



# DRINKING WATER QUALITY MANAGEMENT PLAN 2020/2021 REPORT

<b>Service Provider Identification Number</b>	<b>SP485</b>
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<b>Local Government Area covered by this plan</b>	<b>Gympie Regional Council</b>
<b>Water Supply Schemes covered by this plan</b>	<b>Amamoor, Cooloola Cove, Goomeri, Gympie, Imbil, Kandanga, Kilkivan and Rainbow Beach</b>

Revision	Revision Date	Details	Authorised
1.0	17 December 2021	Initial release	Peter Manning
1.1	21 April 2022	Corrected Kandanga Drinking Water Scheme table Water Quality Compliance – E.Coli in Appendix A	Rhonda Otto

## About this report

The Gympie Regional Council 2020/21 Drinking Water Quality Management Plan (DWQMP) Report provides an overview of our operational performance with respect to drinking water quality, and shows how we have been implementing key improvement actions detailed in our approved DWQMP.

This report provides our customers with information about the quality of their drinking water.

This report also informs the regulator on how we complied with our DWQMP and its approval conditions. It also allows us to meet our legislative obligations under the *Water Supply (Safety and Reliability) Act 2008*.

## Audience

This report aims to communicate comprehensive information to satisfy the needs of individuals and groups who are affected by, or have an interest in, our activities, including:

- our customers
- the communities we serve
- current and future employees
- government agencies
- other Local Councils and utilities
- business and industry.

## Reporting requirements

Under the *Water Supply (Safety and Reliability) Act 2008*, water service providers must prepare a DWQMP Report each financial year. This report must include:

- the actions taken by Gympie Regional Council to implement its DWQMP
- the outcome of any DWQMP Review undertaken
- a summary of DWQMP audit findings and recommendations
- details of any water quality incidents
- details of Gympie Regional Council's compliance with drinking water quality criteria
- details of any customer complaints related to water quality.

## **Tell us what you think**

A copy of this DWQMP report is available to view on Council's website and for inspection by the public during office hours on business days. A copy of the report is also available for purchase at a reasonable cost.

If you would like to provide feedback on this report, please contact us via:

### **Website**

[www.gympie.qld.gov.au](http://www.gympie.qld.gov.au)

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## Chapter 1: About us

### What we do

Gympie Regional Council is responsible for delivering drinking water, recycled water and sewerage services to approximately 35,182 customers in the Gympie Region.

Our 6,898km<sup>2</sup> geographical area includes the towns of Amamoor, Cooloola Cove, Tin Can Bay, Goomeri, Gympie, Imbil, Kandanga, Kilkivan and Rainbow Beach.

We provide water services through the management of an extensive network, including:

- 8 water treatment plants
- 19 reservoirs
- 6 pump stations
- 452 kilometres of pipeline.

### Our strategic framework

#### Our purpose

To be a sustainable regional water business, providing reliable and value for money water and sewerage services.

## Our Corporate Values



## Key Strategic Themes

Council's activities aimed toward achieving its vision for the future of the local government area are focused into the following five key strategic themes.

### OUR INFRASTRUCTURE

*is well planned, integrated and safe.*

### OUR COMMUNITY

*is active, diverse, creative and engaged.*

### OUR ECONOMY

*is dynamic, productive and resilient.*

### OUR ENVIRONMENT

*is sustainable, well-managed and accessible.*

### OUR ORGANISATION

*is accountable, responsive, efficient and innovative.*

## Chapter 2: Our service area



### Our network

We supply around 4,051.8 megalitres of drinking water to approximately 14,443 residential and commercial properties. Drinking water is delivered to our customers via 8 separate network water supply schemes as listed below:

- Amamoor
- Cooloola Cove/Tin Can Bay
- Goomeri
- Gympie
- Imbil
- Kandanga
- Kilkivan
- Rainbow Beach.

The schemes begin at raw water source (surface and groundwater) and include water treatment, water storage, trunk and distribution pipe networks, pumps, chlorination systems and water meters. Gympie is the largest scheme, supplying 65 per cent of the customers.



## Amamoor

Amamoor water supply is sourced from Amamoor Creek. This scheme includes:

- surface water source and infrastructure
- water treatment
- chlorine disinfection
- operation and management
- water distribution.

## Cooloola Cove/Tin Can Bay

Cooloola Cove/Tin Can Bay water supply is sourced from Teewah Creek. This scheme includes:

- surface water source and infrastructure
- water treatment
- chlorine disinfection and fluoridation
- operation and management
- water distribution.

## Goomeri

Goomeri water supply is sourced from a combination of artesian bores and an off stream storage off Kimbombi Creek. This scheme includes:

- bores, surface water source and infrastructure
- water treatment
- chlorine disinfection and ozone treatment
- operation and management
- water distribution.

## Gympie

The Mary River is the sole source of supply for the Gympie scheme, and Gympie Regional Council holds a high priority allocation of 3454ML per annum from this source. Seqwater controls releases from Borumba Dam which feeds into the Mary River via Yabba Creek.

This scheme includes:

- shared bulk water sources and infrastructure
- water treatment
- chlorine disinfection and fluoridation
- operation and management
- water distribution.

## Imbil

Imbil water supply is sourced from Yabba Creek which is fed from Borumba Dam. This scheme includes:

- surface water source and infrastructure
- water treatment
- chlorine disinfection and UV treatment
- operation and management
- water distribution.

## Kandanga

Kandanga water supply is sourced from Kandanga Creek. This scheme includes:

- surface water source and infrastructure
- water treatment
- chlorine disinfection
- operation and management
- water distribution.

## Kilkivan

Kilkivan water supply is sourced from artesian bores. This scheme includes:

- bores and infrastructure
- water treatment
- chlorine disinfection and ozone treatment
- operation and management
- water distribution.

## Rainbow Beach

Rainbow Beach water supply is sourced from bores drawing sub artesian water from the Cooloola Sand mass. This scheme includes:

- bores and infrastructure
- water treatment
- chlorine disinfection
- operation and management
- water distribution.

## Chapter 3: Drinking water quality performance

### Legislative requirements

The supply of safe and reliable drinking water in Queensland is regulated by various state legislation, including the *Water Supply (Safety and Reliability) Act 2008* and the *Public Health Act 2005*.

Under the *Water Supply (Safety and Reliability) Act 2008*, a drinking water service provider may only carry out a registered drinking water service in accordance with an approved Drinking Water Quality Management Plan (DWQMP).

Under the *Public Health Act 2005*, Queensland Health has regulated the standards for drinking water quality related to *E. coli* and fluoride. These standards, together with the health guideline levels in the 'Australian Drinking Water Guidelines 2011' – updated March 2021 (ADWG), have been incorporated under the *Water Supply (Safety and Reliability) Act 2008* as water quality criteria for drinking water in Queensland.

### Water quality performance summary

For the 2020/21 reporting period, Gympie Regional Council met the prescribed microbiological standards for all eight drinking water schemes.

Table 1 summarises how our drinking water schemes performed over 1 July 2020 to 30 June 2021, against each category of water quality performance:

Water Quality Performance		
Scheme	Microbiological	Chemical
Amamoor	✓	✗
Cooloola Cove/Tin Can Bay	✓	✓
Goomeri	✓	✓
Gympie	✓	✓
Imbil	✓	✗
Kandanga	✓	✗
Kilkivan	✓	✓
Rainbow Beach	✓	✓

**Table 1: Drinking water performance summary: 1 July 2020 – 30 June 2021**

## Verification monitoring program

To verify that we deliver safe drinking water, Council's Environmental Health Department collects samples from the respective networks and sends the samples to a National Association of Testing Authorities (NATA) accredited laboratory for water analyses. These samples are collected from 31 dedicated sample points across the service region. The water quality data is reviewed and compared against prescribed requirements in the legislation and the ADWG.

As part of our commitment to continuous improvement we are revising the location of the sample points in the network and installing new sample taps with dedicated service lines.

## Microbiological assessment (E. coli)

Over 2020/21 eight drinking water schemes achieved 100 per cent compliance with legislative *E. coli* requirements. The standard for drinking water in Queensland requires no detection of *E. coli* in 98 per cent of samples collected over a 12 month period. The minimum number of samples required to be taken is detailed in the *Queensland Public Health Regulation 2005 Schedule 3A*.

*E. coli* water quality compliance details are provided in Appendix A, including the month-by-month performance.

## Health-related chemical assessment

We use a risk management approach to drinking water quality which allows us to identify the substances that may pose a risk to public health. The verification monitoring program analyses these substances which are continuously assessed against ADWG health-related limits and operational control triggers.

Five of the eight water schemes complied with all of the health-related chemical limit values defined in the ADWG. The exceptions were the below levels of trihalomethanes (THMs):

Water supply	Date	THMs (mg/L) range
Amamoor	10 November 2020 – 7 April 2020	270 - 440
Imbil	10 November 2020 – 1 February 2021	280 - 330
Kandanga	10 November 2020 – 23 March 2021	270 - 370

Health assessment water quality compliance details are provided in Appendix B.

## Aesthetic assessment

Our routine verification monitoring program is important for us to verify that we provide safe drinking water to our customers. We take advantage of the program to continuously assess non-health related parameters which contribute to the way our water tastes, smells and appears. We aim to meet the ADWG aesthetic guidelines where possible, however providing safe drinking water is our overriding priority.

## Chapter 4: Notifying the regulator

Under sections 102 and 102A of the *Water Supply (Safety and Reliability) Act 2008*, Gympie Regional Council is required to immediately inform the Regulator if the quality of water supplied from its drinking water service does not comply with the water quality criteria as specified in the ADWG.

In the event that Gympie Regional Council becomes aware of a reportable incident, we notify the Regulator within the required timeframe.

On detection of a water quality issue, Council will:

- initiate further sampling in the affected zone
- undertake a comprehensive investigation to determine the factors that may have attributed to the event, and
- initiate responsive corrective actions e.g. flushing of water mains.

For the 2020/2021 year the reportable events were

- THM exceedances in Amamoor water scheme between 10 November 2020 and 7 April 2021 with range of 270 and 440  $\mu\text{g/L}$ ;
- THM exceedance in Imbil water scheme on 10 November 2020 to 1 February 2021 with range of 280 to 330  $\mu\text{g/L}$ ;
- THM exceedance in Kandanga water scheme between 10 November 2020 and 23 March 2021 with values ranging from 270 and 370  $\mu\text{g/L}$ ;
- High Manganese at Amamoor Reservoir on 21 October 2020
- Tankering Water to Kandanga Water Scheme on 30 October 2020, 9 December 2020 and 19 January 2021.
- Tankering Water to Amamoor Water Supply Scheme on 15 October 2020.

## Chapter 5: Managing water safety

Gympie Regional Council is committed to providing safe, reliable drinking water from source to our customers' tap. We ensure a consistent and reliable supply of high quality and safe drinking water to our customers through a risk management and robust planning approach.

### Drinking Water Quality Management Plan review

Gympie Regional Council operates with an approved DWQMP that is reviewed every two years. The last update was in December 2019 where Council undertook a comprehensive review of the existing DWQMP. As a result of the review, a DWQMP amendment was submitted to the Regulator and was approved on 20 March 2020.

### Risk management approach

The 2019 approved DWQMP follows industry best practice in that all water quality hazards have been identified, risk assessed, and where necessary, improvements have been committed to.

An update on actions included within the risk management improvement plan is given in Chapter 7.

### DWQMP audit

As required by the *Water Supply (Safety and Reliability) Act 2008*, Gympie Regional Council is operating its drinking water service under an approved DWQMP. Northern Water Management Pty Ltd conducted the second regular audit of Gympie Regional Council's approved DWQMP in February and March 2021.

The scope of the audit was in accordance with DRDMW's *Drinking Water Quality Management Plan Review and Audit Guideline 2019*.

The audit reported an acceptable level of compliance during the audit period.

Four minor non-conformances were identified in the 2021 DWQMP audit. The recommendations from the audit were:

- Parameter coverage – ensure that the chlorine residuals in the various reticulation systems are above minimum ADWG of 0.2 mg/L.
- Reagent management – order new pH standards and ensure that they are ordered in anticipation of their use-by date, and ensure that only products with an expiry date are purchased.



- Instrument calibration - Ensure that all instruments are externally calibrated tagged, and the results recorded
- RMIP implementation - Ensure that the RMIP is tracked and actions allocated and actioned within the plan's due dates. If necessary, adjust timeframes in consultation with the regulator and the client's internal finance team.

These recommendations will be addressed in the next review of the DWQMP currently being undertaken in the second half of 2021.

## Chapter 6: Managing the customer's water quality experience

Gympie Regional Council receives various water quality enquiries throughout the year. When a customer is dissatisfied with the efforts of Gympie Regional Council to address a water quality issue and remedial action is required, these enquiries are classified as 'water quality complaints'.

Water quality complaints are captured, recorded and monitored to help identify any trends and possible areas of improvement in the operation, maintenance and management of the Gympie Regional Council water supply network.

A total of 11 water quality complaints were received during 2020/21, with the complaints including concerns about aesthetic parameters, chemical content, colour, taste and odour. These concerns were across two of our water schemes:

- Three complaints in the Gympie water scheme concerning taste and odour
- Eight complaints in the Cooloola Cove/Tin Can Bay water scheme concerning taste, odour and chemical content

These concerns were all investigated, customers were contacted and matters resolved.

## Chapter 7: Risk management improvement program update

A review of our risk management improvement program (RMIP) was conducted in December 2019. This updated RMIP was incorporated into the DWQMP update approved in 2020.

The below dot points and Tables 18 to 26 (Appendix C) outline the progress against this RMIP.

Significant projects undertaken within this year include:

- Amamoor and Imbil Reservoirs – the roofs and access ladders were replaced. The new roofs no longer have the central box gutters, removing a potential contaminant ingress point
- Rainbow Beach Reservoir No. 2 – the roof has also been replaced. This project was brought forward with the assistance of Queensland Government grant funding.
- Goomeri WTP – an order was placed for a new ultraviolet disinfection system. Installation will be in the 2021/22 financial year due to equipment delivery times from overseas.
- Amamoor, Imbil, Kandanga and Goomeri reservoirs – reservoirs cleaned internally while still in service utilizing specialized diving contractor.
- Reviewed the SCADA strategy and developed upgrade package for tender in the 2021/22 financial year.

## Glossary

<	Less than.
>	Greater than.
ADWG	Australian Drinking Water Guidelines 2011 – updated November 2018 published by the National Health and Medical Research Council of Australia.
Bulk Water	The treated water supplied from the Queensland Bulk Water Authority (Seqwater) to distributor retailers, including Gympie Regional Council.
CFU/100mL	Colony Forming Units per 100 millilitres.
DNRME	Department of Natural Resources Mines and Energy (Queensland Government).
DRDMW	Department of Regional Development Manufacturing and Water (Queensland Government)
Disinfectant	An agent that destroys or inhibits the activity of microorganisms which cause disease. Gympie Regional Council uses chlorine.
DWQMP	Drinking Water Quality Management Plan as required under the <i>Water Supply (Safety and Reliability) Act 2008</i> .
<i>E. coli</i>	<i>Escherichia coli</i> , a bacterium whose presence in water indicates that the water may be contaminated by faecal matter and therefore there is the potential to cause illness when people drink the water.
Km	Kilometre, which is 1,000 metres.
Megalitre (ML)	One million litres.
mg/L	Milligrams per litre.
MPN/100mL	Most Probable Number per 100 millilitres.
Network	An arrangement or system of pipes, pumps and reservoirs used for distributing water.
NTU	Nephelometric Turbidity Unit- a measure of turbidity which is the

	cloudiness or haziness of water caused by particles that are generally invisible to the naked eye. The measurement of turbidity is a key test of water quality.
Reservoir	A water tower or tank used for the storage of treated water within the water distribution system.
QFSS	Queensland Forensic and Scientific Services, Health Support Queensland.
Scheme	The system distributing drinking water to customers.
Seqwater	Queensland Bulk Water Supply Authority, trading as Seqwater. The bulk drinking water provider for Gympie Regional Council.
Stakeholder	All those who are either affected by or who can affect the activities of an organisation, namely customers, governments, regulators, the media, non-government organisations, local residents and employees.
The Regulator	The Chief Executive of Department of Regional Development Manufacturing and Water (DRDMW); previously Department of Natural Resources Mines and Energy (DNRME).
THMs	Total Trihalomethanes – a group of disinfection by-products that generally form when chlorine is used to disinfect drinking water.
WTP	Water Treatment Plant.

## Appendices

## Appendix A: Water quality compliance – E. coli

Overall						
Scheme	Number of samples required	Actual number of samples	Number of samples <i>E.coli</i> detected	Required performance %	Actual performance %	<i>E. coli</i> Compliant
Amamoor	12	24	0	98	100	✓
Cooloola Cove/Tin Can Bay	60	106	0	98	100	✓
Goomeri	12	24	0	98	100	✓
Gympie	96	122	0	98	100	✓
Imbil	12	24	0	98	100	✓
Kandanga	12	24	0	98	100	✓
Kilkivan	12	24	0	98	100	✓
Rainbow Beach	60	92	0	98	100	✓

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.

# Drinking water scheme: Amamoor

Year	2020-2021											
Month	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	2	2	2	2	2	2	2	2	2	2	2	2
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	24	24	24	24	24	24	24	24	24	24	24	24
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



## Drinking water scheme: Cooloola Cove/Tin Can Bay

Year	2020-2021											
Month	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	9	9	9	8	9	9	10	7	9	9	9	9
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12-month period	108	108	108	107	107	107	108	106	106	106	106	106
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

## Drinking water scheme: Goomeri

Year	2020-2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	2	2	2	2	2	2	2	2	2	2	2	2
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	24	24	24	24	24	24	24	24	24	24	24	24
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

## Drinking water scheme: Gympie

Year	2020-2021											
Month	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	11	11	10	9	11	10	11	8	10	11	10	10
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	124	125	125	123	124	124	124	122	122	122	122	122
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

## Drinking water scheme: Imbil

Year	2020-2021											
Month	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	2	2	2	2	2	2	2	2	2	2	2	2
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	24	24	24	24	24	24	24	24	24	24	24	24
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

# Drinking water scheme: Kandanga

Year	2020-21											
Month	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	2	2	2	2	2	2	2	2	2	2	2	2
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	27	27	27	27	27	23	23	24	24	24	24	24
No. of failures for previous 12 month period	1	1	1	1	1	0	0	0	0	0	0	0
% of samples that comply	96.3%	96.3%	96.3%	96.3%	96.3%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES

## Drinking water scheme: Kilkivan

Year	2020-21											
Month	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	2	2	2	2	2	2	2	2	2	2	2	2
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	24	24	24	24	24	24	24	24	24	24	24	24
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

## Drinking water scheme: Rainbow Beach

Year	2020-2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
No. of samples collected	8	8	8	8	8	6	8	6	8	8	8	8
No. of samples collected in which <i>E. coli</i> is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	96	96	96	96	96	94	94	92	92	92	92	92
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

## Appendix B: Water quality compliance – Health Assessment



**Table 1 - Amamoor Water Analysis**

Parameter	Scheme	Units	Frequency of sampling	Total No. samples collected	No of samples in which parameter was detected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Limit of reporting	Laboratory name
Chlorine Residual	Raw	mg/L	-	-	-	-	-	-	-	-	-
	Treated		D	361	361	0	1.00	6.55	2.60	0.01	WTP
	Reticulation		M	12	12	0	0.28	1.39	0.85		QFSS
Total Trihalomethanes	Raw	ug/L	-	-	-	-	-	-	-	-	-
	Treated		-	17	17	0	29	200	53	-	QFSS
	Reticulation		M	32	32	10	85	440	195		QFSS
<i>E. Coli</i>	Raw	mpn/100mL	-	-	-	-	-	-	-	-	-
	Treated		-	-	-	-	-	-	-	-	-
	Reticulation		M	12	0	0	0	0	0		QFSS
pH	Raw		HY	2	2	0	7.04	7.25	7.15		QFSS
	Treated		W	51	51	0	7.35	7.90	7.60		WTP
	Reticulation		HY	2	2	0	7.09	7.28	7.19		QFSS
Total Hardness	Raw	mgCaCO <sub>3</sub> /L	HY	2	2	0	166	183	175		QFSS
	Treated		M	26	26	0	70	228	171	1	WTP
	Reticulation		HY	2	2	0	167	183	175		QFSS
Temporary Hardness	Raw	mgCaCO <sub>3</sub> /L	HY	2	2	0	129	164	147		QFSS
	Treated		HY	2	2	0	131	162	147		QFSS
	Reticulation		HY	2	2	0	130	160	145		QFSS
Alkalinity	Raw	mgCaCO <sub>3</sub> /L	HY	2	2	0	129	160	145		QFSS
	Treated		HY	2	2	0	131	160	146		QFSS
	Reticulation		HY	2	2	0	130	160	145		QFSS
Residual Alkalinity	Raw	meq/L	HY	2	0	0	0.0	0.0	0.0		QFSS
	Treated		HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	2	0	0	0.0	0.0	0.0		QFSS
Silica	Raw	mg/L	HY	2	2	0	25	27	26		QFSS
	Treated		HY	2	2	0	25	27	26		QFSS
	Reticulation		HY	2	2	0	25	26	26		QFSS
Total Dissolved Ions	Raw	mg/L	HY	2	2	0	318	377	348		QFSS
	Treated		HY	2	2	0	348	365	357		QFSS
	Reticulation		HY	2	2	0	347	377	362		QFSS
Total Dissolved Solids	Raw	mg/L	HY	2	2	0	265	300	283		QFSS
	Treated		HY	2	2	0	290	294	292		QFSS

	Reticulation		HY	2	2	0	293	300	297		QFSS
True Colour	Raw	Hazen	HY	2	2	0	8	20	14		QFSS
	Treated		W	51	51	5	0	4	1	1	WTP
	Reticulation		HY	2	2	0	7	8	8		QFSS
Turbidity	Raw	NTU	HY	2	2	0	1	3	2		QFSS
	Treated		W	51	51	0	0.008	8.8	0.07	0.001	WTP
	Reticulation		HY	2	2	0	1	1	1		QFSS
pH Saturation	Raw		HY	2	2	0	7.9	8.0	8.0		QFSS
	Treated		HY	2	2	0	7.9	8.0	8.0		QFSS
	Reticulation		HY	2	2	0	7.9	8.0	8.0		QFSS
Saturation Index	Raw		HY	2	2	0	-1.0	-0.6	-0.8		QFSS
	Treated		HY	2	2	0	-1.0	-0.7	-0.9		QFSS
	Reticulation		HY	2	2	0	-0.6	-0.9	-0.8		QFSS
Mole Ratio	Raw		HY	2	2	0	2.7	3.0	2.9		QFSS
	Treated		HY	2	2	0	2.8	3.1	3.0		QFSS
	Reticulation		HY	2	2	0	2.7	3.0	2.9		QFSS
Sodium	Raw	mg/L	HY	2	2	0	32	42	37		QFSS
	Treated		HY	2	2	0	38	42	40		QFSS
	Reticulation		HY	2	2	0	42	42	42		QFSS
Potassium	Raw	mg/L	HY	2	2	0	1.0	1.3	1.2		QFSS
	Treated		HY	2	2	0	0.98	1.4	1.2		QFSS
	Reticulation		HY	2	2	0	1.0	1.5	1.3		QFSS
Calcium	Raw	mg/L	HY	2	2	0	21	23	22		QFSS
	Treated		HY	2	2	0	21	23	22		QFSS
	Reticulation		HY	2	2	0	22	24	23		QFSS
Magnesium	Raw	mg/L	HY	2	2	0	28	31	30		QFSS
	Treated		HY	2	2	0	28	31	30		QFSS
	Reticulation		HY	2	2	0	27	30	29		QFSS
Hydrogen	Raw	mg/L	HY	2	0	0	0.0	0.0	0.0		QFSS
	Treated		HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	2	0	0	0.0	0.0	0.0		QFSS
Bicarbonate	Raw	mg/L	HY	2	2	0	157	199	178		QFSS
	Treated		HY	2	2	0	160	198	179		QFSS
	Reticulation		HY	2	2	0	158	199	179		QFSS
Carbonate	Raw	mg/L	HY	2	2	0	0.1	0.2	0.2		QFSS
	Treated		HY	2	2	0	0.1	0.2	0.2		QFSS
	Reticulation		HY	2	2	0	0.1	0.2	0.2		QFSS
Hydroxide	Raw	mg/L	HY	2	0	0	0.0	0.0	0.0		QFSS

	Treated		HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	2	0	0	0.0	0.0	0.0		QFSS
Chloride	Raw	mg/L	HY	2	2	0	59	68	64		QFSS
	Treated		HY	2	2	0	62	74	68		QFSS
	Reticulation		HY	2	2	0	67	74	71		QFSS
Fluoride	Raw	mg/L	HY	2	2	0	0.08	0.08	0.08		QFSS
	Treated		HY	2	2	0	0.08	0.08	0.08		QFSS
	Reticulation		HY	2	2	0	0.08	0.09	0.09		QFSS
Nitrate	Raw	mg/L	HY	2	2	0	0.05	0.29	0.17		QFSS
	Treated		HY	2	2	0	0.15	0.28	0.22		QFSS
	Reticulation		HY	2	2	0	0.09	0.29	0.19		QFSS
Sulphate	Raw	mg/L	HY	2	2	0	13	20	17		QFSS
	Treated		HY	2	2	0	13	21	17		QFSS
	Reticulation		HY	2	2	0	13	22	18		QFSS
Iron	Raw	mg/L	HY	2	2	0	0.01	0.01	0.01		QFSS
	Treated		M	26	26	0	0.001	0.074	0.002	0.001	WTP
	Reticulation		HY	2	2	0	0.01	0.01	0.01		QFSS
Manganese	Raw	mg/L	HY	2	2	0	0.001	0.001	0.001		QFSS
	Treated		M	23	23	0	0.011	0.687	0.100	0.001	WTP
	Reticulation		HY	2	2	0	0.001	0.001	0.001		QFSS
Zinc	Raw	mg/L	HY	2	2	0	0.06	0.06	0.06		QFSS
	Treated		HY	2	2	0	0.06	0.06	0.06		QFSS
	Reticulation		HY	2	2	0	0.06	0.06	0.06		QFSS
Aluminium	Raw	mg/L	HY	2	2	0	0.03	0.03	0.03		QFSS
	Treated		M	26	26	0	0.002	0.042	0.011	0.001	WTP
	Reticulation		HY	2	2	0	0.03	0.03	0.03		QFSS
Boron	Raw	mg/L	HY	2	2	0	0.04	0.04	0.04		QFSS
	Treated		HY	2	2	0	0.04	0.05	0.05		QFSS
	Reticulation		HY	2	2	0	0.04	0.05	0.05		QFSS
Copper	Raw	mg/L	HY	2	2	0	0.003	0.003	0.003		QFSS
	Treated		HY	2	2	0	0.003	0.003	0.003		QFSS
	Reticulation		HY	2	2	0	0.008	0.011	0.010		QFSS
Annual Aluminium Metals	Raw	mg/L	Y	1	1	0	0.022	0.022	0.022		QFSS
	Treated		Y	1	1	0	0.007	0.007	0.007		QFSS
	Reticulation		Y	1	1	0	0.006	0.006	0.006		QFSS
Annual Arsenic Metals	Raw	mg/L	Y	1	1	0	0.0009	0.009	0.0009		QFSS
	Treated		Y	1	1	0	0.0007	0.0007	0.0007		QFSS
	Reticulation		Y	1	1	0	0.0007	0.0007	0.0007		QFSS

Annual Cadmium Metals	Raw	mg/L	Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Treated		Y	1	1	0	0.0004	0.0004	0.0004		QFSS
	Reticulation		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
Annual Chromium Metals	Raw	mg/L	Y	1	1	0	0.0006	0.0006	0.0006		QFSS
	Treated		Y	1	1	0	0.0003	0.0003	0.0003		QFSS
	Reticulation		Y	1	1	0	0.0003	0.0003	0.0003		QFSS
Annual Copper Metals	Raw	mg/L	Y	1	1	0	0.001	0.001	0.001		QFSS
	Treated		Y	1	1	0	0.001	0.001	0.001		QFSS
	Reticulation		Y	1	1	0	0.011	0.011	0.011		QFSS
Annual Iron Metals	Raw	mg/L	Y	1	1	0	0.16	0.16	0.16		QFSS
	Treated		Y	1	1	0	0.005	0.005	0.005		QFSS
	Reticulation		Y	1	1	0	0.009	0.009	0.009		QFSS
Annual Lead Metals	Raw	mg/L	Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	1	1	0	0.0006	0.0006	0.0006		QFSS
Annual Manganese Metals	Raw	mg/L	Y	1	1	0	0.066	0.066	0.066		QFSS
	Treated		Y	1	1	0	0.0003	0.0003	0.0003		QFSS
	Reticulation		Y	1	1	0	0.0016	0.0016	0.0016		QFSS
Annual Nickel Metals	Raw	mg/L	Y	1	1	0	0.0025	0.0025	0.0025		QFSS
	Treated		Y	1	1	0	0.0008	0.0008	0.0008		QFSS
	Reticulation		Y	1	1	0	0.0008	0.0008	0.0008		QFSS
Annual Zinc Metals	Raw	mg/L	Y	1	1	0	0.001	0.001	0.001		QFSS
	Treated		Y	1	1	0	0.001	0.001	0.001		QFSS
	Reticulation		Y	1	1	0	0.008	0.008	0.008		QFSS

NOTE: QFSS Limit of Reporting not provided to Gympie Regional Council.

**Table 2 – Cooloola Cove/Tin Can Bay Water Analysis**

Parameter	Scheme	Units	Frequency of sampling	Total No. samples collected	No of samples in which parameter was detected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Limit of reporting	Laboratory name
Chlorine Residual	Raw	mg/L	-	-	-	-	-	-	-	-	-
	Treated		D	363	363	0	2.0	3.72	2.65	0.01	WTP
	Reticulation		W	93	93	0	0.46	2.09	1.47		QFSS
Total Trihalomethanes	Raw	ug/L	-	-	-	-	-	-	-	-	-
	Treated		-	-	-	-	-	-	-	-	-
	Reticulation		M	19	19	0	29	100	52		QFSS
<i>E. Coli</i>	Raw	mpn/100mL	-	-	-	-	-	-	-	-	-
	Treated		M	13	0	0	0	0	0		QFSS
	Reticulation		W	93	0	0	0	0	0		QFSS
pH	Raw		HY	2	2	0	4.64	5.02	4.83		QFSS
	Treated		D	363	363	0	6.70	7.70	7.00	1	WTP
	Reticulation		HY	4	4	0	6.46	6.63	6.55		QFSS
Total Hardness	Raw	mgCaCO <sub>3</sub> /L	HY	2	2	0	7	7	7		QFSS
	Treated		M	8	8	0	8	18	11	1	WTP
	Reticulation		HY	4	4	0	7	9	8		QFSS
Temporary Hardness	Raw	mgCaCO <sub>3</sub> /L	HY	2	2	0	1	2	1		QFSS
	Treated		HY	2	2	0	8	9	8		QFSS
	Reticulation		HY	4	4	0	7	9	8		QFSS
Alkalinity	Raw	mgCaCO <sub>3</sub> /L	HY	2	2	0	1	2	2		QFSS
	Treated		M	8	8	0	36	70	45	1	WTP
	Reticulation		HY	4	4	0	25	37	32		QFSS
Residual Alkalinity	Raw	meq/L	HY	2	0	0	0.0	0.0	0.0		QFSS
	Treated		HY	2	2	0	0.3	0.5	0.4		QFSS
	Reticulation		HY	4	4	0	1.4	0.6	0.5		QFSS
Silica	Raw	mg/L	HY	2	2	0	6	7	6		QFSS
	Treated		HY	2	2	0	6	6	6		QFSS
	Reticulation		HY	4	4	0	5	6	6		QFSS
Total Dissolved Ions	Raw	mg/L	HY	2	2	0	39	41	40		QFSS
	Treated		HY	2	2	0	145	169	157		QFSS
	Reticulation		HY	4	4	0	138	185	162		QFSS
Total Dissolved	Raw	mg/L	HY	2	2	0	44	46	45		QFSS

Solids	Treated		HY	2	2	0	136	150	143		QFSS
	Reticulation		HY	4	4	0	129	170	150		QFSS
True Colour	Raw	Hazen	HY	2	2	0	94	210	152		QFSS
	Treated		D	363	363	0	1	1	1	1	WTP
	Reticulation		HY	4	4	0	7	8	8		QFSS
Turbidity	Raw	NTU	HY	2	2	0	1	2	2		QFSS
	Treated		D	363	363	0	0.001	0.116	0.052	0.001	WTP
	Reticulation		HY	4	4	0	1	1	1		QFSS
pH Saturation	Raw		HY	2	2	0	11.3	11.4	11.4		QFSS
	Treated		HY	2	2	0	10.1	10.2	10.2		QFSS
	Reticulation		HY	4	4	0	9.6	10.0	9.8		QFSS
Saturation Index	Raw		HY	2	2	0	-6.7	-6.3	-6.5		QFSS
	Treated		HY	2	2	0	-3.5	-3.5	-3.5		QFSS
	Reticulation		HY	4	4	0	-3.4	-3.0	-3.3		QFSS
Mole Ratio	Raw		HY	2	2	0	6.4	6.7	6.6		QFSS
	Treated		HY	4	4	0	3.1	3.6	3.4		QFSS
	Reticulation		HY	2	2	0	3.7	3.8	3.7		QFSS
Sodium	Raw	mg/L	HY	2	2	0	12	12	12		QFSS
	Treated		HY	2	2	0	46	53	50		QFSS
	Reticulation		HY	4	4	0	42	57	50		QFSS
Potassium	Raw	mg/L	HY	2	2	0	0.38	0.42	0.40		QFSS
	Treated		HY	2	2	0	0.35	0.57	0.46		QFSS
	Reticulation		HY	4	4	0	0.36	0.60	0.39		QFSS
Calcium	Raw	mg/L	HY	2	2	0	1	1	1		QFSS
	Treated		HY	2	2	0	1	1	1		QFSS
	Reticulation		HY	4	4	0	1	2	1		QFSS
Magnesium	Raw	mg/L	HY	2	2	0	1	1	1		QFSS
	Treated		HY	2	2	0	1	2	2		QFSS
	Reticulation		HY	4	4	0	1	1	1		QFSS
Hydrogen	Raw	mg/L	HY	2	0	0	0.0	0.0	0.0	-	QFSS
	Treated		HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	4	0	0	0.0	0.0	0.0		QFSS
Bicarbonate	Raw	mg/L	HY	2	2	0	3	3	3		QFSS
	Treated		HY	2	2	0	30	41	36		QFSS
	Reticulation		HY	4	4	0	31	45	38		QFSS
Carbonate	Raw	mg/L	HY	2	0	0	0.0	0.0	0.0		QFSS
	Treated		HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	4	0	0	0.0	0.0	0.0		QFSS

Hydroxide	Raw	mg/L	HY	2	0	0	0.0	0.0	0.0		QFSS
	Treated		HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	4	0	0	0.0	0.0	0.0		QFSS
Chloride	Raw	mg/L	HY	2	2	0	20	21	21		QFSS
	Treated		HY	2	2	0	22	27	25		QFSS
	Reticulation		HY	4	4	0	22	23	23		QFSS
Fluoride	Raw	mg/L	HY	2	2	0	0.02	0.02	0.02		QFSS
	Treated		D	363	363	0	0.04	0.92	0.77	1	WTP
	Reticulation		M	4	4	0	0.70	0.77	0.75		QFSS
Nitrate	Raw	mg/L	HY	2	2	0	0.14	0.15	0.15		QFSS
	Treated		HY	2	2	0	0.10	0.13	0.12		QFSS
	Reticulation		HY	4	4	0	0.09	0.13	0.12		QFSS
Sulphate	Raw	mg/L	HY	2	2	0	1.9	26	2.3		QFSS
	Treated		HY	2	2	0	37	50	44		QFSS
	Reticulation		HY	4	4	0	38	56	47		QFSS
Iron	Raw	mg/L	HY	2	2	0	0.06	0.19	0.13		QFSS
	Treated		M	12	12	0	0.03	0.11	0.04	0.01	WTP
	Reticulation		HY	4	4	0	0.01	0.01	0.01		QFSS
Manganese	Raw	mg/L	HY	2	2	0	0.002	0.002	0.002		QFSS
	Treated		M	12	12	0	0.05	0.05	0.05	0.01	WTP
	Reticulation		HY	4	4	0	0.001	0.001	0.001		QFSS
Zinc	Raw	mg/L	HY	2	2	0	0.06	0.06	0.06		QFSS
	Treated		HY	2	2	0	0.06	0.06	0.06		QFSS
	Reticulation		HY	4	4	0	0.06	0.06	0.06		QFSS
Aluminium	Raw	mg/L	HY	2	2	0	0.19	0.24	0.22		QFSS
	Treated		M	12	12	0	0.000	0.037	0.010	0.1	WTP
	Reticulation		HY	4	4	0	0.03	0.06	0.04		QFSS
Boron	Raw	mg/L	HY	2	2	0	0.02	0.02	0.02		QFSS
	Treated		HY	2	2	0	0.02	0.02	0.02		QFSS
	Reticulation		HY	4	4	0	0.02	0.02	0.02		QFSS
Copper	Raw	mg/L	HY	2	2	0	0.014	0.042	0.028		QFSS
	Treated		HY	2	2	0	0.003	0.003	0.003		QFSS
	Reticulation		HY	4	4	0	0.003	0.006	0.004		QFSS
Annual Aluminium Metals	Raw	mg/L	Y	1	1	0	0.2	0.2	0.2		QFSS
	Treated		Y	1	1	0	0.036	0.036	0.036		QFSS
	Reticulation		Y	2	2	0	0.022	0.025	0.024		QFSS
Annual Arsenic Metals	Raw	mg/L	Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS

	Reticulation		Y	2	2	0	0.0001	0.0001	0.0001		QFSS
Annual Cadmium Metals	Raw	mg/L	Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	2	2	0	0.0001	0.0001	0.0001		QFSS
Annual Chromium Metals	Raw	mg/L	Y	1	1	0	0.0004	0.0004	0.0004		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	2	2	0	0.0001	0.0002	0.0002		QFSS
Annual Copper Metals	Raw	mg/L	Y	1	1	0	0.025	0.025	0.025		QFSS
	Treated		Y	1	1	0	0.001	0.001	0.001		QFSS
	Reticulation		Y	2	2	0	0.003	0.006	0.005		QFSS
Annual Iron Metals	Raw	mg/L	Y	1	1	0	0.22	0.22	0.22		QFSS
	Treated		Y	1	1	0	0.009	0.009	0.009		QFSS
	Reticulation		Y	2	2	0	0.006	0.008	0.007		QFSS
Annual Lead Metals	Raw	mg/L	Y	1	1	0	0.0011	0.0011	0.0011		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	2	2	0	0.0001	0.0001	0.0001		QFSS
Annual Manganese Metals	Raw	mg/L	Y	1	1	0	0.0015	0.0015	0.0015		QFSS
	Treated		Y	1	1	0	0.0012	0.0012	0.0012		QFSS
	Reticulation		Y	2	2	0	0.0002	0.0003	0.0003		QFSS
Annual Nickel Metals	Raw	mg/L	Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Treated		Y	1	1	0	0.0002	0.0002	0.0002		QFSS
	Reticulation		Y	2	2	0	0.0001	0.0001	0.0001		QFSS
Annual Zinc Metals	Raw	mg/L	Y	1	1	0	0.009	0.009	0.009		QFSS
	Treated		Y	1	1	0	0.004	0.004	0.004		QFSS
	Reticulation		Y	2	2	0	0.004	0.028	0.016		QFSS

NOTE: QFSS Limit of Reporting not provided to Gympie Regional Council.



**Table 3 - Goomeri Water Analysis**

Parameter	Scheme	Units	Frequency of sampling	Total No. samples collected	No of samples in which parameter was detected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Limit of reporting	Laboratory name
Chlorine Residual	Raw	mg/L	-	-	-	-	-	-	-	-	-
	Treated		D	365	365	0	0.32	2.52	1.35	0.01	WTP
	Reticulation		M	24	24	0	0.30	1.76	1.11		QFSS
Total Trihalomethanes	Raw	ug/L	-	-	-	-	-	-	-	-	-
	Treated		-	-	-	-	-	-	-	-	-
	Reticulation		M	12	12	0	10	180	155		QFSS
<i>E. Coli</i>	Raw	mpn/100mL	-	-	-	-	-	-	-	-	-
	Treated		-	-	-	-	-	-	-	-	-
	Reticulation		M	24	0	0	0	0	0		QFSS
pH	Raw		HY	10	10	0	7.00	7.95	7.54		QFSS
	Treated		W	365	365	0	6.89	8.07	7.65	1	WTP
	Reticulation		HY	2	2	0	7.38	8.26	7.82		QFSS
Total Hardness	Raw	mgCaCO <sub>3</sub> /L	HY	10	10	0	130	675	556		QFSS
	Treated		M	48	48	0	160	124	229	1	WTP
	Reticulation		HY	2	2	0	169	259	214		QFSS
Temporary Hardness	Raw	mgCaCO <sub>3</sub> /L	HY	10	10	0	129	429	371		QFSS
	Treated		HY	2	2	0	149	192	171		QFSS
	Reticulation		HY	2	2	0	151	194	173		QFSS
Alkalinity	Raw	mgCaCO <sub>3</sub> /L	HY	10	10	0	130	429	373		QFSS
	Treated		M	26	26	0	99	232	145	1	WTP
	Reticulation		HY	2	2	0	150	194	105		QFSS
Residual Alkalinity	Raw	meq/L	HY	10	0	0	0.0	0.0	0.0		QFSS
	Treated		HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	2	0	0	0.0	0.0	0.0		QFSS
Silica	Raw	mg/L	HY	10	10	0	17	54	46		QFSS
	Treated		HY	2	2	0	20	27	24		QFSS
	Reticulation		HY	2	2	0	20	27	24		QFSS
Total Dissolved Ions	Raw	mg/L	HY	10	10	0	210	960	817		QFSS
	Treated		HY	2	2	0	344	498	421		QFSS
	Reticulation		HY	2	2	0	348	501	425		QFSS
Total Dissolved Solids	Raw	mg/L	HY	10	10	0	210	960	817		QFSS
	Treated		HY	2	2	0	270	407	399		QFSS

	Reticulation		HY	2	2	0	280	411	346		QFSS
True Colour	Raw	Hazen	HY	10	10	0	7	36	8	8	QFSS
	Treated		W	365	0	0	0.0	0.0	0.0	1	WTP
	Reticulation		HY	2	2	0	7	8	8		QFSS
Turbidity	Raw	NTU	HY	10	10	0	1	11	1		QFSS
	Treated		W	365	365	0	0.06	0.34	0.15	0.001	WTP
	Reticulation		HY	2	2	0	1	1	1		QFSS
pH Saturation	Raw		HY	10	10	0	6.7	8.4	7.3		QFSS
	Treated		HY	2	2	0	7.4	8.2	7.8		QFSS
	Reticulation		HY	2	2	0	7.4	8.2	7.8		QFSS
Saturation Index	Raw		HY	10	10	0	-1.4	1.0	0.3		QFSS
	Treated		HY	2	2	0	-0.7	0.5	-0.1		QFSS
	Reticulation		HY	2	2	0	-0.8	0.8	0.0		QFSS
Mole Ratio	Raw		HY	10	10	0	2.0	3.2	2.7		QFSS
	Treated		HY	2	2	0	2.1	2.7	2.4		QFSS
	Reticulation		HY	2	2	0	1.9	2.9	2.4		QFSS
Sodium	Raw	mg/L	HY	10	10	0	21	100	84		QFSS
	Treated		HY	2	2	0	32	49	41		QFSS
	Reticulation		HY	2	2	0	32	49	41		QFSS
Potassium	Raw	mg/L	HY	10	10	0	0.32	6.40	1.15		QFSS
	Treated		HY	2	2	0	5.1	5.1	5.1		QFSS
	Reticulation		HY	2	2	0	5.0	5.0	5.0		QFSS
Calcium	Raw	mg/L	HY	10	10	0	31	150	130		QFSS
	Treated		HY	2	2	0	42	62	52		QFSS
	Reticulation		HY	2	2	0	42	63	53		QFSS
Magnesium	Raw	mg/L	HY	10	10	0	12	71	56		QFSS
	Treated		HY	2	2	0	26	26	26		QFSS
	Reticulation		HY	2	2	0	16	25	21		QFSS
Hydrogen	Raw	mg/L	HY	10	0	0	0.0	0.0	0.0		QFSS
	Treated		HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	2	0	0	0.0	0.0	0.0		QFSS
Bicarbonate	Raw	mg/L	HY	10	10	2	158	520	451		QFSS
	Treated		HY	2	2	0	182	232	207		QFSS
	Reticulation		HY	2	2	0	184	231	208		QFSS
Carbonate	Raw	mg/L	HY	10	10	0	0.1	2.3	0.9		QFSS
	Treated		HY	2	2	0	0.2	1.5	0.9		QFSS
	Reticulation		HY	2	2	0	0.1	2.6	1.4		QFSS
Hydroxide	Raw	mg/L	HY	10	0	0	0.0	0.0	0.0		QFSS

	Treated		HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	2	0	0	0.0	0.0	0.0		QFSS
Chloride	Raw	mg/L	HY	10	10	0	37	290	240		QFSS
	Treated		HY	2	2	0	62	110	86		QFSS
	Reticulation		HY	2	2	0	63	110	87		QFSS
	Raw		HY	10	10	0	0.2	0.3	0.2		QFSS
Fluoride	Treated	mg/L	HY	2	2	0	0.22	0.26	0.24		QFSS
	Reticulation		HY	2	2	0	0.21	0.27	0.24		QFSS
Nitrate	Raw	mg/L	HY	10	10	0	0.3	9.0	2.7		QFSS
	Treated		HY	2	2	0	0.55	1.60	1.08		QFSS
	Reticulation		HY	2	2	0	0.55	1.60	1.08		QFSS
	Raw		HY	10	10	0	1.60	48.0	37.5		QFSS
Sulphate	Treated	mg/L	HY	2	2	0	5.1	11.0	8.1		QFSS
	Reticulation		HY	2	2	0	5.2	12.0	8.6		QFSS
Iron	Raw	mg/L	HY	10	10	0	0.01	0.03	0.01		QFSS
	Treated		M	2	2	0	0.01	0.01	0.01	0.001	WTP
	Reticulation		HY	2	2	0	0.01	0.01	0.01		QFSS
	Raw		HY	10	10	0	0.001	0.087	0.004		QFSS
Manganese	Treated	mg/L	M	22	22	0	0.20	0.22	0.20	0.001	WTP
	Reticulation		HY	2	2	0	0.001	0.003	0.002		QFSS
Zinc	Raw	mg/L	HY	10	10	0	0.06	0.06	0.06		QFSS
	Treated		HY	2	2	0	0.06	0.06	0.06		QFSS
	Reticulation		HY	2	2	0	0.06	0.06	0.06		QFSS
	Raw		HY	10	10	0	0.03	0.03	0.03		QFSS
Aluminium	Treated	mg/L	M	26	15	0	0.0	0.033	0.011	0.001	WTP
	Reticulation		HY	2	2	0	0.03	0.03	0.03		QFSS
Boron	Raw	mg/L	HY	10	10	0	0.03	0.05	0.03		QFSS
	Treated		HY	2	2	0	0.04	0.05	0.05		QFSS
	Reticulation		HY	2	20	0	0.04	0.05	0.05		QFSS
	Raw		HY	10	10	0	0.003	0.003	0.003		QFSS
Copper	Treated	mg/L	HY	2	2	0	0.010	0.013	0.012		QFSS
	Reticulation		HY	2	2	0	0.003	0.004	0.004		QFSS
Annual Aluminium Metals	Raw	mg/L	Y	3	3	0	0.0030	0.0510	0.0030		QFSS
	Treated		Y	1	1	0	0.008	0.008	0.008		QFSS
	Reticulation		Y	1	1	0	0.006	0.006	0.006		QFSS
	Raw		Y	3	3	0	0.0007	0.0094	0.0009		QFSS
Annual Arsenic Metals	Treated	mg/L	Y	1	1	0	0.0077	0.0077	0.0077		QFSS
	Reticulation		Y	1	1	0	0.0075	0.0075	0.0075		QFSS

Annual Cadmium Metals	Raw	mg/L	Y	3	3	0	0.0001	0.0001	0.0001		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
Annual Chromium Metals	Raw	mg/L	Y	3	3	0	0.0001	0.0002	0.0001		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
Annual Copper Metals	Raw	mg/L	Y	3	3	0	0.0010	0.0030	0.0010		QFSS
	Treated		Y	1	1	0	0.012	0.012	0.012		QFSS
	Reticulation		Y	1	1	0	0.004	0.004	0.004		QFSS
Annual Iron Metals	Raw	mg/L	Y	3	3	0	0.019	0.100	0.040		QFSS
	Treated		Y	1	1	0	0.005	0.005	0.005		QFSS
	Reticulation		Y	1	1	0	0.01	0.01	0.01		QFSS
Annual Lead Metals	Raw	mg/L	Y	3	3	0	0.0001	0.0018	0.0001		QFSS
	Treated		Y	1	1	0	0.0002	0.0002	0.0002		QFSS
	Reticulation		Y	1	1	0	0.0004	0.0004	0.0004		QFSS
Annual Manganese Metals	Raw	mg/L	Y	3	3	0	0.0003	0.0860	0.0420		QFSS
	Treated		Y	1	1	0	0.0005	0.0005	0.0005		QFSS
	Reticulation		Y	1	1	0	0.0005	0.0005	0.0005		QFSS
Annual Nickel Metals	Raw	mg/L	Y	3	3	0	0.0010	0.0025	0.0020		QFSS
	Treated		Y	1	1	0	0.0006	0.0006	0.0006		QFSS
	Reticulation		Y	1	1	0	0.0006	0.0006	0.0006		QFSS
Annual Zinc Metals	Raw	mg/L	Y	3	3	0	0.0010	0.0080	0.0060		QFSS
	Treated		Y	1	1	0	0.005	0.005	0.005		QFSS
	Reticulation		Y	1	1	0	0.005	0.005	0.005		QFSS

NOTE: QFSS Limit of Reporting not provided to Gympie Regional Council.

**Table 4 - Gympie Water Analysis**

Parameter	Scheme	Units	Frequency of sampling	Total No. samples collected	No of samples in which parameter was detected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Limit of reporting	Laboratory name
Chlorine Residual	Raw	mg/L	-	-	-	-	-	-	-	-	-
	Treated		D	354	354	0	2.10	4.88	2.98	0.01	WTP
	Reticulation		W	113	113	0	0.02	2.26	0.86		QFSS
Total Trihalomethanes	Raw	ug/L	-	-	-	-	-	-	-	-	-
	Treated		-	-	-	-	-	-	-	-	-
	Reticulation		M	13	13	0	30	170	76		QFSS
<i>E. Coli</i>	Raw	mpn/100mL	-	-	-	-	-	-	-	-	-
	Treated		M	12	0	0	0	0	0		QFSS
	Reticulation		W	113	0	0	0	0	0		QFSS
pH	Raw		HY	2	2	0	6.73	7.28	7.01		QFSS
	Treated		D	364	364	0	6.83	7.62	7.14	1	WTP
	Reticulation		HY	4	4	0	6.51	7.06	6.72		QFSS
Total Hardness	Raw	mgCaCO <sub>3</sub> /L	HY	2	2	0	71	108	90		QFSS
	Treated		M	24	24	0	38	124	78	1	WTP
	Reticulation		HY	4	4	0	68	95	82		QFSS
Temporary Hardness	Raw	mgCaCO <sub>3</sub> /L	HY	2	2	0	70	91	81		QFSS
	Treated		HY	2	2	0	56	72	64		QFSS
	Reticulation		HY	4	4	0	53	63	57		QFSS
Alkalinity	Raw	mgCaCO <sub>3</sub> /L	HY	2	2	0	70	91	81		QFSS
	Treated		HY	2	2	0	56	72	64		QFSS
	Reticulation		HY	4	4	0	53	63	57		QFSS
Residual Alkalinity	Raw	meq/L	HY	2	0	0	0.0	0.0	0.0		QFSS
	Treated		HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	4	0	0	0.0	0.0	0.0		QFSS
Silica	Raw	mg/L	HY	2	2	0	10	13	12		QFSS
	Treated		HY	2	2	0	9	11	10		QFSS
	Reticulation		HY	4	4	0	10	11	10		QFSS
Total Dissolved Ions	Raw	mg/L	HY	2	2	0	184	263	224		QFSS
	Treated		HY	2	2	0	186	275	231		QFSS
	Reticulation		HY	4	4	0	181	268	223		QFSS
Total Dissolved Solids	Raw	mg/L	HY	2	2	0	150	217	184		QFSS
	Treated		HY	2	2	0	160	240	200		QFSS

	Reticulation		HY	4	4	0	160	239	197		QFSS
True Colour	Raw	Hazen	HY	2	2	0	20	23	22		QFSS
	Treated		D	359	359	0	1	4	1	1	WTP
	Reticulation		HY	4	4	0	7	8	8		QFSS
Turbidity	Raw	NTU	D	364	364	0	1.3	157	4.8	0.001	WTP
	Treated		D	364	364	0	0.03	0.2	0.1	0.001	WTP
	Reticulation		HY	4	4	0	1	1	1		QFSS
pH Saturation	Raw		HY	2	2	0	8.4	9.1	8.8		QFSS
	Treated		HY	2	2	0	8.5	9.2	8.9		QFSS
	Reticulation		HY	4	4	0	8.5	9.2	8.9		QFSS
Saturation Index	Raw		HY	2	2	0	-2.6	-1.1	-1.7		QFSS
	Treated		HY	2	2	0	-2.7	-1.5	-2.1		QFSS
	Reticulation		HY	4	4	0	-27	-1.5	-2.2		QFSS
Mole Ratio	Raw		HY	2	2	0	3.0	3.7	3.4		QFSS
	Treated		HY	2	2	0	3.3	4.0	3.7		QFSS
	Reticulation		HY	4	4	0	3.4	4.1	3.8		QFSS
Sodium	Raw	mg/L	HY	2	2	0	27	40	34		QFSS
	Treated		HY	2	2	0	29	46	38		QFSS
	Reticulation		HY	4	4	0	30	50	39		QFSS
Potassium	Raw	mg/L	HY	2	2	0	1.7	2.9	2.3		QFSS
	Treated		HY	2	2	0	1.7	2.9	2.3		QFSS
	Reticulation		HY	4	4	0	1.7	3.2	2.4		QFSS
Calcium	Raw	mg/L	HY	2	2	0	12	15	14		QFSS
	Treated		HY	2	2	0	12	15	14		QFSS
	Reticulation		HY	4	4	0	12	14	13		QFSS
Magnesium	Raw	mg/L	HY	2	2	0	10	17	13		QFSS
	Treated		HY	2	2	0	10	17	13		QFSS
	Reticulation		HY	4	4	0	10	15	12		QFSS
Hydrogen	Raw	mg/L	HY	2	0	0	0.0	0.0	0.0		QFSS
	Treated		HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	4	0	0	0.0	0.0	0.0		QFSS
Bicarbonate	Raw	mg/L	HY	2	2	0	85	111	98		QFSS
	Treated		HY	2	2	0	68	87	78		QFSS
	Reticulation		HY	4	4	0	65	77	70		QFSS
Carbonate	Raw	mg/L	HY	2	1	0	0.0	0.1	0.1		QFSS
	Treated		HY	2	1	0	0.0	0.1	0.1		QFSS
	Reticulation		HY	4	0	0	0.0	0.0	0.0		QFSS
Hydroxide	Raw	mg/L	HY	2	0	0	0.0	0.0	0.0		QFSS

	Treated		HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	4	0	0	0.0	0.0	0.0		QFSS
Chloride	Raw	mg/L	HY	2	2	0	42	65	54		QFSS
	Treated		HY	2	2	0	44	69	57		QFSS
	Reticulation		HY	4	4	0	43	68	55		QFSS
	Raw		HY	2	2	0	0.08	0.10	0.09		QFSS
Fluoride	Treated	mg/L	D	363	363	0	0.08	0.90	0.74	0.01	WTP
	Reticulation		M	12	12	0	0.41	0.84	0.74		QFSS
Nitrate	Raw	mg/L	HY	2	2	0	0.05	0.41	0.23		QFSS
	Treated		HY	2	2	0	0.07	0.09	0.08		QFSS
	Reticulation		HY	4	4	0	0.11	0.26	0.15		QFSS
	Raw		HY	2	2	0	7	11	9		QFSS
Sulphate	Treated	mg/L	HY	2	2	0	20	36	28		QFSS
	Reticulation		HY	4	4	0	10	43	31		QFSS
Iron	Raw	mg/L	HY	2	2	0	0.01	0.28	0.15		QFSS
	Treated		M	24	24	0	0.001	0.04	0.009	0.001	WTP
	Reticulation		HY	4	4	0	0.01	0.01	0.01		QFSS
	Raw		HY	2	2	0	0.001	0.002	0.002		QFSS
Manganese	Treated	mg/L	M	15	15	0	0.007	0.100	0.017	0.001	WTP
	Reticulation		HY	4	4	0	0.001	0.003	0.001		QFSS
Zinc	Raw	mg/L	HY	2	2	0	0.06	0.06	0.06		QFSS
	Treated		HY	2	2	0	0.06	0.06	0.06		QFSS
	Reticulation		HY	4	4	0	0.06	0.06	0.06		QFSS
	Raw		HY	2	2	0	0.03	0.03	0.03		QFSS
Aluminium	Treated	mg/L	M	24	24	0	0.001	0.040	0.009	0.001	WTP
	Reticulation		HY	4	4	0	0.03	0.03	0.03		QFSS
Boron	Raw	mg/L	HY	2	2	0	0.02	0.03	0.03		QFSS
	Treated		HY	2	2	0	0.02	0.03	0.03		QFSS
	Reticulation		HY	4	4	0	0.02	0.03	0.03		QFSS
	Raw		HY	2	2	0	0.003	0.005	0.004		QFSS
Copper	Treated	mg/L	HY	2	2	0	0.003	0.003	0.003		QFSS
	Reticulation		HY	4	4	0	0.003	0.014	0.007		QFSS
Annual Aluminium Metals	Raw	mg/L	Y	1	1	0	0.061	0.061	0.061		QFSS
	Treated		Y	1	1	0	0.025	0.025	0.025		QFSS
	Reticulation		Y	2	2	0	0.17	0.019	0.018		QFSS
	Raw		Y	1	1	0	0.0007	0.0007	0.0007		QFSS
Annual Arsenic Metals	Treated	mg/L	Y	1	1	0	0.0002	0.0002	0.0002		QFSS
	Reticulation		Y	2	2	0	0.0002	0.0002	0.0002		QFSS

Annual Cadmium Metals	Raw	mg/L	Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Treated		Y	1	1	0	0.0002	0.0002	0.0002		QFSS
	Reticulation		Y	2	2	0	0.0001	0.0001	0.0001		QFSS
Annual Chromium Metals	Raw	mg/L	Y	1	1	0	0.0003	0.0003	0.0003		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	2	2	0	0.0001	0.0001	0.0001		QFSS
Annual Copper Metals	Raw	mg/L	Y	1	1	0	0.006	0.006	0.006		QFSS
	Treated		Y	1	1	0	0.003	0.003	0.003		QFSS
	Reticulation		Y	2	2	0	0.004	0.017	0.011		QFSS
Annual Iron Metals	Raw	mg/L	Y	1	1	0	0.47	0.47	0.47		QFSS
	Treated		Y	1	1	0	0.005	0.005	0.005		QFSS
	Reticulation		Y	2	2	0	0.005	0.005	0.005		QFSS
Annual Lead Metals	Raw	mg/L	Y	1	1	0	0.0002	0.0002	0.0002		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	2	2	0	0.0003	0.0004	0.0004		QFSS
Annual Manganese Metals	Raw	mg/L	Y	1	1	0	0.018	0.018	0.018		QFSS
	Treated		Y	1	1	0	0.0039	0.0039	0.0039		QFSS
	Reticulation		Y	2	2	0	0.0018	0.0029	0.0024		QFSS
Annual Nickel Metals	Raw	mg/L	Y	1	1	0	0.0009	0.0009	0.0009		QFSS
	Treated		Y	1	1	0	0.0006	0.0006	0.0006		QFSS
	Reticulation		Y	2	2	0	0.0006	0.0006	0.0006		QFSS
Annual Zinc Metals	Raw	mg/L	Y	1	1	0	0.004	0.004	0.004		QFSS
	Treated		Y	1	1	0	0.006	0.006	0.006		QFSS
	Reticulation		Y	2	2	0	0.002	0.004	0.003		QFSS

NOTE: QFSS Limit of Reporting not provided to Gympie Regional Council.



**Table 5 - Imbil Water Analysis**

Parameter	Scheme	Units	Frequency of sampling Required	Total No. samples collected	No of samples in which parameter was detected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Limit of reporting	Laboratory name
Chlorine Residual	Raw	mg/L	-	-	-	-	-	-	-	-	-
	Treated		D	298	298	0	2.24	6.50	3.38	0.01	WTP
	Reticulation		M	24	24	0	0.04	1.66	0.44		QFSS
Total Trihalomethanes	Raw	ug/L	-	-	-	-	-	-	-	-	-
	Treated		-	17	17	0	33	170	53	-	QFSS
	Reticulation		M	32	32	5	93	330	180		QFSS
<i>E. Coli</i>	Raw	mpn/100mL	-	-	-	-	-	-	-	-	-
	Treated		-	-	-	-	-	-	-	-	-
	Reticulation		M	24	0	0	0	0	0		QFSS
pH	Raw		HY	2	2	0	6.71	6.80	6.76		QFSS
	Treated		W	51	51	0	7.20	7.80	7.40	1	WTP
	Reticulation		HY	2	2	0	6.80	7.04	6.92		QFSS
Total Hardness	Raw	mgCaCO <sub>3</sub> /L	HY	2	2	0	130	184	157		QFSS
	Treated		M	26	26	0	82	192	132	1	WTP
	Reticulation		HY	2	2		0	184	148		QFSS
Temporary Hardness	Raw	mgCaCO <sub>3</sub> /L	HY	2	2	0	105	140	123		QFSS
	Treated		HY	2	2	0	107	136	122		QFSS
	Reticulation		HY	2	2	0	99	133	116		QFSS
Alkalinity	Raw	mgCaCO <sub>3</sub> /L	HY	2	2	0	105	140	123		QFSS
	Treated		HY	2	2	0	107	140	124		QFSS
	Reticulation		HY	2	2	0	99	130	115		QFSS
Residual Alkalinity	Raw	meq/L	HY	2	0	0	0	0	0		QFSS
	Treated		HY	2	0	0	0	0	0		QFSS
	Reticulation		HY	2	0	0	0	0	0		QFSS
Silica	Raw	mg/L	HY	2	2	0	18	20	19		QFSS
	Treated		HY	2	2	0	18	20	19		QFSS
	Reticulation		HY	2	2	0	16	19	18		QFSS
Total Dissolved Ions	Raw	mg/L	HY	2	2	0	267	369	318		QFSS
	Treated		HY	2	2	0	288	378	333		QFSS
	Reticulation		HY	2	2	0	259	379	319		QFSS
Total Dissolved Solids	Raw	mg/L	HY	2	2	0	219	310	265		QFSS
	Treated		HY	2	2	0	239	310	275		QFSS

	Reticulation		HY	2	2	0	214	320	267		QFSS
True Colour	Raw	Hazen	HY	2	2	0	13	16	15		QFSS
	Treated		W	51	51	0	1	3	1	1	WTP
	Reticulation		HY	2	2	0	7	8	8		QFSS
Turbidity	Raw	NTU	HY	2	2	0	1	2	2		QFSS
	Treated		W	51	51	0	0.02	0.2	0.1	0.001	WTP
	Reticulation		HY	2	2	0	1	1	1		QFSS
pH Saturation	Raw		HY	2	2	0	8.1	7.9	8.0		QFSS
	Treated		HY	2	2	0	7.9	8.1	8.0		QFSS
	Reticulation		HY	2	2	0	7.9	8.2	8.1		QFSS
Saturation Index	Raw		HY	2	2	0	-1.4	-1.1	-1.3		QFSS
	Treated		HY	2	2	0	-1.4	-1.0	-1.2		QFSS
	Reticulation		HY	2	2	0	-1.4	-0.8	-1.1		QFSS
Mole Ratio	Raw		HY	2	2	0	3.4	3.4	3.4		QFSS
	Treated		HY	2	2	0	3.2	3.6	3.4		QFSS
	Reticulation		HY	2	2	0	3.2	3.4	3.3		QFSS
Sodium	Raw	mg/L	HY	2	2	0	29	42	36		QFSS
	Treated		HY	2	2	0	37	46	42		QFSS
	Reticulation		HY	2	2	0	34	46	40		QFSS
Potassium	Raw	mg/L	HY	2	2	0	2.2	4.0	3.1		QFSS
	Treated		HY	2	2	0	2.2	4.0	3.1		QFSS
	Reticulation		HY	2	2	0	2.2	3.6	2.9		QFSS
Calcium	Raw	mg/L	HY	2	2	.	22	29	26		QFSS
	Treated		HY	2	2	0	22	28	25		QFSS
	Reticulation		HY	2	2	0	19	30	25		QFSS
Magnesium	Raw	mg/L	HY	2	2	0	18	27	23		QFSS
	Treated		HY	2	2	0	18	26	22		QFSS
	Reticulation		HY	2	2	0	15	27	21		QFSS
Hydrogen	Raw	mg/L	HY	2	0	0	0	0	0		QFSS
	Treated		HY	2	0	0	0	0	0		QFSS
	Reticulation		HY	2	0	0	0	0	0		QFSS
Bicarbonate	Raw	mg/L	HY	2	2	0	129	165	147		QFSS
	Treated		HY	2	2	0	130	166	148		QFSS
	Reticulation		HY	2	2	0	121	161	141		QFSS
Carbonate	Raw	mg/L	HY	2	1	0	0.0	0.1	0.1		QFSS
	Treated		HY	2	1	0	0.0	0.1	0.1		QFSS
	Reticulation		HY	2	1	0	0.0	0.1	0.1		QFSS
Hydroxide	Raw	mg/L	HY	2	0	0	0	0	0		QFSS

	Treated		HY	2	0	0	0	0	0		QFSS
	Reticulation		HY	2	0	0	0	0	0		QFSS
Chloride	Raw	mg/L	HY	2	2	0	59	88	74		QFSS
	Treated		HY	2	2	0	70	94	82		QFSS
	Reticulation		HY	2	2	0	61	98	80		QFSS
Fluoride	Raw	mg/L	HY	2	2	0	0.09	0.10	0.10		QFSS
	Treated		HY	2	2	0	0.09	0.10	0.10		QFSS
	Reticulation		HY	2	2	0	0.09	0.10	0.10		QFSS
Nitrate	Raw	mg/L	HY	2	2	0	0.23	0.32	0.28		QFSS
	Treated		HY	2	2	0	0.16	0.27	0.22		QFSS
	Reticulation		HY	2	2	0	0.18	0.21	0.20		QFSS
Sulphate	Raw	mg/L	HY	2	2	0	5.8	14.0	9.9		QFSS
	Treated		HY	2	2	0	5.8	14.0	9.9		QFSS
	Reticulation		HY	2	2	0	4.7	15.0	9.9		QFSS
Iron	Raw	mg/L	HY	2	2	0	0.01	0.03	0.02		QFSS
	Treated		M	26	26	0	0.002	0.022	0.004	0.001	WTP
	Reticulation		HY	2	2	0	0.01	0.01	0.01		QFSS
Manganese	Raw	mg/L	HY	2	2	0	0.001	0.001	0.001		QFSS
	Treated		M	24	24	1	0.000	0.200	0.100	0.001	WTP
	Reticulation		HY	2	2	0	0.001	0.001	0.001		QFSS
Zinc	Raw	mg/L	HY	2	2	0	0.06	0.06	0.06		QFSS
	Treated		HY	2	2	0	0.06	0.06	0.06		QFSS
	Reticulation		HY	2	2	0	0.06	0.06	0.06		QFSS
Aluminium	Raw	mg/L	HY	2	2	0	0.03	0.03	0.03		QFSS
	Treated		M	26	26	0	0.001	0.027	0.008	0.001	WTP
	Reticulation		HY	2	2	0	0.03	0.03	0.03		QFSS
Boron	Raw	mg/L	HY	2	2	0	0.03	0.03	0.03		QFSS
	Treated		HY	2	2	0	0.03	0.03	0.03		QFSS
	Reticulation		HY	2	2	0	0.03	0.03	0.03		QFSS
Copper	Raw	mg/L	HY	2	2	0	0.015	0.018	0.017		QFSS
	Treated		HY	2	2	0	0.014	0.027	0.021		QFSS
	Reticulation		HY	2	2	0	0.013	0.013	0.013		QFSS
Annual Aluminium Metals	Raw	mg/L	Y	1	1	0	0.007	0.007	0.007		QFSS
	Treated		Y	1	1	0	0.005	0.005	0.005		QFSS
	Reticulation		Y	1	1	0	0.019	0.019	0.019		QFSS
Annual Arsenic Metals	Raw	mg/L	Y	1	1	0	0.0009	0.0009	0.0009		QFSS
	Treated		Y	1	1	0	0.0005	0.0005	0.0005		QFSS
	Reticulation		Y	1	1	0	0.0006	0.0006	0.0006		QFSS

Annual Cadmium Metals	Raw	mg/L	Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
Annual Chromium Metals	Raw	mg/L	Y	1	1	0	0.0002	0.0002	0.0002		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
Annual Copper Metals	Raw	mg/L	Y	1	1	0	0.022	0.022	0.022		QFSS
	Treated		Y	1	1	0	0.014	0.014	0.014		QFSS
	Reticulation		Y	1	1	0	0.014	0.014	0.014		QFSS
Annual Iron Metals	Raw	mg/L	Y	1	1	0	0.130	0.130	0.130		QFSS
	Treated		Y	1	1	0	0.005	0.005	0.005		QFSS
	Reticulation		Y	1	1	0	0.010	0.010	0.010		QFSS
Annual Lead Metals	Raw	mg/L	Y	1	1	0	0.001	0.001	0.001		QFSS
	Treated		Y	1	1	0	0.0004	0.0004	0.0004		QFSS
	Reticulation		Y	1	1	0	0.0004	0.0004	0.0004		QFSS
Annual Manganese Metals	Raw	mg/L	Y	1	1	0	0.078	0.078	0.078		QFSS
	Treated		Y	1	1	0	0.0002	0.0002	0.0002		QFSS
	Reticulation		Y	1	1	0	0.0005	0.0005	0.0005		QFSS
Annual Nickel Metals	Raw	mg/L	Y	1	1	0	0.0017	0.0017	0.0017		QFSS
	Treated		Y	1	1	0	0.0007	0.0007	0.0007		QFSS
	Reticulation		Y	1	1	0	0.0006	0.0006	0.0006		QFSS
Annual Zinc Metals	Raw	mg/L	Y	1	1	0	0.016	0.016	0.016		QFSS
	Treated		Y	1	1	0	0.011	0.011	0.011		QFSS
	Reticulation		Y	1	1	0	0.003	0.003	0.003		QFSS

NOTE: QFSS Limit of Reporting not provided to Gympie Regional Council.

**Table 6- Kandanga Water Analysis**

Parameter	Scheme	Units	Frequency of sampling	Total No. samples collected	No of samples in which parameter was detected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Limit of reporting	Laboratory name
Chlorine Residual	Raw	mg/L	-	-	-	-	-	-	-	-	-
	Treated		D	305	305	0	1.55	6.70	3.00	0.01	WTP
	Reticulation		M	21	21	0	0.05	1.52	0.39		QFSS
Total Trihalomethanes	Raw	ug/L	-	-	-	-	-	-	-	-	-
	Treated		-	16	16	0	44	150	78	-	QFSS
	Reticulation		M	35	35	7	110	370	170		QFSS
<i>E. Coli</i>	Raw	mpn/100mL	-	-	-	-	-	-	-	-	-
	Treated		-	-	-	-	-	-	-	-	-
	Reticulation		M	247	0	0	0	0	0		QFSS
pH	Raw		HY	2	2	0	6.96	7.06	7.01		QFSS
	Treated		W	51	51	0	6.90	7.80	7.50	1	WTP
	Reticulation		HY	2	2	0	7.06	7.10	7.08		QFSS
Total Hardness	Raw	mgCaCO <sub>3</sub> /L	HY	2	2	0	164	165	165		QFSS
	Treated		M	26	26	0	72	198	170	1	WTP
	Reticulation		HY	2	2	0	164	172	168		QFSS
Temporary Hardness	Raw	mgCaCO <sub>3</sub> /L	HY	2	2	0	137	143	140		QFSS
	Treated		HY	2	2	0	144	147	144		QFSS
	Reticulation		HY	2	2	0	145	148	147		QFSS
Alkalinity	Raw	mgCaCO <sub>3</sub> /L	HY	2	2	0	137	140	139		QFSS
	Treated		HY	2	2	0	140	147	144		QFSS
	Reticulation		HY	2	2	0	148	150	149		QFSS
Residual Alkalinity	Raw	meq/L	HY	2	0	0	0.0	0.0	0.0		QFSS
	Treated		HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	2	0	0	0.0	0.0	0.0		QFSS
Silica	Raw	mg/L	HY	2	2	0	22	27	25		QFSS
	Treated		HY	2	2	0	24	27	26		QFSS
	Reticulation		HY	2	2	0	24	26	25		QFSS
Total Dissolved Ions	Raw	mg/L	HY	2	2	0	326	334	330		QFSS
	Treated		HY	2	2	0	349	349	349		QFSS
	Reticulation		HY	2	2	0	350	365	358		QFSS
Total Dissolved Solids	Raw	mg/L	HY	2	2	0	263	270	267		QFSS
	Treated		HY	2	2	0	281	290	286		QFSS

	Reticulation		HY	2	2	0	290	297	294		QFSS
True Colour	Raw	Hazen	HY	2	2	0	18	23	21		QFSS
	Treated		W	51	51	1	0	4	1	1	WTP
	Reticulation		HY	2	2	0	7	8	8		QFSS
Turbidity	Raw	NTU	HY	2	2	0	2	3	3		QFSS
	Treated		W	75	75	0	0.04	0.53	0.09	0.001	WTP
	Reticulation		HY	2	2	0	1	1	1		QFSS
pH Saturation	Raw		HY	2	2	0	8.1	8.1	8.1		QFSS
	Treated		HY	2	2	0	8.1	8.1	8.1		QFSS
	Reticulation		HY	2	2	0	8.0	8.1	8.1		QFSS
Saturation Index	Raw		HY	2	2	0	-1.1	-1.0	-1.1		QFSS
	Treated		HY	2	2	0	-1.2	-1.1	-1.2		QFSS
	Reticulation		HY	2	2	0	-1.0	-1.0	-1.0		QFSS
Mole Ratio	Raw		HY	2	2	0	3.0	3.1	3.1		QFSS
	Treated		HY	2	2	0	3.1	3.1	3.1		QFSS
	Reticulation		HY	2	2	0	3.0	3.0	3.0		QFSS
Sodium	Raw	mg/L	HY	2	2	0	334	37	36		QFSS
	Treated		HY	2	2	0	38	43	41		QFSS
	Reticulation		HY	2	2	0	43	44	44		QFSS
Potassium	Raw	mg/L	HY	2	2	0	2.0	3.2	2.5		QFSS
	Treated		HY	2	2	0	2.1	3.0	2.6		QFSS
	Reticulation		HY	2	2	0	2.0	3.1	2.6		QFSS
Calcium	Raw	mg/L	HY	2	2	0	17	17	17		QFSS
	Treated		HY	2	2	0	17	18	18		QFSS
	Reticulation		HY	2	2	0	18	18	18		QFSS
Magnesium	Raw	mg/L	HY	2	2	0	30	30	30		QFSS
	Treated		HY	2	2	0	30	31	31		QFSS
	Reticulation		HY	2	2	0	29	30	30		QFSS
Hydrogen	Raw	mg/L	HY	2	0	0	0	0	0		QFSS
	Treated		HY	2	0	0	0	0	0		QFSS
	Reticulation		HY	2	0	0	0	0	0		QFSS
Bicarbonate	Raw	mg/L	HY	2	2	0	167	174	171		QFSS
	Treated		HY	2	2	0	175	179	177		QFSS
	Reticulation		HY	2	2	0	176	180	178		QFSS
Carbonate	Raw	mg/L	HY	2	2	0	0.1	0.1	0.1		QFSS
	Treated		HY	2	2	0	0.1	0.1	0.1		QFSS
	Reticulation		HY	2	2	0	0.1	0.1	0.1		QFSS
Hydroxide	Raw	mg/L	HY	2	0	0	0	0	0		QFSS

	Treated		HY	2	0	0	0	0	0		QFSS
	Reticulation		HY	2	0	0	0	0	0		QFSS
Chloride	Raw	mg/L	HY	2	2	0	65	65	65		QFSS
	Treated		HY	2	2	0	69	74	72		QFSS
	Reticulation		HY	2	2	0	74	77	76		QFSS
Fluoride	Raw	mg/L	HY	2	2	0	0.06	0.07	0.07		QFSS
	Treated		HY	2	2	0	0.07	0.07	0.07		QFSS
	Reticulation		HY	2	2	0	0.07	0.07	0.07		QFSS
Nitrate	Raw	mg/L	HY	2	2	0	0.06	0.57	0.32		QFSS
	Treated		HY	2	2	0	0.05	0.44	0.25		QFSS
	Reticulation		HY	2	2	0	0.06	0.33	0.20		QFSS
Sulphate	Raw	mg/L	HY	2	2	0	7.0	9.7	8.4		QFSS
	Treated		HY	2	2	0	7.1	10.0	8.6		QFSS
	Reticulation		HY	2	2	0	7.3	11.0	9.2		QFSS
Iron	Raw	mg/L	HY	2	2	0	0.01	0.01	0.01		QFSS
	Treated		M	26	26	0	0.001	0.008	0.002	0.001	WTP
	Reticulation		HY	2	2	0	0.01	0.01	0.01		QFSS
Manganese	Raw	mg/L	HY	2	2	0	0.001	0.001	0.001		QFSS
	Treated		HY	2	2	0	0.001	0.001	0.001		QFSS
	Reticulation		HY	2	2	0	0.002	0.004	0.003		QFSS
Zinc	Raw	mg/L	HY	2	2	0	0.06	0.06	0.06		QFSS
	Treated		HY	2	2	0	0.06	0.06	0.06		QFSS
	Reticulation		HY	2	2	0	0.06	0.06	0.06		QFSS
Aluminium	Raw	mg/L	HY	2	2	0	0.03	0.03	0.03		QFSS
	Treated		M	26	26	0	0.001	0.023	0.007	0.001	WTP
	Reticulation		HY	2	2	0	0.03	0.03	0.03		QFSS
Boron	Raw	mg/L	HY	2	2	0	0.03	0.04	0.04		QFSS
	Treated		HY	2	2	0	0.03	0.04	0.04		QFSS
	Reticulation		HY	2	2	0	0.03	0.04	0.04		QFSS
Copper	Raw	mg/L	HY	2	2	0	0.003	0.003	0.003		QFSS
	Treated		HY	2	2	0	0.003	0.003	0.003		QFSS
	Reticulation		HY	2	2	0	0.003	0.011	0.007		QFSS
Annual Aluminium Metals	Raw	mg/L	Y	1	1	0	0.034	0.034	0.034		QFSS
	Treated		Y	1	1	0	0.003	0.003	0.003		QFSS
	Reticulation		Y	1	1	0	0.006	0.006	0.006		QFSS
Annual Arsenic Metals	Raw	mg/L	Y	1	1	0	0.0018	0.0018	0.0018		QFSS
	Treated		Y	1	1	0	0.0010	0.0010	0.0010		QFSS
	Reticulation		Y	1	1	02	0.0012	0.0012	0.0012		QFSS

Annual Cadmium Metals	Raw	mg/L	Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
Annual Chromium Metals	Raw	mg/L	Y	1	1	0	0.0007	0.0007	0.0007		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	1	1	0	0.0002	0.0002	0.0002		QFSS
Annual Copper Metals	Raw	mg/L	Y	1	1	0	0.001	0.001	0.001		QFSS
	Treated		Y	1	1	0	0.001	0.001	0.001		QFSS
	Reticulation		Y	1	1	0	0.004	0.004	0.004		QFSS
Annual Iron Metals	Raw	mg/L	Y	1	1	0	0.400	0.400	0.400		QFSS
	Treated		Y	1	1	0	0.005	0.005	0.005		QFSS
	Reticulation		Y	1	1	0	0.009	0.009	0.009		QFSS
Annual Lead Metals	Raw	mg/L	Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	1	1	0	0.0003	0.0003	0.0003		QFSS
Annual Manganese Metals	Raw	mg/L	Y	1	1	0	0.26	0.26	0.26		QFSS
	Treated		Y	1	1	0	0.0002	0.0002	0.0002		QFSS
	Reticulation		Y	1	1	0	0.0110	0.0110	0.0110		QFSS
Annual Nickel Metals	Raw	mg/L	Y	1	1	0	0.0029	0.0029	0.0029		QFSS
	Treated		Y	1	1	0	0.0008	0.0008	0.0008		QFSS
	Reticulation		Y	1	1	0	0.0010	0.0010	0.0010		QFSS
Annual Zinc Metals	Raw	mg/L	Y	1	1	0	0.001	0.001	0.001		QFSS
	Treated		Y	1	1	0	0.001	0.001	0.001		QFSS
	Reticulation		Y	1	1	0	0.002	0.002	0.002		QFSS

NOTE: QFSS Limit of Reporting not provided to Gympie Regional Council.



**Table 7 - Kilkivan Water Analysis**

Parameter	Scheme	Units	Frequency of sampling	Total No. samples collected	No of samples in which parameter was detected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Limit of reporting	Laboratory name
Chlorine Residual	Raw	mg/L	-	-	-	-	-	-	-	-	-
	Treated		D	343	343	0	0.18	4.02	1.25	0.01	WTP
	Reticulation		W	24	24	0	0.24	1.44	0.96		QFSS
Total Trihalomethanes	Raw	mg/L	-	-	-	-	-	-	-	-	-
	Treated		-	-	-	-	-	-	-	-	-
	Reticulation		M	12	12	0	11	39	28		QFSS
<i>E. Coli</i>	Raw	mpn/100mL	-	-	-	-	-	-	-	-	-
	Treated		-	-	-	-	-	-	-	-	-
	Reticulation		M	24	0	0	0	0	0		QFSS
pH	Raw		HY	8	8	0	7.04	7.95	7.62		QFSS
	Treated		D	343	343	0	7.22	7.83	7.50	1	WTP
	Reticulation		HY	2	2	0	7.45	7.79	7.62		QFSS
Total Hardness	Raw	mgCaCO <sub>3</sub> /L	HY	8	8	0	272	856	508		QFSS
	Treated		W	26	26	0	127	224	165	1	WTP
	Reticulation		HY	2	2	0	156	171	164		QFSS
Temporary Hardness	Raw	mgCaCO <sub>3</sub> /L	HY	8	8	0	247	597	376		QFSS
	Treated		HY	2	2	0	149	164	157		QFSS
	Reticulation		HY	2	2	0	156	171	164		QFSS
Alkalinity	Raw	mgCaCO <sub>3</sub> /L	HY	8	0	0	0.0	0.0	0.0		QFSS
	Treated		W	26	26	0	94	198	163	1	WTP
	Reticulation		HY	2	2	0	186	200	193		QFSS
Residual Alkalinity	Raw	meq/L	HY	8	0	0	0.0	0.0	0.0		QFSS
	Treated		HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	2	0	0	0.0	0.0	0.0		QFSS
Silica	Raw	mg/L	HY	8	8	0	24	71	32		QFSS
	Treated		HY	2	2	0	15	19	17		QFSS
	Reticulation		HY	2	2	0	15	19	17		QFSS
Total Dissolved Ions	Raw	mg/L	HY	8	8	0	552	1370	983		QFSS
	Treated		HY	2	2	0	422	454	438		QFSS
	Reticulation		HY	2	2	0	430	467	449		QFSS
Total Dissolved Solids	Raw	mg/L	HY	8	8	0	430	1080	781		QFSS
	Treated		HY	2	2	0	320	354	337		QFSS

	Reticulation		HY	2	2	0	330	367	349		QFSS
True Colour	Raw	Hazen	HY	8	8	0	7	8	8		QFSS
	Treated		D	343	0	0	0	0	0	1	WTP
	Reticulation		HY	2	2	0	7	8	8		QFSS
Turbidity	Raw	NTU	HY	8	8	0	1	1	1		QFSS
	Treated		D	343	343	0	0.03	0.15	0.10	0.001	WTP
	Reticulation		HY	2	2	0	1	1	1		QFSS
pH Saturation	Raw		HY	8	8	0	7.0	8.2	7.6		QFSS
	Treated		HY	2	2	0	7.8	8.5	8.2		QFSS
	Reticulation		HY	2	2	0	7.8	8.4	8.1		QFSS
Saturation Index	Raw		HY	8	8	0	-1.1	0.7	-0.1		QFSS
	Treated		HY	2	1	0	-1.2	0.0	-0.6		QFSS
	Reticulation		HY	2	1	0	-0.9	0.0	-0.5		QFSS
Mole Ratio	Raw		HY	8	8	0	2.1	3.1	2.6		QFSS
	Treated		HY	2	2	0	2.3	2.9	2.6		QFSS
	Reticulation		HY	2	2	0	2.3	2.7	2.5		QFSS
Sodium	Raw	mg/L	HY	8	8	0	57	120	99		QFSS
	Treated		HY	2	2	0	65	74	70		QFSS
	Reticulation		HY	2	2	0	65	77	71		QFSS
Potassium	Raw	mg/L	HY	8	8	0	0.35	2.50	1.90		QFSS
	Treated		HY	2	2	0	1.2	1.2	1.2		QFSS
	Reticulation		HY	2	2	0	1.2	1.2	1.2		QFSS
Calcium	Raw	mg/L	HY	8	8	0	16	83	41		QFSS
	Treated		HY	2	2	0	18	24	21		QFSS
	Reticulation		HY	2	2	0	21	26	24		QFSS
Magnesium	Raw	mg/L	HY	8	8	0	50	200	73		QFSS
	Treated		HY	2	2	0	26	26	26		QFSS
	Reticulation		HY	2	2	0	25	26	26		QFSS
Hydrogen	Raw	mg/L	HY	8	0	0	0.0	0.0	0.0		QFSS
	Treated		HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	2	0	0	0.0	0.0	0.0		QFSS
Bicarbonate	Raw	mg/L	HY	8	8	0	301	720	455		QFSS
	Treated		HY	2	2	0	225	235	230		QFSS
	Reticulation		HY	2	2	0	225	237	231		QFSS
Carbonate	Raw	mg/L	HY	8	8	0	0.1	4.1	0.9		QFSS
	Treated		HY	2	2	0	0.1	0.8	0.5		QFSS
	Reticulation		HY	2	2	0	0.2	0.9	0.6		QFSS
Hydroxide	Raw	mg/L	HY	8	0	0	0.0	0.0	0.0		QFSS

Chloride	Treated	mg/L	HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	2	0	0	0.0	0.0	0.0		QFSS
	Raw		HY	8	8	0	89	310	255		QFSS
Fluoride	Treated	mg/L	HY	2	2	0	72	100	86		QFSS
	Reticulation		HY	2	2	0	73	110	92		QFSS
	Raw		HY	8	8	0	0.10	0.20	0.18		QFSS
Nitrate	Treated	mg/L	HY	2	2	0	0.07	0.08	0.08		QFSS
	Reticulation		HY	2	2	0	0.08	0.08	0.08		QFSS
	Raw		HY	8	8	0	0.1	5.8	0.2		QFSS
Sulphate	Treated	mg/L	HY	2	2	0	0.26	0.51	0.39		QFSS
	Reticulation		HY	2	2	0	0.26	0.54	0.40		QFSS
	Raw		HY	8	8	0	0.5	25.0	9.4		QFSS
Iron	Treated	mg/L	HY	2	2	0	2.5	5.8	4.2		QFSS
	Reticulation		HY	2	2	0	2.2	6.8	4.5		QFSS
	Raw		HY	8	8	0	0.01	0.01	0.01		QFSS
Manganese	Treated	mg/L	M	26	6	0	0.000	0.006	0.000	0.01	WTP
	Reticulation		HY	2	2	0	0.01	0.01	0.01		QFSS
	Raw		HY	8	8	0	0.001	0.650	0.015		QFSS
Zinc	Treated	mg/L	M	26	26	0	0.20	0.24	0.20	0.01	WTP
	Reticulation		HY	2	2	0	0.001	0.001	0.001		QFSS
	Raw		HY	8	8	0	0.06	0.06	0.06		QFSS
Aluminium	Treated	mg/L	HY	2	2	0	0.06	0.06	0.06		QFSS
	Reticulation		HY	2	2	0	0.06	0.06	0.06		QFSS
	Raw		HY	8	8	0	0.03	0.03	0.03		QFSS
Boron	Treated	mg/L	M	26	13	0	0.000	0.028	0.001	0.1	WTP
	Reticulation		HY	2	2	0	0.03	0.03	0.03		QFSS
	Raw		HY	8	8	0	0.05	0.09	0.07		QFSS
Copper	Treated	mg/L	HY	2	2	0	0.05	0.06	0.06		QFSS
	Reticulation		HY	2	2	0	0.05	0.06	0.06		QFSS
	Raw		HY	8	8	0	0.003	0.004	0.003		QFSS
Annual Aluminium Metals	Treated	mg/L	HY	2	2	0	0.003	0.003	0.003		QFSS
	Reticulation		HY	2	2	0	0.061	0.074	0.068		QFSS
	Raw		Y	4	4	0	0.003	0.003	0.003		QFSS
Annual Arsenic Metals	Treated	mg/L	Y	1	1	0	0.003	0.003	0.003		QFSS
	Reticulation		Y	1	1	0	0.003	0.003	0.003		QFSS
	Raw		Y	4	4	0	0.0010	0.0056	0.0014		QFSS
Annual Arsenic Metals	Treated	mg/L	Y	1	1	0	0.0011	0.0011	0.0011		QFSS
	Reticulation		Y	1	1	0	0.0010	0.0010	0.0010		QFSS
	Raw		Y	4	4	0	0.0010	0.0010	0.0010		QFSS

Annual Cadmium Metals	Raw	mg/L	Y	4	4	0	0.0001	0.0001	0.0001		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
Annual Chromium Metals	Raw	mg/L	Y	4	4	0	0.0001	0.0007	0.0002		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
Annual Copper Metals	Raw	mg/L	Y	4	4	0	0.001	0.003	0.002		QFSS
	Treated		Y	1	1	0	0.003	0.003	0.003		QFSS
	Reticulation		Y	1	1	0	0.068	0.068	0.068		QFSS
Annual Iron Metals	Raw	mg/L	Y	4	4	0	0.006	0.050	0.009		QFSS
	Treated		Y	1	1	0	0.005	0.005	0.005		QFSS
	Reticulation		Y	1	1	0	0.008	0.008	0.008		QFSS
Annual Lead Metals	Raw	mg/L	Y	4	4	0	0.0001	0.0003	0.0002		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	1	1	0	0.0014	0.0014	0.0014		QFSS
Annual Manganese Metals	Raw	mg/L	Y	4	4	0	0.0016	0.6400	0.2159		QFSS
	Treated		Y	1	1	0	0.0002	0.0002	0.0002		QFSS
	Reticulation		Y	1	1	0	0.0003	0.0003	0.0003		QFSS
Annual Nickel Metals	Raw	mg/L	Y	4	4	0	0.0011	0.0031	0.0017		QFSS
	Treated		Y	1	1	0	0.0002	0.0002	0.0002		QFSS
	Reticulation		Y	1	1	0	0.0002	0.0002	0.0002		QFSS
Annual Zinc Metals	Raw	mg/L	Y	4	4	0	0.001	0.021	0.003		QFSS
	Treated		Y	1	1	0	0.002	0.002	0.002		QFSS
	Reticulation		Y	1	1	0	0.022	0.022	0.022		QFSS

NOTE: QFSS Limit of Reporting not provided to Gympie Regional Council.

**Table 8 - Rainbow Beach Water Analysis**

Parameter	Scheme	Units	Frequency of sampling	Total No. samples collected	No of samples in which parameter was detected	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Limit of reporting	Laboratory name
Chlorine Residual	Raw	mg/L	-	-	-	-	-	-	-	-	-
	Treated		D	312	312	0	0.26	1.32	0.93	0.01	WTP
	Reticulation		W	78	78	0	0.11	1.19	0.95		QFSS
Total Trihalomethanes	Raw	ug/L	-	-	-	-	-	-	-	-	-
	Treated		-	-	-	-	-	-	-	-	-
	Reticulation		M	12	12	0	7	19	8		QFSS
<i>E. Coli</i>	Raw	mpn/100mL	-	-	-	-	-	-	-	-	-
	Treated		M	14	0	0	0	0	0		QFSS
	Reticulation		W	78	0	0	0	0	0		QFSS
pH	Raw		HY	8	8	0	4.94	5.31	5.16		QFSS
	Treated		D	312	312	0	6.70	7.30	7.00	1	WTP
	Reticulation		HY	2	2	0	6.67	6.70	6.69		QFSS
Total Hardness	Raw	mgCaCO <sub>3</sub> /L	HY	8	8	0	7	9	8		QFSS
	Treated		M	12	12	0	8	14	12	1	WTP
	Reticulation		HY	2	2	0	10	10	10		QFSS
Temporary Hardness	Raw	mgCaCO <sub>3</sub> /L	HY	8	8	0	2	3	3		QFSS
	Treated		HY	2	2	0	8	8	8		QFSS
	Reticulation		HY	2	2	0	10	10	10		QFSS
Alkalinity	Raw	mgCaCO <sub>3</sub> /L	HY	8	8	0	2	3	3		QFSS
	Treated		M	12	12	0	90	132	119	1	WTP
	Reticulation		HY	2	2	0	86	92	89		QFSS
Residual Alkalinity	Raw	meq/L	HY	8	0	0	0.0	0.0	0.0		QFSS
	Treated		HY	2	2	0	1.5	1.7	1.6		QFSS
	Reticulation		HY	2	2	0	1.5	1.6	1.6		QFSS
Silica	Raw	mg/L	HY	8	8	0	9	10	9		QFSS
	Treated		HY	2	2	0	9	10	9		QFSS
	Reticulation		HY	2	2	0	10	10	10		QFSS
Total Dissolved Ions	Raw	mg/L	HY	8	8	0	45	54	49		QFSS
	Treated		HY	2	2	0	188	200	194		QFSS
	Reticulation		HY	2	2	0	191	200	196		QFSS
Total Dissolved Solids	Raw	mg/L	HY	8	8	0	52	61	57		QFSS
	Treated		HY	2	2	0	150	153	152		QFSS

	Reticulation		HY	2	2	0	150	153	152		QFSS
True Colour	Raw	Hazen	HY	8	8	0	7	11	8		QFSS
	Treated		W	316	316	0	1	2	1	1	WTP
	Reticulation		HY	2	2	0	7	8	8		QFSS
Turbidity	Raw	NTU	HY	8	8	0	1	3	1		QFSS
	Treated		W	312	312	0	0.180	2.930	0.300	0.001	WTP
	Reticulation		HY	2	2	0	1	1	1		QFSS
pH Saturation	Raw		HY	8	8	0	11.1	11.3	11.2		QFSS
	Treated		HY	2	2	0	9.6	9.6	9.6		QFSS
	Reticulation		HY	2	2	0	9.3	9.4	9.4		QFSS
Saturation Index	Raw		HY	8	8	0	-6.3	-5.8	-6.0		QFSS
	Treated		HY	2	2	0	-3.1	-3.0	-3.1		QFSS
	Reticulation		HY	2	2	0	-2.7	-2.6	-2.7		QFSS
Mole Ratio	Raw		HY	8	8	0	6.0	6.5	6.2		QFSS
	Treated		HY	2	2	0	3.3	3.3	3.3		QFSS
	Reticulation		HY	2	2	0	3.2	3.2	3.2		QFSS
Sodium	Raw	mg/L	HY	8	8	0	13	16	15		QFSS
	Treated		HY	2	2	0	54	56	55		QFSS
	Reticulation		HY	2	2	0	54	56	55		QFSS
Potassium	Raw	mg/L	HY	8	8	0	0.39	0.65	0.52		QFSS
	Treated		HY	2	2	0	0.53	0.53	0.53		QFSS
	Reticulation		HY	2	2	0	0.53	0.54	0.54		QFSS
Calcium	Raw	mg/L	HY	8	6	0	0	1	1		QFSS
	Treated		HY	2	2	0	1	1	1		QFSS
	Reticulation		HY	2	2	0	1	2	2		QFSS
Magnesium	Raw	mg/L	HY	8	8	0	2	2	2		QFSS
	Treated		HY	2	2	0	2	2	2		QFSS
	Reticulation		HY	2	2	0	1	2	1		QFSS
Hydrogen	Raw	mg/L	HY	8	0	0	0.0	0.0	0.0		QFSS
	Treated		HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	2	0	0	0.0	0.0	0.0		QFSS
Bicarbonate	Raw	mg/L	HY	8	8	0	4	4	4		QFSS
	Treated		HY	2	2	0	112	102	107		QFSS
	Reticulation		HY	2	2	0	105	112	109		QFSS
Carbonate	Raw	mg/L	HY	8	0	0	0.0	0.0	0.0		QFSS
	Treated		HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	2	0	0	0.0	0.0	0.0		QFSS
Hydroxide	Raw	mg/L	HY	8	0	0	0.0	0.0	0.0		QFSS

	Treated	mg/L	HY	2	0	0	0.0	0.0	0.0		QFSS
	Reticulation		HY	2	0	0	0.0	0.0	0.0		QFSS
	Raw		HY	8	8	0	22	27	24		QFSS
Chloride	Treated	mg/L	HY	2	2	0	25	26	26		QFSS
	Reticulation		HY	2	2	0	25	25	25		QFSS
	Raw		HY	8	8	0	0.02	0.02	0.02		QFSS
Fluoride	Treated	mg/L	HY	2	2	0	0.02	0.02	0.02		QFSS
	Reticulation		HY	2	2	0	0.02	0.02	0.02		QFSS
	Raw		HY	8	8	0	0.11	0.89	0.19		QFSS
Nitrate	Treated	mg/L	HY	2	2	0	0.40	0.42	0.41		QFSS
	Reticulation		HY	2	2	0	0.40	0.42	0.41		QFSS
	Raw		HY	8	8	0	2.8	3.6	3.1		QFSS
Sulphate	Treated	mg/L	HY	2	2	0	3.0	3.2	3.1		QFSS
	Reticulation		HY	2	2	0	3.0	3.0	3.0		QFSS
	Raw		HY	8	8	0	0.01	0.01	0.01		QFSS
Iron	Treated	mg/L	M	12	12	0	0.04	0.11	0.05	0.01	WTP
	Reticulation		HY	2	2	0	0.01	0.01	0.01		QFSS
	Raw		HY	8	8	0	0.001	0.005	0.003		QFSS
Manganese	Treated	mg/L	M	11	11	0	0.05	0.05	0.05	0.01	WTP
	Reticulation		HY	2	2	0	0.001	0.001	0.001		QFSS
	Raw		HY	8	8	0	0.06	0.06	0.06		QFSS
Zinc	Treated	mg/L	HY	2	2	0	0.06	0.06	0.06		QFSS
	Reticulation		HY	2	2	0	0.06	0.06	0.06		QFSS
	Raw		HY	8	8	0	0.03	0.03	0.03		QFSS
Aluminium	Treated	mg/L	M	12	12	0	0.01	0.10	0.01	0.1	WTP
	Reticulation		HY	2	2	0	0.03	0.05	0.04		QFSS
	Raw		HY	8	8	0	0.02	0.02	0.02		QFSS
Boron	Treated	mg/L	HY	2	2	0	0.02	0.02	0.02		QFSS
	Reticulation		HY	2	2	0	0.02	0.02	0.02		QFSS
	Raw		HY	8	8	0	0.003	0.003	0.003		QFSS
Copper	Treated	mg/L	HY	2	2	0	0.022	0.027	0.025		QFSS
	Reticulation		HY	2	2	0	0.010	0.017	0.014		QFSS
	Raw		Y	4	4	0	0.014	0.046	0.020		QFSS
Annual Aluminium Metals	Treated	mg/L	Y	1	1	0	0.024	0.024	0.024		QFSS
	Reticulation		Y	1	1	0	0.019	0.019	0.019		QFSS
	Raw		Y	4	3	0	0.0000	0.0002	0.0001		QFSS
Annual Arsenic Metals	Treated	mg/L	Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Raw		Y	1	1	0	0.0001	0.0001	0.0001		QFSS

Annual Cadmium Metals	Raw	mg/L	Y	4	4	0	0.0001	0.0001	0.0001		QFSS
	Treated		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
	Reticulation		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
Annual Chromium Metals	Raw	mg/L	Y	4	4	0	0.0002	0.0004	0.0002		QFSS
	Treated		Y	1	1	0	0.0002	0.0002	0.0002		QFSS
	Reticulation		Y	1	1	0	0.0003	0.0003	0.0003		QFSS
Annual Copper Metals	Raw	mg/L	Y	4	4	0	0.001	0.001	0.001		QFSS
	Treated		Y	1	1	0	0.032	0.032	0.032		QFSS
	Reticulation		Y	1	1	0	0.010	0.010	0.010		QFSS
Annual Iron Metals	Raw	mg/L	Y	4	4	0	0.013	0.220	0.080		QFSS
	Treated		Y	1	1	0	0.012	0.012	0.012		QFSS
	Reticulation		Y	1	1	0	0.012	0.012	0.012		QFSS
Annual Lead Metals	Raw	mg/L	Y	4	4	0	0.0001	0.0001	0.0001		QFSS
	Treated		Y	1	1	0	0.0007	0.0007	0.0007		QFSS
	Reticulation		Y	1	1	0	0.0007	0.0007	0.0007		QFSS
Annual Manganese Metals	Raw	mg/L	Y	4	4	0	0.0010	0.0037	0.0020		QFSS
	Treated		Y	1	1	0	0.0016	0.0016	0.0016		QFSS
	Reticulation		Y	1	1	0	0.0004	0.0004	0.0004		QFSS
Annual Nickel Metals	Raw	mg/L	Y	4	4	0	0.0001	0.0002	0.0002		QFSS
	Treated		Y	1	1	0	0.0002	0.0002	0.0002		QFSS
	Reticulation		Y	1	1	0	0.0001	0.0001	0.0001		QFSS
Annual Zinc Metals	Raw	mg/L	Y	4	4	0	0.002	0.004	0.003		QFSS
	Treated		Y	1	1	0	0.013	0.013	0.013		QFSS
	Reticulation		Y	1	1	0	0.008	0.008	0.008		QFSS

NOTE: QFSS Limit of Reporting not provided to Gympie Regional Council.



## Appendix C: Risk management improvement plan - progress

**Table 18 – Whole of System Risk Register including Progress against the risk management improvement program (RMIP) in the approved DWQMP- All Schemes**

Process Step	Primary hazard	Other hazards managed by same barriers	Source of Hazard/Event	Primary Preventive Measure	Other Preventative Measures	RMIP			Updates
						Immediate (30/06/2020)	Short Term (30/06/2021)	Long Term (30/06/2025)	
Whole of System	Bacteria/ Virus (Reticulation)		Reservoir ingress	Reservoir integrity	Preventive maintenance programs (5 yearly cleaning unless required sooner, and external inspection); Draft Reservoir Inspection Procedure Disinfectant Residual	Finalise Reservoir Inspection Procedure	Investigate use of drones to inspect reservoir roofs	Program of reservoir hatch and ladder enclosure replacements (10 year capital program - ongoing)	
	Protozoa (Crypto/ Giardia) (Retic)		Flood	Pressurised network	Repair as soon as possible, disaster management plan, leakage management software		Install flow/pressure monitoring (for confirmation of network integrity)		Flow meters are installed; issues with reverse flow monitoring
	Bacteria/ Virus (Reticulation)		Backflow	Disinfection residual	Plumbing regulations, regular audits/inspections				Council to check STP backflow prevention measures
	Loss of Supply		PLC failure/ lightning strike/ rough power	Reservoir storage	Incident management plan; Disaster management plan		Review control systems at WTPs and consider additional backup/ protections		
	All hazards		Human Error (either due to knowledge/training, resourcing or fatigue)	Staff training, fortnightly head operator/ reticulation meetings	All staff trained to Cert 3, CCPs, ongoing training, other procedures and work instructions; Water hygiene training	-	Roll out Aquacard training; Review all operational procedures listed in the DWQMP	Develop succession plan for operators; Install new verification monitoring locations (focus on reservoir outlets)	
	Chlorate		Breakdown of sodium hypochlorite (not relevant for the gas chlorine schemes)	Various (refer to scheme risk assessments)	Less stock on hand at smaller schemes (some issues when chlorine usage drops)	Review/implement inventory control and testing of hypo quality at time of purchase	Investigative monitoring for chlorate to determine need/frequency for inclusion in verification monitoring		
	All hazards		Operation of a bypass valve allowing untreated water into the reticulation	Various (refer to scheme risk assessments)		Cap and clearly mark all bypass valves	Alter bypass pipework to include air gaps		Some have been capped, marked and/or removed, but not all
	Bacteria/ Virus (Reticulation)	Taste and odour	Offline reservoir returned into service, supply of stagnant or potentially contaminated water to customers (with no chlorine residual barrier)	Dose chlorine, and undertake water quality testing before returning a reservoir to service.			Roll out Aquacard training		
	Bacteria/ Virus (Reticulation)		Cross contamination between sewer and water maintenance & operations	General staff awareness and training	Disinfectant residual; sewerage maintenance tools and equipment stay at the plant	Aquacard training for all Operations staff	Investigate supply options for 4% hypo		

**Table 19 – Progress against the risk management improvement program in the approved DWQMP- Amamoor**

Process Step	Primary hazard	Other hazards managed by same barriers	Source of Hazard/Event	Primary Preventive Measure	Other Preventative Measures	RMIP			Updates
						Immediate (30/06/2020)	Short Term (30/06/2021)	Long Term (30/06/2025)	
WTP bypass	Protozoa (Crypto/ Giardia) (Gympie, Mary Valley, Kinbombi)	Turbidity, Manganese, Iron	Accidental or deliberate use of bypass	Bolt installed to prevent operation	Operator training, only use under incident management team	Air gap the bypass			Plant bypass removed
Supernatant return	Protozoa (Crypto/ Giardia) (Gympie, Mary Valley, Kinbombi)		Supernatant return - concentration of oocysts	Filtration and UV	Not currently returning but need a long term option for supernatant	Investigate local usage of supernatant or return to creek (if allowable)			
Pre-chlorination	Disinfection byproducts (surface water)		Reaction with organic matter and chlorine	Chlorination OCP	Control and monitoring of pre-dose to provide Fe and Mn removal without over-dosing				Commenced detailed sampling and investigation for THM control action plan
Chlorine Disinfection	Disinfection byproducts (surface water)		Reaction with organic matter and chlorine	Disinfection OCP	Control and monitoring of pre-dose to provide Fe and Mn removal without over-dosing				
Reservoir Storage	Bacteria/ Virus (Reticulation)		Reservoir ingress	Sealed tank	Disinfectant residual	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	New roof installed Reservoir cleaned
	Protozoa (Crypto/ Giardia) (Retic)		Reservoir ingress	Sealed tank		Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	New roof installed Reservoir cleaned

**Table 20 – Progress against the risk management improvement program in the approved DWQMP- Cooloola Cove/Tin Can Bay**

Process Step	Primary hazard	Other hazards managed by same barriers	Source of Hazard/Event	Primary Preventive Measure	Other Preventative Measures	RMIP			Updates
						Immediate (30/06/2020)	Short Term (30/06/2021)	Long Term (30/06/2025)	
Coagulation/Flocculation	Protozoa (Crypto/Giardia) (Teewah Creek)	Colour	Underdose coagulant	Coagulation OCP	Jar testing as required	Turbidity meter connection into ClearSCADA			Instrumentation connected to SCADA
Sand Filters	Protozoa (Crypto/Giardia) (Teewah Creek)		Filter breakthrough	Filtration OCP		Online monitoring and automated plant shutdown - filtered water turbidity (Cooloola TCB)	Investigate options for filter to waste		Instrumentation connected to SCADA
Clear Water Storage	Bacteria/ Virus (Reticulation)		Ingress into tank	Sealed storage	Disinfection residual	Refer to Whole of System RMIP (Reservoir ingress); Clean and inspect CWS	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	
	Protozoa (Crypto/Giardia) (Retic)		Ingress into tank	Sealed storage		Refer to Whole of System RMIP (Reservoir ingress); Clean and inspect CWS	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	

**Table 21 – Progress against the risk management improvement program in the approved DWQMP- Goomeri**

Process Step	Primary hazard	Other hazards managed by same barriers	Source of Hazard/Event	Primary Preventive Measure	Other Preventative Measures	RMIP			Updates
						Immediate (30/06/2020)	Short Term (30/06/2021)	Long Term (30/06/2025)	
Surface Water (Kinbombi Creek, Weir, OS Storages)	Hardness/TDS		Naturally occurring	N/A	Ion exchange water softener (but not currently used)	Develop long term water supply & security strategy for Goomeri (incl. treatment processes for the available sources)			Whilst a high risk, this is lower priority as it is not based on a health outcome
Groundwater	Hardness/TDS		Naturally occurring		Ion exchange water softener (but not currently used)	Develop long term water supply & security strategy for Goomeri (incl. treatment processes for the available sources)			Whilst a high risk, this is lower priority as it is not based on a health outcome
Bypass	All hazards		Accidental or deliberate use of bypass	Air gapped	Staff training - Not intentionally used	Investigate potential second bypass at WTP - lockout			
Sand filtration	Protozoa (Crypto/ Giardia) (Gympie, Mary Valley, Kinbombi)	Protozoa (Crypto/ Giardia) (Western bores); Turbidity	Filter breakthrough	Filtration OCP; Running on bore water only until RMIP action for filter upgrade is complete	Combined filter outlet turbidity monitoring; Ozone system		Filter replacement, install individual online turbidity meters	Investigate feasibility of increasing ozone contact tank to allow increased protozoan deactivation, or alternatively cost out a UV system	Order placed for UV system
Primary Disinfection (Hypo)	Chlorate		Breakdown of sodium hypochlorite				Refer to Whole of System RMIP (Chlorate)		
Water softener	Hardness/TDS		Naturally occurring	N/A	Ion exchange water softener (but not currently used)	Develop long term water supply & security strategy for Goomeri (incl. treatment processes for the available sources)			Whilst a high risk, this is lower priority as it is not based on a health outcome
Secondary disinfection (hypo)	Chlorate		Breakdown of sodium hypochlorite				Refer to Whole of System RMIP (Chlorate)		
Goomeri Reservoir	Bacteria/ Virus (Reticulation)	Protozoa (Crypto/ Giardia) (Retic)	Ingress into Reservoir	Sealed storage, vermin proofed	Monitoring point at the reservoir; tank drained, cleaned and inspected in 2018	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	Reservoir cleaned 2021
	Disinfection byproducts (surface water)		Water age, low turnover	Bore water in use until filter refurbishment	Ozone BAC		Investigate options for increasing turnover of reservoir		

**Table 22 – Progress against the risk management improvement program in the approved DWQMP- Gympie**

Process Step	Primary hazard	Other hazards managed by same barriers	Source of Hazard/Event	Primary Preventive Measure	Other Preventative Measures	RMIP			Updates
						Immediate (30/06/2020)	Short Term (30/06/2021)	Long Term (30/06/2025)	
Mary River	Loss of Supply		Asset failure - raw water tunnel	Reservoir storage	Disaster Management Plan		Develop contingency plan for raw water tunnel bypass		
Supernatant return	Protozoa (Crypto/ Giardia) (Gympie, Mary Valley, Kinbombi)		Concentration through waste recycle	Filtration CCP	Online monitoring of filtration	Investigate possibility of ceasing this practice and sending supernatant to sewer (currently being scoped)			
Bypass of filter	Protozoa (Crypto/ Giardia) (Gympie, Mary Valley, Kinbombi)		Bypass from sedimentation tank into clear water	Filter bypass - dead plate on the valve - capped.	Not used under normal circumstances	Refer to Whole of System RMIP (Bypass)	Refer to Whole of System RMIP (Bypass)		
Clear Water Storage	Protozoa (Crypto/ Giardia) (Gympie, Mary Valley, Kinbombi)		Failure of backwash procedure allowing dirty water to enter the Clear Water Tank	Operator training and awareness	Backwash Procedure (EWSI1104)		SCADA Lockout to prevent accidental initiation of backwash		
Reservoir Storage	Bacteria/ Virus (Reticulation)	Protozoa (Crypto/ Giardia) (Retic)	Ingress into reservoirs - Jones Hill in-ground	Residual disinfection	Sealed storages	Refer to Whole of System RMIP (Reservoir ingress); Fill gaps underneath corrugations	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	
	Bacteria/ Virus (Reticulation)		Ingress into reservoirs - Penny Road and Noosa Road WPS	Sealed storages	Residual disinfection	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	
	Protozoa (Crypto/ Giardia) (Retic)		Ingress into reservoirs - Penny Road and Noosa Road WPS	Sealed storages		Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	
	Bacteria/ Virus (Reticulation)		Ingress into reservoirs - other storages	Sealed storages	Residual disinfection	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	
	Protozoa (Crypto/ Giardia) (Retic)		Ingress into reservoirs - other storages	Sealed storages		Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	

**Table 23 – Progress against the risk management improvement program in the approved DWQMP- Imbil**

Process Step	Primary hazard	Other hazards managed by same barriers	Source of Hazard/Event	Primary Preventive Measure	Other Preventative Measures	RMIP			Updates
						Immediate (30/06/2020)	Short Term (30/06/2021)	Long Term (30/06/2025)	
Reservoir Storage	Bacteria/ Virus (Reticulation)		Reservoir ingress	Sealed reservoirs	Disinfectant residual	Refer to Whole of System RMIP (Reservoir ingress); Interim works complete, next on the list for roof renewal	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	New roof installed (removing box gutter) Reservoir cleaned
	Protozoa (Crypto/ Giardia) (Retic)		Reservoir ingress	Sealed reservoirs		Refer to Whole of System RMIP (Reservoir ingress); Interim works complete, next on the list for roof renewal	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	New roof installed (removing box gutter) Reservoir cleaned

**Table 24 – Progress against the risk management improvement program in the approved DWQMP- Kandanga**

Process Step	Primary hazard	Other hazards managed by same barriers	Source of Hazard/Event	Primary Preventive Measure	Other Preventative Measures	RMIP			Updates
						Immediate (30/06/2020)	Short Term (30/06/2021)	Long Term (30/06/2025)	
WTP bypass	Protozoa (Crypto/ Giardia) (Gympie, Mary Valley, Kinbombi)	Turbidity, Manganese, Iron	Accidental or deliberate use of bypass	Bolt installed to prevent operation	Operator training, only use under incident management team	Air gap the bypass			
Supernatant return	Protozoa (Crypto/ Giardia) (Gympie, Mary Valley, Kinbombi)		Supernatant return - concentration of oocysts	Filtration and UV	Not currently returning but need a long term option for supernatant	Investigate local usage of supernatant or return to creek (if allowable)			
Reservoir Storage	Bacteria/ Virus (Reticulation)		Reservoir ingress	Sealed tank	Disinfectant residual; recent remedial works	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	New roof installed (removing box gutter) Reservoir cleaned
	Protozoa (Crypto/ Giardia) (Retic)		Reservoir ingress	Sealed tank	Disinfectant residual; recent remedial works	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	New roof installed (removing box gutter) Reservoir cleaned

**Table 25 – Progress against the risk management improvement program in the approved DWQMP- Kilkivan**

Process Step	Primary hazard	Other hazards managed by same barriers	Source of Hazard/Event	Primary Preventive Measure	Other Preventative Measures	RMIP			Updates
						Immediate (30/06/2020)	Short Term (30/06/2021)	Long Term (30/06/2025)	
Bypass	All hazards		Accidental or deliberate use of bypass	Marked (blue); signed on GIS	Staff training - Not intentionally used	Refer to Whole of System RMIP (Bypass) Investigate potential additional bypasses in the network	Refer to Whole of System RMIP (Bypass)		
Disinfection (hypo)	Chlorate		Breakdown of sodium hypochlorite				Refer to Whole of System RMIP (Chlorate)		



**Table 26 – Progress against the risk management improvement program in the approved DWQMP- Rainbow Beach**

Process Step	Primary hazard	Other hazards managed by same barriers	Source of Hazard/Event	Primary Preventive Measure	Other Preventative Measures	RMIP			Updates
						Immediate (30/06/2020)	Short Term (30/06/2021)	Long Term (30/06/2025)	
Reservoirs	Bacteria/ Virus (Reticulation)		Ingress into tank	Sealed storages	Residual disinfection	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	Rainbow Beach Reservoir No.2 – roof replaced
	Protozoa (Crypto/ Giardia) (Retic)		Ingress into tank	Sealed storages		Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	Refer to Whole of System RMIP (Reservoir ingress)	Rainbow Beach Reservoir No.2 – roof replaced