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# **NORTH BURNETT REGIONAL COUNCIL**

## **ANNUAL REPORT ON DRINKING WATER QUALITY MANAGEMENT PLAN**

### **FINANCIAL YEAR 2020-2021**

### **SPID: 490**

This report has been prepared in accordance with the Drinking Water Quality Management Plan Report Guidance Note.

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## 1 Introduction

North Burnett Regional Council presents this Drinking Water Quality Management Plan (DWQMP) for the financial year 2020 – 2021.

North Burnett Regional Council (NBRC) is listed as Service Provider Identification (SPID) Number 490 with the Department Regional Development, Manufacturing and Water (RDMW). NBRC is operating under an approved DWQMP to ensure the consistent supply of safe, quality drinking water in order to protect public health.

The DWQMP report includes:

- Activities undertaken during the financial year in operating Councils drinking water service
- A summary of drinking water quality results
- A summary of Councils performance in implementing the approved DWQMP.

Council completes this report and submits it to the Regulator to fulfil our regulatory requirements. Copies of this report are made available to customers via Council's website or are available for inspection upon request at one of Councils Customer Service Centres.

## 2 Summary of water sources and scheme/s operated

Table 1 – Summary of schemes

Scheme	Water Source	Treatment processes	Treatment capacity	Towns supplied
Biggenden Water	Water is sourced directly from two alluvial bores that adjoin the Degilbo Creek. The current policy is not to use water sourced directly from Degilbo Creek.	Oxidation, coagulation, flocculation, clarification, fast sand filtration, chlorination	1.00 ML/day	Biggenden
Eidsvold Water	Water is extracted from alluvial bores adjacent to the Burnett River.	Oxidation, coagulation, flocculation, clarification, fast sand filtration, GAC pressure filtration, UV disinfection, chlorination	1.24 ML/day	Eidsvold
Gayndah Water	Water is sourced from the Burnett River.	Oxidation, PAC, pH correction, coagulation, flocculation, clarification, filtration, secondary pH correction, UV disinfection and chlorination	4.00 ML/day	Gayndah
Monto Water	Water is extracted from bores in the alluvium of Three Moon Creek.	UV disinfection and chlorination	1.90 ML/day	Monto
Mount Perry Water	Water is extracted from bores, located in the Mount Perry region.	Aeration, UV disinfection and chlorination	0.30 ML/day	Mount Perry
Mulgildie Water	Water is extracted from an artesian bore, located on the perimeter of the township.	pH adjustment, oxidation, aeration, pressure sand filtration, chlorination, and UV disinfection.	0.20 ML/day	Mulgildie
Mundubbera Water	Water is sourced from the Burnett River. The allocation of the bulk water is managed by Sunwater. NBRC	pH correction, coagulation, flocculation, clarification, oxidation, media filtration, pH readjustment, chlorination	2.60 ML/day	Mundubbera

Scheme	Water Source	Treatment processes	Treatment capacity	Towns supplied
	receive a priority allocation.			
Mingo Crossing	The water is sourced from the Burnett River. During low flow levels water is carted by a certified water carrier.	Flocculation, aeration, clarification, pressure sand filtration, GAC Pressure filtration, 300-micron membrane ultrafiltration, chlorination	0.032 ML/day	Mingo Crossing Caravan Park
Paradise Dam	The water is sourced from the Burnett River. During flood events, water is carted by a certified carrier.	Flocculation, sedimentation, pressure sand filtration, pressure GAC filtration, dual membrane filtration, chlorination	0.072 ML/day	Paradise Dam Caravan Park

### 3 DWQMP implementation

The actions undertaken to implement the DWQMP are summarised below.

#### Progress in implementing the risk management improvement plan

During the year, the North Burnett Regional Council Water and Wastewater department consisted of the following personnel:

- Water and Wastewater Manager
- Senior Water and Wastewater Supervisor
- Administration Officer (Technical Services)
- 4 x Senior Water and Wastewater Operators
- 8 x Water and Wastewater Operators (currently 7 x Operators, tbc)
- 2 x Water and Wastewater Trainees

The Water and Wastewater Manager and Senior Water and Wastewater Supervisor meet regularly to review the existing DWQMP and to discuss water and wastewater issues.

The Senior Water and Wastewater Supervisor and the Senior Water and Wastewater Operators meet regularly to discuss water and wastewater issues and their roles in implementing the DWQMP.

Meetings are held with all NBRC Water and Wastewater team members to discuss aspects of the DWQMP, and information sessions are conducted on Water Quality and associated risks.

**Refer to the tables below for a summary of progress in implementing each of the Improvement Program actions.**

The actions undertaken to implement the risk management improvement program are discussed in the following Tables.

**Table 2.1 – Risk management improvement program implementation status – Biggenden Water Supply**

No.	Scheme Component	Hazard	Hazard Source	Priority	Risk Improvement Actions-Short Term	Risk Improvement Actions-Long-term	Target Dates	Estimated Costs	Responsibility
1	Source water	Biological contamination Protozoa	1. Livestock 2. Wildlife 3. Issues with Bore Infiltration	High	Seek funding to develop new source(s)	Seek funding to develop new source(s)	30/6/2022; 30/6/2024	\$400,000	Major Projects
2	Source water	Biological contamination Bacteria Viruses	1. Livestock 2. Wildlife 3. Issues with Bore Infiltration	High	Seek funding to develop new source(s)	Seek funding to develop new source(s)	30/6/2022; 30/6/2024	\$400,000	Major Projects
3	Source water	Chemical contamination Heavy metals: Arsenic	1. Natural arsenic and other chemicals in water	High	Seek funding to develop new source(s)	Seek funding to develop new source(s)	30/6/2022; 30/6/2024	\$400,000	Major Projects
4	Source water	Chemical contamination Nutrients: Nitrate Anions: Sulphate, Fluoride	1. Pesticides and Fertilisers 2. Natural occurrences of anions	Medium	Seek funding to develop new source(s)	Seek funding to develop new source(s)	30/6/2022; 30/6/2024	\$400,000	Major Projects
5	Source water	Chemical contamination General metals: Aluminium, Iron, Manganese, Boron, Copper	1. Natural chemicals in water	Medium	Seek funding to develop new source(s)	Seek funding to develop new source(s)	30/6/2022; 30/6/2024	\$400,000	Major Projects
8	Source water	Lack of supply	1. Inadequate maintenance 2. Lack or failure of standby pumps 3. Blockage of creek intake structure	Medium	Seek funding to develop new source(s)	Seek funding to develop new source(s)	30/6/2022; 30/6/2024	\$400,000	Major Projects
9	Source water	Lack of supply	Climatic variations	Medium	Seek funding to develop new source(s)	Seek funding to develop new source(s)	30/6/2022; 30/6/2024	\$400,000	Major Projects

No.	Scheme Component	Hazard	Hazard Source	Priority	Risk Improvement Actions-Short Term	Risk Improvement Actions-Long-term	Target Dates	Estimated Costs	Responsibility
10	Treatment	Biological contamination Bacteria Viruses	1. Failure of chlorine injection 2. Insufficient chlorine residual 3. Loss of Chemical supplies 4. Staff error 5. Plant Design		Seek Funding for new plant with upgraded processes	Seek funding to renew and upgrade WTP	01/10/21; 30/6/2023	\$7.2M	Major Projects
11	Treatment	Biological contamination Protozoa	1. Cross contamination 2. Vermin and bird access 3. Staff error 4. Plant Design		Seek Funding for new plant with upgraded processes	Seek funding to renew and upgrade WTP	01/10/21; 30/6/2023	\$7.2M	Major Projects
12	Treatment	Chemical contamination	1. Chemical overdose due to equipment failure 2. Loss of Chemical supplies 3. Communication breakdown (alarms) 4. Staff error 5. Plant Design		Seek Funding for new plant with upgraded processes	Seek funding to renew and upgrade WTP	01/10/21; 30/6/2023	\$7.2M	Major Projects/ Water and Wastewater
13	Treatment	Disinfection by-products	1. High raw water turbidity (dependent on nature of turbidity) 2. Plant Design THM monitoring have commenced. All results are below ADWG limits. <b>Biggenden 2018-03:</b> THM monitoring occurs monthly		Seek Funding for new plant with upgraded processes	Seek funding to renew and upgrade WTP	01/10/21; 30/6/2023	\$7.2M	Major Projects
14	Treatment	Physical/chemical Contamination Turbidity Manganese Particulates	1. Failure of back-wash of sand filters 2. Failure of dosing equipment or clarifier. 3. High levels of manganese or turbidity. 4. Communication Breakdown 5. Staff error		Seek Funding for new plant with upgraded processes	Seek funding to renew and upgrade WTP	01/10/21; 30/6/2023	\$7.2M	Major Projects

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No.	Scheme Component	Hazard	Hazard Source	Priority	Risk Improvement Actions-Short Term	Risk Improvement Actions-Long-term	Target Dates	Estimated Costs	Responsibility
16	Treatment	Perimeter Fence Security	Trespassing or property damage		Repair Fencing behind backwash pods		30/08/2022	\$5000	Water and Wastewater
17	Treatment	Microbial/Turbidity	Raw water from catchment		Seek Funding for new plant with upgraded processes	Seek funding to renew and upgrade WTP	01/10/21; 30/6/2023	\$7.2M	Major Projects
18	Treatment	Operational Treatment Failures	Aged plant		Seek Funding for new plant with upgraded processes	Seek funding to renew and upgrade WTP	01/10/21; 30/6/2023	\$7.2M	Major Projects
19	Treatment	Short Circuit in treatment	Section of pipeline joining raw to treated reservoir		Remove section of pipe or plate flange		01/10/21; 30/6/2023	Operational	Water and Wastewater



**Table 2.2 – Risk management improvement program implementation status – Eidsvold Water Supply**

Risk No.	Scheme Component / Sub-component	Hazard/ Hazardous event	Priority	Risk Improvement Actions			Target dates	Responsibility	Status
				interim	short-term	long-term			
5	Source water	Chemical contamination General metals: Aluminium, Iron, Manganese, Boron, Copper	Medium			Pre-dosing potassium permanganate in raw water	30/09/2022	\$15000	Water and Wastewater
10	Treatment	Biological contamination Bacteria Viruses	High		Operational review of UV	Upgrade of UV	30/06/2022	\$10000 \$40000	Water and Wastewater
11	Treatment	Biological Contamination Protozoa	High		Operational review of UV	Upgrade of UV	30/06/2022	\$10000 \$40000	Water and Wastewater

**Table 2.3 – Risk management improvement program implementation status – Gayndah Water Supply**

Risk No.	Scheme Component / Sub-component	Hazard/ Hazardous event	Priority	Risk Improvement Actions			Target dates	Estimated cost	Responsibility
				interim	short-term	long-term			
1	Source water	Biological contamination Protozoa	Medium			Validate filter for protozoa using surrogate microbe challenge testing	20/12/2022	\$30,000	Water and Wastewater
2	Source water	Biological contamination • Bacteria • Viruses	Medium		Consider removal of colony of trees to remove bat roosts and discourage the bat colonies.		20/12/2021	\$-	Water and Wastewater
10	Treatment	Biological contamination • Bacteria • Viruses	Medium			UV Operational review	30/6/2022	\$10,000	Water and Wastewater
11	Treatment	Biological contamination Protozoa	Medium			UV Operational review	30/6/2022	\$10,000	Water and Wastewater

**Table 2.4 – Risk management improvement program implementation status – Mingo Crossing Water Supply**

Risk No.	Scheme Component / Sub-component	Hazard/ Hazardous event	Priority	Risk Improvement Actions			Target dates	Estimated cost	Responsibility
				interim	short-term	long-term			
1	Source	Biological contamination • Protozoa	Medium		Investigate implementing an exclusion zone around the intake or moving the intake away from recreational water users, in consultation with SunWater.	Investigate installing riparian Spear at current offtake site	20/06/2022	\$1500 for signage. Sunwater to supply	Water and Wastewater
2	Source water	Biological contamination • Bacteria • Viruses	Medium			Investigate installing riparian Spear at current offtake site	20/06/2022	\$1500 for signage. Sunwater to supply	Water and Wastewater
8	Source	Lack of supply	High	Truck water		Seek assistance from Sunwater to provide reliable source infrastructure such as a riparian spear.	20/06/2022	Sunwater to supply	Water and Wastewater
9	Source	Lack of supply	High	Truck water		Seek assistance from Sunwater to provide reliable source infrastructure such as a riparian spear.	20/06/2022	Sunwater to supply	Water and Wastewater

**Table 2.5 – Risk management improvement program implementation status – Monto Water Supply**

Risk No.	Scheme Component / Sub-component	Hazard/ Hazardous event	Priority	Risk Improvement Actions			Target dates	Estimated cost	Responsibility
				interim	short-term	long-term			
1	Source	Biological contamination <ul style="list-style-type: none"> <li>• Protozoa</li> </ul>	Medium			Investigate the impact of the Piggeries staged expansion on source water quality.	Ongoing	\$20k	Water and Wastewater Environment and Planning
3	Source	Biological contamination <ul style="list-style-type: none"> <li>• Bacteria</li> <li>• Viruses</li> </ul>	Medium			Investigate the impact of the Piggeries staged expansion on source water quality.	Ongoing	\$20k	Water and Wastewater Environment and Planning
10	Treatment	Biological contamination <ul style="list-style-type: none"> <li>• Bacteria</li> <li>Viruses</li> </ul>	Medium		UV Operational review		30/06/2022	\$20k	Water and Wastewater
11	Treatment	Biological contamination Protozoa	Medium		UV Operational review		30/06/2022	\$20k	Water and Wastewater
16	All	Power failure causing contamination or supply failure	Low			Seek disaster funding of generators	30/06/2025	\$50k	Major Projects Water and Wastewater

**Table 2.6 – Risk management improvement program implementation status – Mount Perry Water Supply**

Risk No.	Scheme Component / Sub-component	Hazard/ Hazardous event	Priority	Risk Improvement Actions			Target dates	Estimated cost	Responsibility
				interim	short-term	long-term			
1	Source water	Biological contamination • Protozoa	Medium			Apply for funding for UV Disinfection	30/06/2024	\$100k	Major Projects Water and Wastewater
2	Source water	Biological contamination • Bacteria Viruses	Medium			Apply for funding for UV Disinfection	30/06/2024	\$100k	Major Projects Water and Wastewater
10	Treatment	Biological contamination • Bacteria Viruses	Medium			Apply for funding for UV Disinfection	30/06/2024	\$100k	Major Projects Water and Wastewater
11	Treatment	Biological contamination • Protozoa	Medium			Apply for funding for UV Disinfection	30/06/2024	\$100k	Major Projects Water and Wastewater

**Table 2.7 – Risk management improvement program implementation status – Mulgildie Water Supply**

Risk No.	Scheme Component / Sub-component	Hazard/ Hazardous event	Priority	Risk Improvement Actions			Target dates	Estimated cost	Responsibility
				interim	short-term	long-term			
		N/A							

**Table 2.8 – Risk management improvement program implementation status – Mundubbera Water Supply**

Risk No.	Scheme Component / Sub-component	Hazard/ Hazardous event	Priority	Risk Improvement Actions			Target dates	Estimated cost	Responsibility
				interim	short-term	long-term			
11	Treatment	Biological contamination <ul style="list-style-type: none"> <li>• Protozoa</li> </ul>	Medium			Seek funding for installation of a UV unit	30/12/2025	\$100k EACH \$15k OP	Water and Wastewater

**Table 2.9 – Risk management improvement program implementation status – Paradise Dam Water Supply**

Risk No.	Scheme Component / Sub-component	Hazard/ Hazardous event	Priority	Risk Improvement Actions			Target dates	Estimated cost	Responsibility
				interim	short-term	long-term			
1 & 2	Source	Biological contamination • Protozoa	Medium	Seek funding to install UV and SCADA	Close site		November 2021		Facilities, Water and Wastewater
10 & 11	Treatment	Biological contamination • Bacteria • Viruses • Protozoa	Medium	Seek funding to install UV and SCADA	Close site		November 2021		Facilities, Water and Wastewater
12	Treatment	Chemical contamination • ACH	Medium	Seek funding to install SCADA	Close site		November 2021		Facilities, Water and Wastewater



**Table 2.11 Regional Risk Management Improvement Program**

The following table displays the Risk Improvement Program for NBRC. The items identified to reduce risk have been developed to reduce the unacceptable risks identified at the plants. General improvement items have also been listed here.

Risk No.	Scheme Component / Sub-component	Hazard/ Hazardous event	Priority	Risk Improvement Actions			Target dates	Estimated cost	Responsibility
				interim	short-term	long-term			
1	Treatment	Substandard chemicals	High		Test each batch from supplier inhouse	Require chemical quality document with each batch received from supplier	30/12/2022 30/12/2023	\$5000	Water and Wastewater
2	Reticulation	Biological contamination	Medium		Option: Develop procedure for disinfecting mains after repairs. WIOA procedures and Operator's disinfection training required.  Require Aquacard completion by all workers on and around Council water infrastructure		30/12/2022	\$10000	Water and Wastewater and WHS
3	Reticulation	Protozoa	Low		Option: Develop procedure for disinfecting mains after repairs. WIOA procedures and Operator's disinfection training required.  Require Aquacard completion by all workers on and around Council water infrastructure		30/12/2022	\$10000	Water and Wastewater and WHS

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Risk No.	Scheme Component / Sub-component	Hazard/ Hazardous event	Priority	Risk Improvement Actions			Target dates	Estimated cost	Responsibility
				interim	short-term	long-term			
4	Reticulation	Biological contamination	High		Require Aquacard completion by all workers on and around Council water infrastructure	Prepare Work Instructions for disinfection of reticulation repairs	30/06/2022	\$2000	Water and Wastewater and WHS
5	Reticulation	Bacteria	Medium		Require Aquacard completion by all workers on and around Council water infrastructure	Prepare Work Instructions for disinfection of reticulation repairs	30/06/2022	-	Water and Wastewater and WHS
6	Reticulation	Viruses	Medium		Require Aquacard completion by all workers on and around Council water infrastructure	Prepare Work Instructions for disinfection of reticulation repairs	30/06/2022	-	Water and Wastewater and WHS
7	All	Biological contamination – opportunistic pathogen (Naegleria fowleri)	Low	Progressively implement recommendations of audit as SCADA strategy implemented. Engineer dosing equipment to ensure overdosing impossible.			Ongoing	\$500,000	Water and Wastewater
8	All	Chemical contamination	Low	Seek natural disaster funding for onsite automatic generator installation			Ongoing	\$200,000	Water and Wastewater and Major Projects
9	All	Physical contamination	Low	Progressively implement recommendations of audit as SCADA strategy implemented. Engineer dosing equipment to ensure overdosing impossible.			Ongoing	\$500,000	Water and Wastewater

#### 4 Verification monitoring - water quality information and summary

The following tables details the Verification Monitoring conducted by NBRC. NBRC engages Queensland Health and Forensic Scientific Services (QHFSS) to perform both weekly and monthly testing of water across the nine water schemes. The following tables include the parameters to be monitored, monitoring locations, frequency to ensure compliance with drinking water quality criteria; and how excursions are managed.

##### Biggenden Verification Monitoring

As the Biggenden system supplies a population less than 1000 biological verification monitoring is performed monthly. Key elements of Biggenden's verification monitoring table are listed below in **Table 3.1.1**

**Table 3.1.1 Biggenden Verification Monitoring**

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
Bacterial <ul style="list-style-type: none"> <li>E. coli</li> </ul>	Nil detect	NA	Biological contamination	Monthly. One sample is obtained.	Monthly. Two samples are obtained from the residual chlorine test locations within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>NBRC Senior Water and Wastewater Supervisor and Water and Wastewater Manager notified.</li> <li>Refer to table 14-2 in DWQMP.</li> <li>DNRME and Qld Health notified.</li> </ol>
Total coliforms	NA NBRC critical limit set at 20 cfu/100mL	NA	Biological contamination	Monthly. One sample is obtained.	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>NBRC Senior Water and Wastewater Supervisor and Water and Wastewater Manager notified.</li> <li>Internal investigation triggered.</li> </ol>

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
Physio Chemical <ul style="list-style-type: none"> <li>Turbidity</li> <li>pH</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> <li>NA</li> </ul>	<ul style="list-style-type: none"> <li>5 NTU</li> <li>6.5 to 8.5</li> </ul>	Reduced aesthetic quality.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>Water Quality Data received from analysing authority.</li> <li>Incident report completed identifying the cause of exceedance.</li> <li>Corrective action implemented and documented</li> </ol>
General Metals <ul style="list-style-type: none"> <li>Manganese</li> <li>Copper</li> </ul>	<ul style="list-style-type: none"> <li>0.5</li> <li>2</li> </ul>	<ul style="list-style-type: none"> <li>0.1</li> <li>1</li> </ul>	Exceedance of health based limits.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>Water Quality Data received from analysing authority.</li> <li>Incident report completed identifying the cause of exceedance.</li> <li>Corrective action implemented and documented</li> </ol>
Heavy Metals <ul style="list-style-type: none"> <li>Arsenic</li> </ul>	<ul style="list-style-type: none"> <li>0.01</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> </ul>	Exceedance of health based limits.	12 monthly. One sample obtained.		QHFSS	<ol style="list-style-type: none"> <li>Water Quality Data received from analysing authority.</li> <li>Incident report completed identifying the cause of exceedance.</li> <li>Corrective action implemented and documented – investigate alternate water sources</li> </ol>
Anions <ul style="list-style-type: none"> <li>Nitrate</li> </ul>	<ul style="list-style-type: none"> <li>50</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> </ul>	Exceedance of health based limits.		Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>Water Quality Data received from analysing authority.</li> <li>Incident report completed identifying the cause of exceedance.</li> <li>Corrective action implemented and documented</li> </ol>

**Table 3.1.2 – Drinking water quality performance - verification monitoring for Biggenden**

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e. ADWG health guideline value)	No. of non compliant samples	Comments
Biggenden	E. coli	36	60	0	0	
Biggenden	Turbidity	12	12	<5NTU	0	
Biggenden	pH	12	12	6.5 – 8.5	0	
Biggenden	Manganese	12	12	0.5mg/l	0	
Biggenden	Copper	12	12	2mg/l	0	
Biggenden	Nitrate	12	12	50mg/l	0	
Biggenden	Arsenic	1	4	0.01mg/l	0	

**Table 3.1.3. E. coli compliance with annual value for Biggenden**

Drinking water scheme:		Biggenden										
Year	2020 – 2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	5	5	5	5	5	5	5	5	5	5	5	5
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	60	60	60	60	60	60	60	60	60	60	60	60
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%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

## Eidsvold Verification Monitoring

The Eidsvold system also services a population less than 1000, however because of a past history of exceedances biological verification monitoring is performed weekly. Key elements of Eidsvold's verification monitoring table are listed in **Table 3.2.1**

**Table 3.2.1 Eidsvold Verification Monitoring**

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
Bacterial <ul style="list-style-type: none"> <li>E. coli</li> </ul>	Nil detect	NA	Biological contamination	Monthly. One sample is obtained.	Monthly. Two samples are obtained from the residual chlorine test locations shown in Table 15.2	QHFSS	<ol style="list-style-type: none"> <li>NBRC Senior Water and Wastewater Supervisor and Water and Wastewater Manager notified.</li> <li>Refer to table 14-2 in DWQMP</li> <li>DNRME and Qld Health notified.</li> </ol>
Total coliforms	NA NBRC critical limit set at 20 cfu/100mL	NA	Biological contamination	Monthly. One sample is obtained.	Monthly. One sample is obtained from sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>NBRC Senior Water and Wastewater Supervisor and Water and Wastewater Manager notified.</li> <li>Internal investigation triggered.</li> </ol>
Physio Chemical <ul style="list-style-type: none"> <li>Turbidity</li> <li>pH</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> <li>NA</li> </ul>	<ul style="list-style-type: none"> <li>5 NTU</li> <li>6.5 to 8.5</li> </ul>	Reduced aesthetic quality.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>Water Quality Data received from analysing authority.</li> <li>Incident report completed identifying the cause of exceedance.</li> <li>Corrective action implemented and documented</li> </ol>
General Metals <ul style="list-style-type: none"> <li>Manganese</li> <li>Copper</li> </ul>	<ul style="list-style-type: none"> <li>0.5</li> <li>2</li> </ul>	<ul style="list-style-type: none"> <li>0.1</li> <li>1</li> </ul>	Exceedance of health based limits.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>Water Quality Data received from analysing authority.</li> <li>Incident report completed identifying the cause of exceedance.</li> <li>Corrective action implemented and documented</li> </ol>

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
Anions • Nitrate	• 50	• NA	Exceedance of health based limits.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	1. Water Quality Data received from analysing authority. 2. Incident report completed identifying the cause of exceedance. 3. Corrective action implemented and documented



**Table 3.2.2 – Drinking water quality performance - verification monitoring for Eidsvold**

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e. ADWG health guideline value)	No. of non compliant samples	Comments
Eidsvold	E. coli	36	203	0	0	
Eidsvold	Turbidity	12	14	<5NTU	0	
Eidsvold	pH	12	14	6.5 – 8.5	0	
Eidsvold	Manganese	12	14	0.5mg/l	0	
Eidsvold	Copper	12	14	2mg/l	0	
Eidsvold	Nitrate	12	14	50mg/l	0	

**Table 3.2.3 E. coli compliance with annual value for Eidsvold**

Drinking water scheme:		Eidsvold										
Year	2020 – 2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	16	20	16	16	20	12	16	16	19	16	20	16
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	196	201	201	197	202	202	202	202	201	202	206	203
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%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

### Gayndah Verification Monitoring

As the Gayndah system serves more than 1000 population biological verification monitoring is performed weekly. Key elements of Gayndah's verification monitoring table are listed in **Table 3.3.1**

**Table 3.3.1 Gayndah Verification Monitoring**

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
Bacterial <ul style="list-style-type: none"> <li>E. coli</li> </ul>	Nil detect	NA	Biological contamination	Weekly One sample is obtained.	Weekly. Two samples are obtained from the residual chlorine test locations shown in Table 15.3	QHFSS	<ol style="list-style-type: none"> <li>NBRC Senior Water and Wastewater Supervisor and Water and Wastewater Manager notified.</li> <li>Refer to table 14-2 in DWQMP.</li> <li>DNRME and Qld Health notified.</li> </ol>
Total coliforms	NA NBRC critical limit set at 20 cfu/100mL	NA	Biological contamination	Weekly. One sample is obtained.	Weekly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>NBRC Senior Water and Wastewater Supervisor and Water and Wastewater Manager notified.</li> <li>Internal investigation triggered.</li> </ol>
Physio Chemical <ul style="list-style-type: none"> <li>Turbidity</li> <li>pH</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> <li>NA</li> </ul>	<ul style="list-style-type: none"> <li>5 NTU</li> <li>6.5 to 8.5</li> </ul>	Reduced aesthetic quality.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>Water Quality Data received from analysing authority.</li> <li>Incident report completed identifying the cause of exceedance.</li> <li>Corrective action implemented and documented</li> </ol>
General Metals <ul style="list-style-type: none"> <li>Manganese</li> <li>Copper</li> </ul>	<ul style="list-style-type: none"> <li>0.5</li> <li>2</li> </ul>	<ul style="list-style-type: none"> <li>0.1</li> <li>1</li> </ul>	Exceedance of health based limits.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>Water Quality Data received from analysing authority.</li> <li>Incident report completed identifying the cause of exceedance.</li> <li>Corrective action implemented and documented</li> </ol>

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
Anions • Nitrate	• 50	• NA	Exceedance of health based limits.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHSS	1. Water Quality Data received from analysing authority. 2. Incident report completed identifying the cause of exceedance. 3. Corrective action implemented and documented

**Table 3.3.2 – Drinking water quality performance - verification monitoring for Gayndah**

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e. ADWG health guideline value)	No. of non compliant samples	Comments
Gayndah	E.coli	156	205	0	0	
Gayndah	Turbidity	12	12	<5NTU	0	
Gayndah	pH	12	12	6.5 – 8.5	1	1 sample on 6 July 2020 was not identified until this report was written. The pH reading of 8.86, this was slightly out of the range of 6.5 to 8.5.
Gayndah	Manganese	12	12	0.5mg/l	0	
Gayndah	Copper	12	12	2mg/l	0	
Gayndah	Nitrate	12	12	50mg/l	0	

**Table 3.3.3 E. coli compliance with annual value for Gayndah**

Drinking water scheme:		Gayndah										
Year	2020 - 2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	16	16	20	16	20	13	16	16	20	16	19	17
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	196	196	196	196	200	201	201	201	201	201	208	205
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%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

### Mingo Crossing Verification Monitoring

The Mingo Crossing system services a population less than 1000 so biological verification monitoring is performed monthly. Key elements of Mingo Crossing’s verification monitoring table are listed in **Table 3.4.1**

**Table 3.4.1 Mingo Crossing Verification Monitoring**

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
Bacterial • <i>E. coli</i>	Nil detect	NA	Biological contamination	Monthly. One sample is obtained.	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHSS	<ol style="list-style-type: none"> <li>1. NBRC Senior Water and Wastewater Supervisor and Water and Wastewater Manager notified.</li> <li>2. Refer to table 14-2 in DWQMP.</li> <li>3. DNRME and Qld Health notified.</li> </ol>
• Total coliforms	NA NBRC critical limit set at 20 cfu/100mL	NA	Biological contamination	Monthly. One sample is obtained.	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHSS	<ol style="list-style-type: none"> <li>1. NBRC Senior Water and Wastewater Supervisor and Water and Wastewater Manager notified.</li> <li>2. Internal investigation triggered.</li> </ol>
Physio Chemical • Turbidity • pH	<ul style="list-style-type: none"> <li>• NA</li> <li>• NA</li> </ul>	<ul style="list-style-type: none"> <li>• 5 NTU</li> <li>• 6.5 to 8.5</li> </ul>	Reduced aesthetic quality.	–	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHSS	<ol style="list-style-type: none"> <li>1. Water Quality Data received from analysing authority.</li> <li>2. Incident report completed identifying the cause of exceedance.</li> <li>3. Corrective action implemented and documented</li> </ol>

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
General Metals <ul style="list-style-type: none"> <li>Manganese</li> <li>Copper</li> </ul>	<ul style="list-style-type: none"> <li>0.5</li> <li>2</li> </ul>	<ul style="list-style-type: none"> <li>0.1</li> <li>1</li> </ul>	Exceedance of health based limits.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>Water Quality Data received from analysing authority.</li> <li>Incident report completed identifying the cause of exceedance.</li> <li>Corrective action implemented and documented</li> </ol>
Anions <ul style="list-style-type: none"> <li>Nitrate</li> </ul>	<ul style="list-style-type: none"> <li>50</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> </ul>	Exceedance of health based limits.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>Water Quality Data received from analysing authority.</li> <li>Incident report completed identifying the cause of exceedance.</li> <li>Corrective action implemented and documented</li> </ol>



**Table 3.4.2 – Drinking water quality performance - verification monitoring for Mingo Crossing**

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e. ADWG health guideline value)	No. of non compliant samples	Comments
Mingo Crossing	E.coli	24	24	0	0	
Mingo Crossing	Turbidity	12	12	<5NTU	0	
Mingo Crossing	pH	12	12	6.5 – 8.5	0	
Mingo Crossing	Manganese	12	12	0.5mg/l	0	
Mingo Crossing	Copper	12	12	2mg/l	0	
Mingo Crossing	Nitrate	12	12	50mg/l	0	

**Table 3.4.3 E. coli compliance with annual value for Mingo Crossing**

Drinking water scheme:		Mingo Crossing										
Year	2020 – 2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	2	2	2	2	2	2	2	2	2	2	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	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%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

### Monto Verification Monitoring

The Monto system services a population greater than 1000 so biological verification monitoring is performed weekly. Key elements of Monto’s verification monitoring table are listed in **Table 3.5.1**

**Table 3.5.1 Monto Verification Monitoring**

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
Bacterial • <i>E. coli</i>	Nil detect		Biological contamination	Weekly. One sample is obtained.	Weekly. Two samples are obtained from the residual chlorine test locations shown in Table 15.4	QHFSS	<ol style="list-style-type: none"> <li>NBRC Senior Water and Wastewater Supervisor and Water and Wastewater Manager notified.</li> <li>Refer to table 14-2 in DWQMP.</li> <li>DNRME and Qld Health notified.</li> </ol>
Total coliforms	NA NBRC critical limit set at 20 cfu/100mL	NA	Biological contamination	Weekly. One sample is obtained.	Weekly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>NBRC Senior Water and Wastewater Supervisor and Water and Wastewater Manager notified.</li> <li>Internal investigation triggered.</li> </ol>
Physio Chemical • Turbidity • pH	<ul style="list-style-type: none"> <li>NA</li> <li>NA</li> </ul>	<ul style="list-style-type: none"> <li>5 NTU</li> <li>6.5 to 8.5</li> </ul>	Reduced aesthetic quality.	–	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>Water Quality Data received from analysing authority.</li> <li>Incident report completed identifying the cause of exceedance.</li> <li>Corrective action implemented and documented</li> </ol>

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
General Metals <ul style="list-style-type: none"> <li>Manganese</li> <li>Copper</li> </ul>	<ul style="list-style-type: none"> <li>0.5</li> <li>2</li> </ul>	<ul style="list-style-type: none"> <li>0.1</li> <li>1</li> </ul>	Exceedance of health based limits.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>Water Quality Data received from analysing authority.</li> <li>Incident report completed identifying the cause of exceedance.</li> <li>Corrective action implemented and documented</li> </ol>
Anions <ul style="list-style-type: none"> <li>Nitrate</li> </ul>	<ul style="list-style-type: none"> <li>50</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> </ul>	Exceedance of health based limits.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>Water Quality Data received from analysing authority.</li> <li>Incident report completed identifying the cause of exceedance.</li> <li>Corrective action implemented and documented</li> </ol>

**Table 3.5.2 – Drinking water quality performance - verification monitoring for Monto**

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e. ADWG health guideline value)	No. of non compliant samples	Comments
Monto	E.coli	156	253	0	0	
Monto	Turbidity	12	13	<5NTU	0	One additional sample collected in Jan 2021 in response to a complaint from the community. The turbidity reading was within ADWQ Guidelines.
Monto	pH	12	13	6.5 – 8.5	0	As above. pH within ADWQ Guidelines.
Monto	Manganese	12	13	0.5mg/l	0	As above. Manganese within ADWQ guidelines.
Monto	Copper	12	13	2mg/l	0	As above. Copper within ADWQ guidelines.
Monto	Nitrate	12	13	50mg/l	0	As above. Nitrate within ADWQ guidelines.

**Table 3.5.3 E. coli compliance with annual value for Monto**

Drinking water scheme:		Monto											
Year	2020 – 2021												
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
No. of samples collected	19	19	25	20	20	20	20	20	25	20	25	20	
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	249	248	253	248	248	253	253	253	253	253	258	253	
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%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

### Mount Perry Verification Monitoring

The Mount Perry system services a population less than 1000 and biological verification monitoring is performed monthly. Key elements of Mount Perry’s verification monitoring table are listed in **Table 3.6.1**

**Table 3.6.1 Mount Perry Verification Monitoring**

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
Bacterial <i>E. coli</i>	Nil detect		Biological contamination	Monthly. One sample is obtained.	Monthly. One sample is obtained from the residual chlorine test locations shown in Table 15.5	QHFSS	1. NBRC Senior Water and Wastewater Supervisor and Water and Wastewater Manager notified. 2. Refer to table 14-2 in DWQMP. 3. DNRME and Qld Health notified.
Total coliforms	NA NBRC critical limit set at 20 cfu/100mL	NA	Biological contamination	Monthly. One sample is obtained.	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	1.NBRC Senior Water and Wastewater 2.Supervisor and Water and Wastewater Manager notified. 3.Internal investigation triggered.
Physio Chemical Turbidity pH	NA NA	5 NTU 6.5 to 8.5	Reduced aesthetic quality.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	1. Water Quality Data received from analysing authority. 2. Incident report completed identifying the cause of exceedance. 3. Corrective action implemented and documented
General Metals Manganese Copper	0.5 2	0.1 1	Exceedance of health based limits.	-	Monthly. One sample is obtained from one	QHFSS	1. Water Quality Data received from analysing authority. 2. Incident report completed identifying the cause of exceedance.

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
					of the sample points within the reticulation.		3. Corrective action implemented and documented
Anions Nitrate	50	NA	Exceedance of health based limits.		Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	1. Water Quality Data received from analysing authority. 2. Incident report completed identifying the cause of exceedance. 3. Corrective action implemented and documented



**Table 3.6.2 – Drinking water quality performance - verification monitoring for Mount Perry**

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e. ADWG health guideline value)	No. of non compliant samples	Comments
Mount Perry	E.coli	24	36	0	0	
Mount Perry	Turbidity	12	12	<5NTU	0	
Mount Perry	pH	12	11	6.5 – 8.5	0	
Mount Perry	Manganese	12	11	0.5mg/l	0	
Mount Perry	Copper	12	11	2mg/l	0	
Mount Perry	Nitrate	12	11	50mg/l	0	

**Table 3.6.3. E. coli compliance with annual value for Mount Perry**

Drinking water scheme:		Mount Perry										
Year	2020 – 2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	3	3	3	3	3	3	3	3	3	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	36	36	36	36	36	36	36
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%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

### Mulgildie Verification Monitoring

The Mulgildie system services a population less than 1,000 and biological verification monitoring is performed monthly. Key elements of Mulgildie’s verification monitoring table are listed in **Table 3.7.1**

**Table 3.7.1 Mulgildie Verification Monitoring**

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
Bacterial • <i>E. coli</i>	Nil detect		Biological contamination	Monthly. One sample is obtained.	Monthly. One sample is obtained from the residual chlorine test locations shown in Table 15.6	QHFSS	<ol style="list-style-type: none"> <li>1. NBRC Senior Water and Wastewater Supervisor and Water and Wastewater Manager notified.</li> <li>2. Refer to table 14-2 in DWQMP</li> <li>3. DNRME and Qld Health notified.</li> </ol>
Total coliforms	NA NBRC critical limit set at 20 cfu/100mL	NA	Biological contamination	Monthly. One sample is obtained.	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>1. NBRC Senior Water and Wastewater Supervisor and Water and Wastewater Manager notified.</li> <li>2. Internal investigation triggered.</li> </ol>
Physio Chemical • Turbidity • pH	<ul style="list-style-type: none"> <li>• NA</li> <li>• NA</li> </ul>	<ul style="list-style-type: none"> <li>• 5 NTU</li> <li>• 6.5 to 8.5</li> </ul>	Reduced aesthetic quality.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>1. Water Quality Data received from analysing authority.</li> <li>2. Incident report completed identifying the cause of exceedance.</li> <li>3. Corrective action implemented and documented</li> </ol>

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
General Metals <ul style="list-style-type: none"> <li>• Manganese</li> <li>• Copper</li> </ul>	<ul style="list-style-type: none"> <li>• 0.5</li> <li>• 2</li> </ul>	<ul style="list-style-type: none"> <li>• 0.1</li> <li>• 1</li> </ul>	Exceedance of health based limits.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>1. Water Quality Data received from analysing authority.</li> <li>2. Incident report completed identifying the cause of exceedance.</li> <li>3. Corrective action implemented and documented</li> </ol>
Anions <ul style="list-style-type: none"> <li>• Nitrate</li> </ul>	<ul style="list-style-type: none"> <li>• 50</li> </ul>	<ul style="list-style-type: none"> <li>• NA</li> </ul>	Exceedance of health based limits.		Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>1. Water Quality Data received from analysing authority.</li> <li>2. Incident report completed identifying the cause of exceedance.</li> <li>3. Corrective action implemented and documented</li> </ol>

**Table 3.7.2 – Drinking water quality performance - verification monitoring for Mulgildie**

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e. ADWG health guideline value)	No. of non compliant samples	Comments
Mulgildie	E.coli	24	24	0	0	
Mulgildie	Turbidity	12	25	<5NTU	0	
Mulgildie	pH	12	25	6.5 – 8.5	0	
Mulgildie	Manganese	12	25	0.5mg/l	0	
Mulgildie	Copper	12	25	2mg/l	0	
Mulgildie	Nitrate	12	25	50mg/l	0	

**Table 3.7.3 E. coli compliance with annual value for Mulgildie**

Drinking water scheme:		Mulgildie										
Year	2020 – 2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	2	2	2	2	2	2	2	2	2	2	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	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%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

### Mundubbera Verification Monitoring

The Mundubbera system services a population greater than 1000 and biological verification monitoring is performed weekly. Key elements of Mundubbera’s verification monitoring table are listed in **Table 3.8.1**

**Table 3.8.1 Mundubbera Verification Monitoring**

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
Bacterial • <i>E. coli</i>	Nil detect		Biological contamination	Weekly. One sample is obtained.	Weekly. Two samples are obtained from the residual chlorine test locations shown in Table 15.7	QHFSS	<ol style="list-style-type: none"> <li>1. NBRC Senior Water and Wastewater Supervisor and Water and Wastewater Manager notified.</li> <li>2. Refer to table 14-2 in DWQMP</li> <li>3. DNRME and Qld Health notified.</li> </ol>
Total coliforms	NA NBRC critical limit set at 20 cfu/100mL	NA	Biological contamination	Weekly. One sample is obtained.	Weekly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>1. NBRC Senior Water and Wastewater Supervisor and Water and Wastewater Manager notified.</li> <li>2. Internal investigation triggered.</li> </ol>
Physio Chemical • Turbidity • pH	<ul style="list-style-type: none"> <li>• NA</li> <li>• NA</li> </ul>	<ul style="list-style-type: none"> <li>• 5 NTU</li> <li>• 6.5 to 8.5</li> </ul>	Reduced aesthetic quality.	–	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>1. Water Quality Data received from analysing authority.</li> <li>2. Incident report completed identifying the cause of exceedance.</li> <li>3. Corrective action implemented and documented</li> </ol>

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
General Metals <ul style="list-style-type: none"> <li>Manganese</li> <li>Copper</li> </ul>	<ul style="list-style-type: none"> <li>0.5</li> <li>2</li> </ul>	<ul style="list-style-type: none"> <li>0.1</li> <li>1</li> </ul>	Exceedance of health based limits.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>Water Quality Data received from analysing authority.</li> <li>Incident report completed identifying the cause of exceedance.</li> <li>Corrective action implemented and documented</li> </ol>
Anions <ul style="list-style-type: none"> <li>Nitrate</li> </ul>	<ul style="list-style-type: none"> <li>50</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> </ul>	Exceedance of health based limits.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>Water Quality Data received from analysing authority.</li> <li>Incident report completed identifying the cause of exceedance.</li> <li>Corrective action implemented and documented</li> </ol>



**Table 3.8.2 – Drinking water quality performance - verification monitoring for Mundubbera**

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e. ADWG health guideline value)	No. of non compliant samples	Comments
Mundubbera	E.coli	156	204	0	0	
Mundubbera	Turbidity	12	12	<5NTU	0	
Mundubbera	pH	12	12	6.5 – 8.5	0	
Mundubbera	Manganese	12	12	0.5mg/l	0	
Mundubbera	Copper	12	12	2mg/l	0	
Mundubbera	Nitrate	12	12	50mg/l	0	

**Table 3.8.3. E. coli compliance with annual value for Mundubbera**

Drinking water scheme:		Mundubbera										
Year	2020 – 2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	16	20	16	16	20	12	16	16	20	16	20	16
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	193	197	197	193	197	197	197	200	204	204	208	204
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%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

### Paradise Dam Verification Monitoring

The Paradise system services a population less than 1000 and biological verification monitoring is performed monthly. Key elements of Paradise Dams verification monitoring table are listed in **Table 3.9.1**

**Table 3.9.1 Paradise Dam Verification Monitoring**

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
Bacterial • <i>E. coli</i>	Nil detect	NA	Biological contamination	Monthly. One sample is obtained.	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>NBRC Senior Water and Wastewater Supervisor and Water and Wastewater Manager notified.</li> <li>Refer to table 14-2 in DWQMP</li> <li>DNRME and Qld Health notified.</li> </ol>
Total coliforms	NA NBRC critical limit set at 20 cfu/100mL	NA	Biological contamination	Monthly. One sample is obtained.	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>NBRC Senior Water and Wastewater Supervisor and Water and Wastewater Manager notified.</li> <li>Internal investigation triggered.</li> </ol>
Physio Chemical • Turbidity • pH	<ul style="list-style-type: none"> <li>NA</li> <li>NA</li> </ul>	<ul style="list-style-type: none"> <li>5 NTU</li> <li>6.5 to 8.5</li> </ul>	Reduced aesthetic quality.	–	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>Water Quality Data received from analysing authority.</li> <li>Incident report completed identifying the cause of exceedance.</li> <li>Corrective action implemented and documented</li> </ol>

Contaminant Class	ADWG Value (mg/L unless specified)		Associated Hazard	Frequency		Analysing Authority	Response to Exceedances
	Health	Aesthetic		At WTP Outlet	In distribution system		
General Metals <ul style="list-style-type: none"> <li>• Manganese</li> <li>• Copper</li> </ul>	<ul style="list-style-type: none"> <li>• 0.5</li> <li>• 2</li> </ul>	<ul style="list-style-type: none"> <li>• 0.1</li> <li>• 1</li> </ul>	Exceedance of health based limits.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>1. Water Quality Data received from analysing authority.</li> <li>2. Incident report completed identifying the cause of exceedance.</li> <li>3. Corrective action implemented and documented</li> </ol>
Anions <ul style="list-style-type: none"> <li>• Nitrate</li> </ul>	<ul style="list-style-type: none"> <li>• 50</li> </ul>	<ul style="list-style-type: none"> <li>• NA</li> </ul>	Exceedance of health based limits.	-	Monthly. One sample is obtained from one of the sample points within the reticulation.	QHFSS	<ol style="list-style-type: none"> <li>1. Water Quality Data received from analysing authority.</li> <li>2. Incident report completed identifying the cause of exceedance.</li> <li>3. Corrective action implemented and documented</li> </ol>

**Table 3.9.2 – Drinking water quality performance - verification monitoring for Paradise Dam**

Scheme name	Parameter	No. of samples required to be collected (as per the approved DWQMP)	No. of samples actually collected and tested	Water quality criteria (i.e. ADWG health guideline value)	No. of non compliant samples	Comments
Paradise Dam	E.coli	24	24	0	0	
Paradise Dam	Turbidity	12	12	<5NTU	0	
Paradise Dam	pH	12	12	6.5 – 8.5	0	
Paradise Dam	Manganese	12	12	0.5mg/l	0	
Paradise Dam	Copper	12	12	2mg/l	0	
Paradise Dam	Nitrate	12	12	50mg/l	0	

**Table 3.9.3. E. coli compliance with annual value for Paradise Dam**

Drinking water scheme:		Paradise Dam										
Year	2020– 2021											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	2	2	2	2	2	2	2	2	2	2	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	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%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

## 5 Incidents reported to the regulator

The incidents reported to the regulator and management actions undertaken over the financial year are provided in this section.

**Table 4 – Incidents reported to the regulator**

Incident date	Scheme / location	Parameter / issue	Preventive actions
14/09/20	Gayndah Water	Routine water monitoring for chemicals in source waters.	Annual monitoring and testing of source waters.
30/11/20	Mingo Crossing	Ongoing supply of water due to drop in dam levels	Carting of water by registered water carrier and extension of power and piping infrastructure to pump further from shore in deeper part of water body.
23/12/20	Paradise Dam	Ongoing supply of water	Extension to mains and re-siting of pump further from shore in deeper part of water body.

## 6 Customer complaints

This section discusses details of any complaints received about the drinking water service.

**Table 5 –Customer complaints about water quality**

Scheme	Health concern	Dirty water	Taste and odour	Other
Biggenden	0	0	0	0
Eidsvold	1	0	0	0
Gayndah	0	1	0	0
Monto	0	0	0	0
Mount Perry	0	0	0	0
Mulgildie	0	1	0	0
Mundubbera	0	0	0	0
Paradise Dam	0	0	0	0
Mingo Crossing	0	0	0	0
<b>Total</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>



## 7 DWQMP review outcomes

Section 95 of the Water Supply (Safety and Reliability) Act 2008 requires a drinking water service provider to prepare a Drinking Water Quality Management Plan (DWQMP) for the drinking water service.

NBRC were required to complete a review of the approved DWQMP by 30 July 2021 and apply for approval of the amended DWQMP within 30 business days of completing the review of the plan as stated in Section 107 of the Act.

NBRC had to submit the amended DWQMP to the Regulator by no later than 30 July 2021. NBRC submitted the amended DWQMP to the Regulator on the 30 July 2021 for review and approval.

In summary the regular review and subsequent revision was undertaken by new management at NBRC.

The following changes were made:

- Regional issues and improvements have been removed from each system and centralised as region-wide issues with region wide treatments.
- Brand names were removed from infrastructure descriptions where applicable.
- Assessment of UV systems and required upgrades and changes have been included.
- Plans to divest NBRC of one system – Paradise Dam.
- All past actions have been updated in tables and future actions consolidated accordingly.
- Operational and verification monitoring and sensitive information have been appendicised so they can be updated separately and secured.
- Staff changes and new positions updated.
- Events, incidents and audits addressed.

## 8 DWQMP audit findings

The North Burnett Regional Council (NBRC) Drinking Water Quality Management Plan (DWQMP) Audit was completed by an external auditor (Northern Water Management) on the 9<sup>th</sup> and 10<sup>th</sup> February 2021.

The objectives of the audit of NBRC was:

- To provide a “standard regular” audit of the way in which NBRC complies with its approved DWQMP to:
  - Verify the accuracy of the monitoring and performance data provided to the regulator under the plan
  - Assess NBRC’s compliance with the DWQMP and approval conditions
  - Assess the relevance of the DWQMP in relation to NBRC drinking water service.
- To conduct that audit on behalf of the Department of Natural Resources Mines and Energy (DNRME) under the Water Supply (Safety and Reliability) Act 2008 (Qld) (the Act) and to report the findings of the audit to DEWS and NBRC.

On-site inspections were completed at Monto, Mulgildie and Biggenden water schemes, on 9<sup>th</sup> February 2021. This included 3 Water Treatment Plants (WTP’s), tank sites, operator’s depot and the town reticulation network.

Northern Water Management submitted their audit report findings to the Regulator on 18<sup>th</sup> March 2021.

The report included the findings and conclusions of the audit of Council’s DWQMP. In general, the auditor noted that NBRC demonstrated a generally acceptable level of compliance with the regular audit imposed by the Water Supply (Safety and Reliability) Act 2008 during the audit period.

In total 60 questions were asked of the NBRC team during the two – day audit, 28 findings were found to be compliant, 25 findings were compliant with an opportunity for improvement and 5 findings were minor non-compliant.

Of the five minor non-compliances, four (4) were related to operational improvements and procedural development. Whilst one (1) minor non-compliance was an administration improvement, linked to updating and closing out of the actions listed on the DWQMP. The details for the non-conformances are listed below.

Non-conformance no 1, listed under Accuracy of Monitoring and Performance Data, the following recommendation in relation to this audit area was made:

1. Minor -Cross Check of SCADA and reported results:
  - (a) Ensure that the SCADA readings are consistent with hand-held calibration checks and if necessary, undertake a SCADA instrument check in addition to regular checks. A procedure may need to be written or add a column for SCADA readings plus a comparison column inside SWIMS.

Non-conformances no 2 to 5, listed under Compliance with the Plan, the following recommendations in relation to this audit area was made:

2. Minor – Cross-Contamination Mitigation:
  - a. There needs to be a process to flush, disinfect, test, and flush again, after a mains repair.
  - b. Create an external policy for stand-pipe use.
3. Minor- Reagent Management:
  - a. Ensure that all turbidity handheld devices have standards that are in date.
4. Minor-Instrument Calibration:
  - a. Ensure that all instruments, particularly the Palintest kits are externally calibrated.
5. Minor-RMIP Implementation:
  - a. Out of the 42 actions, 14 actions are open but should be closed by now, many of which are the same action but for multiple schemes. Complete these actions soon. It is suggested that the annual report should provide in the status column if the items are open or closed, and the RMIP should include actions from previous audits in an updated DWQMP.

The 25 findings with opportunity for improvement, they can be linked to procedural improvements, training and development of staff, using the database more effectively, asset maintenance, minor repairs and improvements and emergency management.

In summary, the audit concluded that NBRC:

- Provided evidence that it had been providing accurate monitoring and performance data to the regulator.
- Generally had implemented it's DWQMP to manage risks to public health
- Generally maintained the relevance of the DWQMP.