual Alkali*	meq/L	**7.1**		
18195	Silica	mg/L	**18**		80
18209	Total Dissolved Ions*	mg/L	**880**		
18209	Total Dissolved Solids*	mg/L	**690**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**8.7**		
18209	Saturation Index*		**0.1**		
18209	Mole Ratio*		**1.1**		
18209	Sodium Absorpt. Ratio*		**57**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
	CATIONS				
18195	Sodium	mg/L	**270**		180
18195	Potassium	mg/L	**0.95**		
18195	Calcium	mg/L	**1.7**		
18195	Magnesium	mg/L	**0.05**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**405**		
18209	Carbonate*	mg/L	**18**		
18209	Hydroxide*	mg/L	**0.1**		
35047	Chloride	mg/L	**120**		250
35047	Fluoride	mg/L	**0.24**	1.5	
35047	Nitrate	mg/L	**< 0.05**	50	
35047	Sulphate	mg/L	**62**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**0.01**		0.3
18195	Manganese	mg/L	**0.006**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**< 0.03**		0.2
18195	Boron	mg/L	**0.20**	4	
18195	Copper	mg/L	**0.005**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 2064.00 TC 12.02 TA 11.87 Imb 0.15 A I/C 0.56

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates that the value for Sodium, Total Dissolved Solids and pH exceeds the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

NATA Accredited Laboratory 41 Accredited for compliance with ISO/IEC 17025 - Testing.

24NA4453

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07-Jun-2024

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Standard Chemical Analysis – Roma Bore 12

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)
Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: M Liston

Laboratory Reference	: SSP0087188
Client Order No.	: WO#11290
Date Received	: 31-Jan-2024
Laboratory Number	: 24NA1060
Batch No	: 852-13

Client Reference	: **ROM-7**
Date Sampled	: **30-Jan-2024**
Sample Source	: **Bore**
Sample Point	: **Bore 12**
Further Information:	: **Roma**

Submitting Authority	: **Maranoa Regional Council**
Reason for Analysis	: **Compliance**
Water Treatment	: **Untreated**

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
18320	Conductivity @ 25°C	µs/cm	**1200**		
18320	pH	at 20°C	**8.86**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**4.6**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**4.6**		
18320	Alkalinity	mg $CaCO_3$/L	**330**		
18209	Residual Alkali*	meq/L	**6.4**		
18195	Silica	mg/L	**18**		80
18209	Total Dissolved Ions*	mg/L	**845**		
18209	Total Dissolved Solids*	mg/L	**680**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**8.8**		
18209	Saturation Index*		**0.1**		
18209	Mole Ratio*		**1.1**		
18209	Sodium Absorpt. Ratio*		**53**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
	CATIONS				
18195	Sodium	mg/L	**260**		180
18195	Potassium	mg/L	**0.92**		
18195	Calcium	mg/L	**1.8**		
18195	Magnesium	mg/L	**0.06**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**362**		
18209	Carbonate*	mg/L	**17**		
18209	Hydroxide*	mg/L	**0.1**		
35047	Chloride	mg/L	**130**		250
35047	Fluoride	mg/L	**0.18**	1.5	
35047	Nitrate	mg/L	**< 0.05**	50	
35047	Sulphate	mg/L	**75**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**< 0.01**		0.3
18195	Manganese	mg/L	**0.007**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**< 0.03**		0.2
18195	Boron	mg/L	**0.14**	4	
18195	Copper	mg/L	**0.040**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 2006.00 TC 11.51 TA 11.64 Imb 0.12 A I/C 0.57

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates that the value for Sodium, Total Dissolved Solids and pH exceeds the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

NATA Accredited Laboratory 41 Accredited for compliance with ISO/IEC 17025 - Testing.
MUTUAL RECOGNITION ARRANGEMENT

24NA1060

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23-Feb-2024

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Standard Chemical Analysis – Roma Bore 13

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)
Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: M Liston

Laboratory Reference	: SSP0087188
Client Order No.	: WO#11290
Date Received	: 31-Jan-2024
Laboratory Number	: 24NA1059
Batch No	: 852-12

Client Reference	: **ROM-6**	Submitting Authority	: **Maranoa Regional Council**
Date Sampled	: **30-Jan-2024**	Reason for Analysis	: **Compliance**
Sample Source	: **Bore**	Water Treatment	: **Untreated**
Sample Point	: **Bore 13**		
Further Information:	: **Roma**		

Method		Units	Result	Guidelines **	
				Health	Aesthetic
18320	Conductivity @ 25°C	µs/cm	**1200**		
18320	pH	at 19°C	**8.86**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**4.4**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**4.4**		
18320	Alkalinity	mg $CaCO_3$/L	**330**		
18209	Residual Alkali*	meq/L	**6.5**		
18195	Silica	mg/L	**18**		80
18209	Total Dissolved Ions*	mg/L	**847**		
18209	Total Dissolved Solids*	mg/L	**680**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**8.8**		
18209	Saturation Index*		**0.1**		
18209	Mole Ratio*		**1.1**		
18209	Sodium Absorpt. Ratio*		**54**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines **	
				Health	Aesthetic
	CATIONS				
18195	Sodium	mg/L	**260**		180
18195	Potassium	mg/L	**0.91**		
18195	Calcium	mg/L	**1.7**		
18195	Magnesium	mg/L	**0.03**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**367**		
18209	Carbonate*	mg/L	**16**		
18209	Hydroxide*	mg/L	**0.1**		
35047	Chloride	mg/L	**120**		250
35047	Fluoride	mg/L	**0.22**	1.5	
35047	Nitrate	mg/L	**< 0.05**	50	
35047	Sulphate	mg/L	**77**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**0.01**		0.3
18195	Manganese	mg/L	**0.008**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**< 0.03**		0.2
18195	Boron	mg/L	**0.18**	4	
18195	Copper	mg/L	**0.003**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 2012.00 TC 11.46 TA 11.65 Imb 0.18 A I/C 0.56

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates that the value for Sodium, Total Dissolved Solids and pH exceeds the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

NATA Accredited Laboratory 41 Accredited for compliance with ISO/IEC 17025 - Testing.

24NA1059

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Standard Chemical Analysis – Roma Bore 14

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)
Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: M Liston

Laboratory Reference	: SSP0087188
Client Order No.	: WO#11290
Date Received	: 31-Jan-2024
Laboratory Number	: 24NA1057
Batch No	: 852-10

Client Reference	: **ROM-4**
Date Sampled	: **30-Jan-2024**
Sample Source	: **Bore**
Sample Point	: **Bore 14**
Further Information:	: **Roma**

Submitting Authority	: **Maranoa Regional Council**
Reason for Analysis	: **Compliance**
Water Treatment	: **Untreated**

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
18320	Conductivity @ 25°C	µs/cm	**860**		
18320	pH	at 20°C	**8.87**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**3.1**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**3.1**		
18320	Alkalinity	mg $CaCO_3$/L	**340**		
18209	Residual Alkali*	meq/L	**6.7**		
18195	Silica	mg/L	**18**		80
18209	Total Dissolved Ions*	mg/L	**682**		
18209	Total Dissolved Solids*	mg/L	**510**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**8.9**		
18209	Saturation Index*		**0.0**		
18209	Mole Ratio*		**0.7**		
18209	Sodium Absorpt. Ratio*		**50**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
	CATIONS				
18195	Sodium	mg/L	**200**		180
18195	Potassium	mg/L	**0.77**		
18195	Calcium	mg/L	**1.2**		
18195	Magnesium	mg/L	**< 0.03**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**374**		
18209	Carbonate*	mg/L	**18**		
18209	Hydroxide*	mg/L	**0.1**		
35047	Chloride	mg/L	**58**		250
35047	Fluoride	mg/L	**0.19**	1.5	
35047	Nitrate	mg/L	**< 0.05**	50	
35047	Sulphate	mg/L	**28**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**< 0.01**		0.3
18195	Manganese	mg/L	**0.006**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**< 0.03**		0.2
18195	Boron	mg/L	**0.10**	4	
18195	Copper	mg/L	**< 0.003**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 1536.00 TC 8.87 TA 8.96 Imb 0.09 A I/C 0.57

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates that the value for Sodium and pH exceeds the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

NATA Accredited Laboratory 41 Accredited for compliance with ISO/IEC 17025 - Testing.
World Recognised Accreditation

24NA1057

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23-Feb-2024

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Standard Chemical Analysis – Roma Bore 15

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)
Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: M Liston

Laboratory Reference	: SSP0087188
Client Order No.	: WO#11290
Date Received	: 31-Jan-2024
Laboratory Number	: 24NA1061
Batch No	: 852-14

Client Reference	: **ROM-8**
Date Sampled	: **30-Jan-2024**
Sample Source	: **Bore**
Sample Point	: **Bore 15**
Further Information:	: **Roma**

Submitting Authority	: **Maranoa Regional Council**
Reason for Analysis	: **Compliance**
Water Treatment	: **Untreated**

Method		Units	Result	Guidelines **	
				Health	Aesthetic
18320	Conductivity @ 25°C	µs/cm	**900**		
18320	pH	at 20°C	**8.89**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**3.2**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**3.2**		
18320	Alkalinity	mg $CaCO_3$/L	**370**		
18209	Residual Alkali*	meq/L	**7.3**		
18195	Silica	mg/L	**18**		80
18209	Total Dissolved Ions*	mg/L	**724**		
18209	Total Dissolved Solids*	mg/L	**540**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**8.9**		
18209	Saturation Index*		**0.0**		
18209	Mole Ratio*		**0.7**		
18209	Sodium Absorpt. Ratio*		**52**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines **	
				Health	Aesthetic
	CATIONS				
18195	Sodium	mg/L	**210**		180
18195	Potassium	mg/L	**0.81**		
18195	Calcium	mg/L	**1.2**		
18195	Magnesium	mg/L	**0.03**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**406**		
18209	Carbonate*	mg/L	**20**		
18209	Hydroxide*	mg/L	**0.1**		
35047	Chloride	mg/L	**63**		250
35047	Fluoride	mg/L	**0.19**	1.5	
35047	Nitrate	mg/L	**< 0.05**	50	
35047	Sulphate	mg/L	**19**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**< 0.01**		0.3
18195	Manganese	mg/L	**0.006**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**< 0.03**		0.2
18195	Boron	mg/L	**0.12**	4	
18195	Copper	mg/L	**< 0.003**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 1607.00 TC 9.35 TA 9.52 Imb 0.17 A I/C 0.58

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates that the value for Sodium and pH exceeds the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

NATA Accredited Laboratory 41 Accredited for compliance with ISO/IEC 17025 - Testing.

24NA1061

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23-Feb-2024

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Standard Chemical Analysis – Roma Bore 16

Missing Data

Standard Chemical Analysis – Roma Bore 17

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)
Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: M Liston

Laboratory Reference	: SSP0087188
Client Order No.	: WO#11290
Date Received	: 31-Jan-2024
Laboratory Number	: 24NA1055
Batch No	: 852-08

Client Reference	: **ROM-2**
Date Sampled	: **30-Jan-2024**
Sample Source	: **Bore**
Sample Point	: **Bore 17**
Further Information:	: **Roma**

Submitting Authority	: **Maranoa Regional Council**
Reason for Analysis	: **Compliance**
Water Treatment	: **Untreated**

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
18320	Conductivity @ 25°C	µs/cm	**970**		
18320	pH	at 20°C	**8.90**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**3.3**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**3.3**		
18320	Alkalinity	mg $CaCO_3$/L	**330**		
18209	Residual Alkali*	meq/L	**6.4**		
18195	Silica	mg/L	**19**		80
18209	Total Dissolved Ions*	mg/L	**737**		
18209	Total Dissolved Solids*	mg/L	**570**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**8.9**		
18209	Saturation Index*		**0.0**		
18209	Mole Ratio*		**0.9**		
18209	Sodium Absorpt. Ratio*		**53**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
	CATIONS				
18195	Sodium	mg/L	**220**		180
18195	Potassium	mg/L	**0.84**		
18195	Calcium	mg/L	**1.3**		
18195	Magnesium	mg/L	**< 0.03**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**361**		
18209	Carbonate*	mg/L	**18**		
18209	Hydroxide*	mg/L	**0.1**		
35047	Chloride	mg/L	**83**		250
35047	Fluoride	mg/L	**0.17**	1.5	
35047	Nitrate	mg/L	**< 0.05**	50	
35047	Sulphate	mg/L	**50**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**< 0.01**		0.3
18195	Manganese	mg/L	**0.006**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**< 0.03**		0.2
18195	Boron	mg/L	**0.08**	4	
18195	Copper	mg/L	**< 0.003**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 1705.00 TC 9.79 TA 9.90 Imb 0.12 A I/C 0.57

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates that the value for Sodium and pH exceeds the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

NATA Accredited Laboratory 41 Accredited for compliance with ISO/IEC 17025 - Testing.
MUTUAL RECOGNITION ARRANGEMENT ACCREDITATION

24NA1055

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Standard Chemical Analysis – Roma Bore 18

Missing Data

Standard Chemical Analysis – Roma Bore 19

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)
Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: M Liston

Laboratory Reference : SSP0087188
Client Order No. : WO#11290
Date Received : 31-Jan-2024
Laboratory Number : 24NA1058
Batch No : 852-11

Client Reference : **ROM-5**
Date Sampled : **30-Jan-2024**
Sample Source : **Bore**
Sample Point : **Bore 19**
Further Information: : **Roma**

Submitting Authority : **Maranoa Regional Council**
Reason for Analysis : **Compliance**
Water Treatment : **Untreated**

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
18320	Conductivity @ 25°C	µs/cm	**780**		
18320	pH	at 20°C	**8.89**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**2.6**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**2.6**		
18320	Alkalinity	mg $CaCO_3$/L	**340**		
18209	Residual Alkali*	meq/L	**6.7**		
18195	Silica	mg/L	**18**		80
18209	Total Dissolved Ions*	mg/L	**641**		
18209	Total Dissolved Solids*	mg/L	**470**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**9.0**		
18209	Saturation Index*		**-0.1**		
18209	Mole Ratio*		**0.6**		
18209	Sodium Absorpt. Ratio*		**50**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
	CATIONS				
18195	Sodium	mg/L	**190**		180
18195	Potassium	mg/L	**0.70**		
18195	Calcium	mg/L	**1.0**		
18195	Magnesium	mg/L	**< 0.03**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**378**		
18209	Carbonate*	mg/L	**18**		
18209	Hydroxide*	mg/L	**0.1**		
35047	Chloride	mg/L	**43**		250
35047	Fluoride	mg/L	**0.17**	1.5	
35047	Nitrate	mg/L	**< 0.05**	50	
35047	Sulphate	mg/L	**14**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**< 0.01**		0.3
18195	Manganese	mg/L	**0.008**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**< 0.03**		0.2
18195	Boron	mg/L	**0.05**	4	
18195	Copper	mg/L	**< 0.003**	2	1

Notes: ' parameter is derived from calculation.
'** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 1414.00 TC 8.16 TA 8.32 Imb 0.17 A I/C 0.57

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates that the value for Sodium and pH exceeds the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

NATA Accredited Laboratory 41 Accredited for compliance with ISO/IEC 17025 - Testing.
WORLD RECOGNISED ACCREDITATION

24NA1058

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Standard Chemical Analysis – Roma Bore 20

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)

Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: M Liston

Laboratory Reference	: SSP0087188
Client Order No.	: WO#11290
Date Received	: 31-Jan-2024
Laboratory Number	: 24NA1054
Batch No	: 852-07

Client Reference	: **ROM-1**
Date Sampled	: **30-Jan-2024**
Sample Source	: **Bore**
Sample Point	: **Bore 20**
Further Information:	: **Roma**

Submitting Authority	: **Maranoa Regional Council**
Reason for Analysis	: **Compliance**
Water Treatment	: **Untreated**

Method		Units	Result	Guidelines ** Health	Aesthetic
18320	Conductivity @ 25°C	µs/cm	**960**		
18320	pH	at 20°C	**8.64**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**5.4**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**5.4**		
18320	Alkalinity	mg $CaCO_3$/L	**360**		
18209	Residual Alkali*	meq/L	**7.1**		
18195	Silica	mg/L	**18**		80
18209	Total Dissolved Ions*	mg/L	**761**		
18209	Total Dissolved Solids*	mg/L	**570**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**8.6**		
18209	Saturation Index*		**0.0**		
18209	Mole Ratio*		**1.0**		
18209	Sodium Absorpt. Ratio*		**42**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines ** Health	Aesthetic
	CATIONS				
18195	Sodium	mg/L	**220**		180
18195	Potassium	mg/L	**0.87**		
18195	Calcium	mg/L	**2.0**		
18195	Magnesium	mg/L	**0.08**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**416**		
18209	Carbonate*	mg/L	**12**		
18209	Hydroxide*	mg/L	**0.1**		
35047	Chloride	mg/L	**73**		250
35047	Fluoride	mg/L	**0.54**	1.5	
35047	Nitrate	mg/L	**< 0.05**	50	
35047	Sulphate	mg/L	**32**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**< 0.01**		0.3
18195	Manganese	mg/L	**< 0.001**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**< 0.03**		0.2
18195	Boron	mg/L	**0.11**	4	
18195	Copper	mg/L	**< 0.003**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 1696.00 TC 9.87 TA 9.98 Imb 0.10 A I/C 0.57

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates that the value for Sodium and pH exceeds the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

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24NA1054

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Standard Chemical Analysis – Surat River

Missing Data

Standard Chemical Analysis – Wallumbilla Bore 1

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)
Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: M Liston

Laboratory Reference : SSP0088224
Client Order No. : LISTON_M
Client Batch Reference : WO#11292/11286/10944
Date Received : 12-Apr-2024
Laboratory Number : 24NA3246
Batch No : 883-13

Client Reference : **WAL-01**
Date Sampled : **10-Apr-2024**
Sample Source :
Sample Point : **Wallumbilla Bore 1**
Further Information :

Submitting Authority : **Maranoa Regional Council**
Reason for Analysis : **Compliance**
Water Treatment : **Untreated**

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
18320	Conductivity @ 25°C	µs/cm	**1600**		
18320	pH	at 21°C	**8.69**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**6.5**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**6.5**		
18320	Alkalinity	mg $CaCO_3$/L	**570**		
18209	Residual Alkali*	meq/L	**11**		
18195	Silica	mg/L	**13**		80
18209	Total Dissolved Ions*	mg/L	**1210**		
18209	Total Dissolved Solids*	mg/L	**890**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**8.4**		
18209	Saturation Index*		**0.3**		
18209	Mole Ratio*		**1.2**		
18209	Sodium Absorpt. Ratio*		**62**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
	CATIONS				
18195	Sodium	mg/L	**360**		180
18195	Potassium	mg/L	**1.1**		
18195	Calcium	mg/L	**2.3**		
18195	Magnesium	mg/L	**0.17**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**652**		
18209	Carbonate*	mg/L	**19**		
18209	Hydroxide*	mg/L	**0.1**		
35047	Chloride	mg/L	**170**		250
35047	Fluoride	mg/L	**0.42**	1.5	
35047	Nitrate	mg/L	**< 0.05**	50	
35047	Sulphate	mg/L	**4.1**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**0.03**		0.3
18195	Manganese	mg/L	**0.007**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**< 0.03**		0.2
18195	Boron	mg/L	**0.58**	4	
18195	Copper	mg/L	**< 0.003**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 2709.00 TC 16.01 TA 16.10 Imb 0.10 A I/C 0.56

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates that the value for Sodium, Total Dissolved Solids and pH exceeds the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

NATA Accredited Laboratory 41 Accredited for compliance with ISO/IEC 17025 - Testing.
WORLD RECOGNISED ACCREDITATION

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30-Apr-2024

24NA3246

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Standard Chemical Analysis – Wallumbilla Bore 3

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)
Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: M Liston

Laboratory Reference : SSP0088224
Client Order No. : LISTON_M
Client Batch Reference : WO#11292/11286/10944
Date Received : 12-Apr-2024
Laboratory Number : 24NA3247
Batch No : 883-14

Client Reference : **WAL-02**
Date Sampled : **10-Apr-2024**
Sample Source :
Sample Point : **Wallumbilla Bore 3**
Further Information: :

Submitting Authority : **Maranoa Regional Council**
Reason for Analysis : **Compliance**
Water Treatment : **Untreated**

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
18320	Conductivity @ 25°C	µs/cm	**1100**		
18320	pH	at 21°C	**8.83**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**3.2**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**3.2**		
18320	Alkalinity	mg $CaCO_3$/L	**380**		
18209	Residual Alkali*	meq/L	**7.4**		
18195	Silica	mg/L	**17**		80
18209	Total Dissolved Ions*	mg/L	**833**		
18209	Total Dissolved Solids*	mg/L	**640**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**8.8**		
18209	Saturation Index*		**0.0**		
18209	Mole Ratio*		**1.0**		
18209	Sodium Absorpt. Ratio*		**62**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
	CATIONS				
18195	Sodium	mg/L	**260**		180
18195	Potassium	mg/L	**0.87**		
18195	Calcium	mg/L	**1.2**		
18195	Magnesium	mg/L	**0.03**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**417**		
18209	Carbonate*	mg/L	**20**		
18209	Hydroxide*	mg/L	**0.1**		
35047	Chloride	mg/L	**120**		250
35047	Fluoride	mg/L	**0.17**	1.5	
35047	Nitrate	mg/L	**< 0.05**	50	
35047	Sulphate	mg/L	**21**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**0.01**		0.3
18195	Manganese	mg/L	**0.007**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**< 0.03**		0.2
18195	Boron	mg/L	**0.07**	4	
18195	Copper	mg/L	**< 0.003**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 1933.00 TC 11.16 TA 11.26 Imb 0.10 A I/C 0.56

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates that the value for Sodium, Total Dissolved Solids and pH exceeds the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

NATA Accredited Laboratory 41 Accredited for compliance with ISO/IEC 17025 - Testing.
WORLD RECOGNISED ACCREDITATION

E. Harrison

Elizabeth Harrison
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30-Apr-2024

24NA3247

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Standard Chemical Analysis – Yuleba Bore 2

Queensland Government

Forensic and Scientific Services

CERTIFICATE OF ANALYSIS

CLIENT : (HMARAN)
Maranoa Regional Council
PO Box 620
ROMA QLD 4455

ATTN: Carolina Avancena

Laboratory Reference : SSP0086994
Client Order No. : WO#2652
Date Received : 17-Jan-2024
Laboratory Number : 24NA575
Batch No : 846-15

Client Reference : **YUL-1**
Date Sampled : **10-Jan-2024**
Sample Source : **Bore**
Sample Point : **Yuleba Bore 2**
Further Information :

Submitting Authority : **Maranoa Regional Council**
Reason for Analysis : **Compliance**
Water Treatment : **Untreated**

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
18320	Conductivity @ 25°C	µs/cm	**1600**		
18320	pH	at 21°C	**8.61**		6.5 - 8.5
18209	Total Hardness*	mg $CaCO_3$/L	**5.0**		200
18209	Temporary Hardness*	mg $CaCO_3$/L	**5.0**		
18320	Alkalinity	mg $CaCO_3$/L	**610**		
18209	Residual Alkali*	meq/L	**12**		
18195	Silica	mg/L	**14**		80
18209	Total Dissolved Ions*	mg/L	**1310**		
18209	Total Dissolved Solids*	mg/L	**960**		600
18206	True Colour	Hazen	**< 8**		15
18212	Turbidity	NTU	**< 1**		5
18209	pH Sat.* (calc. for $CaCO_3$)		**8.5**		
18209	Saturation Index*		**0.1**		
18209	Mole Ratio*		**1.3**		
18209	Sodium Absorpt. Ratio*		**77**		
18209	Figure of Merit Ratio*		**0.0**		

Method		Units	Result	Guidelines ** Health	Guidelines ** Aesthetic
	CATIONS				
18195	Sodium	mg/L	**390**		180
18195	Potassium	mg/L	**1.2**		
18195	Calcium	mg/L	**1.8**		
18195	Magnesium	mg/L	**0.13**		
18209	Hydrogen*	mg/L	**0.0**		
	ANIONS				
18209	Bicarbonate*	mg/L	**715**		
18209	Carbonate*	mg/L	**15**		
18209	Hydroxide*	mg/L	**0.1**		
35047	Chloride	mg/L	**180**		250
35047	Fluoride	mg/L	**0.85**	1.5	
35047	Nitrate	mg/L	**< 0.05**	50	
35047	Sulphate	mg/L	**0.3**	500	250
	OTHER DISSOLVED ELEMENTS				
18195	Iron	mg/L	**< 0.01**		0.3
18195	Manganese	mg/L	**< 0.001**	0.5	0.1
18195	Zinc	mg/L	**< 0.06**		3
18195	Aluminium	mg/L	**< 0.03**		0.2
18195	Boron	mg/L	**1.1**	4	
18195	Copper	mg/L	**< 0.003**	2	1

Notes: * parameter is derived from calculation.
** Australian Drinking Water Guidelines 2011 (ADWG) Health and Aesthetic Values
'-' not determined

Lab use Only: TE 2881.00 TC 17.22 TA 17.34 Imb 0.11 A I/C 0.57

Note the concentration of total elements present may be higher than that of dissolved elements stated in this report.
Fine particles (< 0.45 microns) may cause elevated metal and true colour results.
The result reported indicates that the value for Sodium, Total Dissolved Solids and pH exceeds the Australian Drinking Water Guidelines (ADWG) 2011.
Refer to ADWG section 10.3.7 and part V for details (https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines).
Contact your local Public Health Unit for assistance with interpretation of results.

NATA Accredited Laboratory 41 Accredited for compliance with ISO/IEC 17025 - Testing.
WORLD RECOGNISED ACCREDITATION

E. Harrison

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08-Feb-2024

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Table 3 - Reticulation *E. coli* verification monitoring

Drinking water scheme: Amby

Year	*2023-24*											
Month	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*
No. of samples collected	4	4	4	4	4	4	6	10	10	5	4	4
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	1	3	1	0	0	0
No. of samples collected in previous 12 month period	53	53	53	53	53	52	54	58	64	65	63	63
No. of failures for previous 12 month period	1	1	1	1	1	1	2	5	6	5	5	5
% of samples that comply	98.11%	98.11%	98.11%	98.11%	98.11%	98.11%	96.3%	91.4%	90.6%	90.6%	90.6%	90.6%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

The *Public Health Regulation 2005* (the regulation) requires that 98 per cent of samples taken in a 12 month period should contain no *E. Coli*. This requirement is referred to as the 'annual value' in Schedule 3A of the regulation.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: **Injune**

Year	2023-24											
Month	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
No. of samples collected	9	9	0	18	0	9	9	9	0	8	0	9
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	101	102	92	102	94	95	96	98	90	89	80	80
No. of failures for previous 12 month period	2	1	1	1	1	0	0	0	0	0	0	0
% of samples that comply	98.02%	99.02%	98.91%	99.02%	98.94%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

The *Public Health Regulation 2005* (the regulation) requires that 98 per cent of samples taken in a 12 month period should contain no *E. Coli*. This requirement is referred to as the 'annual value' in Schedule 3A of the regulation.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Jackson

Year	*2023-24*											
Month	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*
No. of samples collected	2	2	2	2	2	2	2	2	2	3	2	2
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	26	26	26	26	26	26	26	26	24	25	25	25
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

The *Public Health Regulation 2005* (the regulation) requires that 98 per cent of samples taken in a 12 month period should contain no *E. Coli*. This requirement is referred to as the 'annual value' in Schedule 3A of the regulation.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Mitchell

Year	*2023-24*											
Month	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*
No. of samples collected	12	7	8	9	8	8	8	6	8	8	8	8
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	111	109	109	111	110	109	109	106	104	102	100	98
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

The *Public Health Regulation 2005* (the regulation) requires that 98 per cent of samples taken in a 12 month period should contain no *E. Coli*. This requirement is referred to as the 'annual value' in Schedule 3A of the regulation.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Muckadilla

Year	*2023-24*											
Month	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*
No. of samples collected	3	3	3	3	3	0	3	0	0	3	3	3
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	36	36	36	36	36	33	33	30	27	27	27	27
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

The *Public Health Regulation 2005* (the regulation) requires that 98 per cent of samples taken in a 12 month period should contain no *E. Coli*. This requirement is referred to as the 'annual value' in Schedule 3A of the regulation.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Mungallala

Year	*2023-24*											
Month	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*
No. of samples collected	3	3	3	3	3	3	3	6	8	3	3	3
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	2	0	0	0	0
No. of samples collected in previous 12 month period	36	36	36	36	36	36	36	39	44	44	44	44
No. of failures for previous 12 month period	0	0	0	0	0	0	0	2	2	2	2	2
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	95.45%	95.45%	95.45%	95.45%	95.45%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

The *Public Health Regulation 2005* (the regulation) requires that 98 per cent of samples taken in a 12 month period should contain no *E. Coli*. This requirement is referred to as the 'annual value' in Schedule 3A of the regulation.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Roma

Year	*2023-24*											
Month	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*
No. of samples collected	67	88	72	73	42	85	79	69	32	85	63	74
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	1	0	1	0	0	0	0	0
No. of samples collected in previous 12 month period	896	900	896	896	879	890	889	897	837	850	830	829
No. of failures for previous 12 month period	1	1	1	1	2	2	2	3	2	2	2	2
% of samples that comply	99.89%	99.89%	99.89%	99.89%	99.77%	99.78%	99.78%	99.66%	99.76%	99.76%	99.76%	99.76%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

The *Public Health Regulation 2005* (the regulation) requires that 98 per cent of samples taken in a 12 month period should contain no *E. Coli*. This requirement is referred to as the 'annual value' in Schedule 3A of the regulation.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Surat

Year	*2023-24*											
Month	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*
No. of samples collected	5	5	5	5	5	45	28	5	0	5	5	5
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	1	0	0	0	0	0	0
No. of samples collected in previous 12 month period	64	64	64	64	64	104	125	125	120	118	118	118
No. of failures for previous 12 month period	0	0	0	0	0	1	1	1	1	1	1	1
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	99.04%	99.20%	99.20%	99.17%	99.15%	99.15%	99.15%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

The *Public Health Regulation 2005* (the regulation) requires that 98 per cent of samples taken in a 12 month period should contain no *E. Coli*. This requirement is referred to as the 'annual value' in Schedule 3A of the regulation.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Wallumbilla

Year	*2023-24*											
Month	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*
No. of samples collected	4	4	4	4	3	4	3	4	5	6	4	4
No. of samples collected in which *E. coli* is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	51	51	51	51	50	50	49	49	48	49	48	48
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

The *Public Health Regulation 2005* (the regulation) requires that 98 per cent of samples taken in a 12 month period should contain no *E. Coli*. This requirement is referred to as the 'annual value' in Schedule 3A of the regulation.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Drinking water scheme: Yuleba

Year	*2023-24*											
Month	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*
No. of samples collected	17	7	6	6	6	10	6	4	4	6	6	4
No. of samples collected in which *E. coli* is detected (i.e. a failure)	1	0	0	0	0	1	0	0	0	0	0	0
No. of samples collected in previous 12 month period	137	139	140	141	142	147	148	147	140	113	84	82
No. of failures for previous 12 month period	13	13	13	13	13	14	14	14	11	6	2	2
% of samples that comply	90.51%	90.65%	90.71%	90.78%	90.84%	90.48%	90.54%	90.48%	92.14%	94.69%	97.62%	97.56%
Compliance with 98% annual value	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

CALCULATE PERCENTAGE USING A TWELVE (12) MONTH 'ROLLING' ANNUAL VALUE

The *Public Health Regulation 2005* (the regulation) requires that 98 per cent of samples taken in a 12 month period should contain no *E. Coli*. This requirement is referred to as the 'annual value' in Schedule 3A of the regulation.

This requirement comes into effect once you have 12 months data and should be assessed every month based on the previous 12 months data (so that it is a 'rolling' assessment).

Appendix B – Implementation of the DWQMP Risk Management Improvement Program

Table 4 – Progress against the risk management improvement program in the approved DWQMP

Item No.	Scheme Component / Sub-component	Action(s)	Target date/s	Status as at Dec 2024	(If implementing these actions will take longer than anticipated, please provide detail, as it may affect the approved DWQMP)
	Surat	*New Bore interconnection with treated river water*	*June 2025*	*Ongoing*	
	Wallumbilla - Supply	*New Reservoir*	*April 2025*	*In Progress*	
	Wallumbilla – Supply	*New Reservoir (additional to above – replacement of existing)*	*June 2025*	*Ongoing*	
	Mitchell - Supply	*Condition Study Bore1 and 2*	*June 2025*	*In Progress*	
	Roma – Supply	*New Bore 21*	*June 2025*	*In Progress*	*Bore 21 and Reservoir to be added to new DWQMP as forecast. Amendment to be made after completion. This was forecast to be completed FY23/24 but bore failed to produce.*
	Roma - Storage	*New treated reservoir (storage for bore 21 complete with pressure system)*	*June 2025*	*In Progress*	
	Roma Supply	*Hydrogeological Study (water level monitor installation)*	*May 2025*	*In Progress*	