Drinking Water Quality Management Plan Report

McKinlay Shire Council

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SPID: 00084

2020-2021

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1 Introduction

This annual report has been prepared in accordance with section 142 of the *Water Supply (Safety and Reliability) Act 2008* (the Act). The purpose of this annual report is to provide the Water Supply Regulator with information on the overall performance of the DWQMP for the period 1 July 2020 to 30 June 2021.

McKinlay Shire Council is a registered service provider with identification (SPID) number 00084.

The report includes the activities undertaken over the financial year in the operation of our drinking water service to protect public health, drinking water quality summaries and summary of our performance implementing our approved DWQMP.

2 Summary of scheme/s operated

McKinlay Shire Council (MSC) is responsible for the management of four (4) water supply systems, these include;

- Julia Creek
- McKinlay
- Kynuna; and
- Nelia

The water supply for each township is sourced from deep bores tapping the Great Artesian Basin (GAB). Julia Creek, McKinlay and Nelia do not have any treatment processes.

The Kynuna Township has a multistage filtration system installed to minimise the level of iron and manganese in the town's water supply. This system consists of an activate medium and membrane filtration network that achieves a high level of suspended mineral filtration.

A summary of the current demands on these schemes is provided in Table 1 below.

Table 1 – List of Drinking Water Schemes

Scheme Name and Community Served	Operator	Current Figures			
		*Permanent Population	*Seasonal & Transit Population	Connections	Demand (kL/d)
Julia Creek	MSC	*511	<3000	348	**1,411
McKinlay	MSC	*23	<150	49	**72.3
Kynuna	MSC	*13	<75	31	**9.6
Nelia	MSC	*5	<20	8	*13.6

**Permanent Population based on 2016 Census Data*

**Seasonal & Transit Population based on events*

*** Demand (kL/d) include seasonal and transit population usages*

3 DWQMP implementation

Council submitted an amendment application of its DWQMP on the 9 November 2020. As part of this amendment application all sections of the Drinking Water Quality Management Plan (DWQMP) were amended to reflect current operations.

Council also addressed the actions taken in relation to the report prepared by specialist water industry consultant, Peter Mosse in September 2018 and updated its risk management section of the plan as identified in the Information Requirement Notice issued by the Water Supply Regulator on the 6 May 2020.

On the 15 February 2021, the Water Supply Regulator approved Council's Drinking Water Quality Management Plan (DWQMP) subject to four standard conditions and two additional conditions.

Council is required in its next regular review of the DWQMP to undertake a site-specific risk assessment for each scheme and update the Risk Management Improvement Program (RMIP) items for all hazards/hazardous events that are considered unacceptable risks by Council. These actions are to be completed no later than 1 March 2022.

4 Verification monitoring - water quality information and summary

Council undertake sampling on all four (4) water supply schemes monthly and send through the samples to Townsville Water Laboratory for analysing. A summary of the results is identified in the table below;

Table 2 – Drinking water quality performance - verification monitoring

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
All Schemes	E. coli	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	Less than 1 E. coli/100ml	Two (2) – McKinlay	*Council was unable to test in April 2020 due to staff absences. *Further information in relation to noncompliant samples is discussed in Section 5 of this report.
All Schemes	Thermotolerant Coliforms	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	No guideline value	Nil	*Council was unable to test in April 2020 due to staff absences.
All Schemes	pH	**Julia Creek** 2 per month **McKinlay**	**Julia Creek** 2 per month **McKinlay**		Four (4)	*Council was unable to test in April 2020 due to staff absences.

		2 per month **Kynuna** 2 per month **Nelia** 1 per month	2 per month **Kynuna** 2 per month **Nelia** 1 per month	6.5 – 8.5 Aesthetic Limit		*Detected in McKinlay Bore samples. Limits are just over the max aesthetic limit of 8.5
All Schemes	TDS	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	No guideline value (good palatability, should not exceed 600mg/L)	Nil	*Council was unable to test in April 2020 due to staff absences. *Detected in McKinlay Bore samples. Limits are just over 600mg/L
All Schemes	Colour	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	15HU Aesthetic Limit	Three (3)	*Council was unable to test in April 2020 due to staff absences. *Detected in Kynuna Bore samples. Limits range from 30-50 HU.
All Schemes	Turbidity	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	5NTU Aesthetic Limit	Twenty-one (21)	*Council was unable to test in April 2020 due to staff absences. *Detected in Kynuna Township Samples. Filtration has assisted in minimising levels.
All Schemes	Aluminium	**Julia Creek**	**Julia Creek**			*Council was unable to test in

		2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	0.2mg/L Aesthetic Limit	Two (2)	April 2020 due to staff absences. *Detected in McKinlay Bore samples. Limits are just over 0.2mg/L
All Schemes	Silica	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	80mg/L Aesthetic Limit	Nil	*Council was unable to test in April 2020 due to staff absences.
All Schemes	Boron	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	4mg/L Aesthetic Limit	Nil	*Council was unable to test in April 2020 due to staff absences.
All Schemes	Ammonia	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	0.5mg/L Aesthetic Limit	Three (3)	*Council was unable to test in April 2020 due to staff absences. *Detected in McKinlay samples. Limits are just over 0.5mg/L
All Schemes	Iron	**Julia Creek** 2 per month	**Julia Creek** 2 per month		Twenty-Two (22)	*Council was unable to test in April 2020 due to staff

		McKinlay 2 per month **Kynuna** 2 per month **Nelia** 1 per month	**McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	0.3mg/L Aesthetic Limit		absences. *Detected in Kynuna Township Samples. Filtration has assisted in minimising levels.
All Schemes	Manganese	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	0.5mg/L Health Limit 0.1mg/L Aesthetic Limit	Three (3) Health (Kynuna Bore – raw water) Nineteen (19) Aesthetic	*Council was unable to test in April 2020 due to staff absences. *Detected in Kynuna Bore samples. Samples taken from Reticulation are all under the health and aesthetic limit *Detected in Nelia sample. Limits just over 0.1mg/L
All Schemes	Sodium	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	180mg/L Aesthetic Limit	Sixteen (16)	*Council was unable to test in April 2020 due to staff absences. *Detected in McKinlay samples. Limits vary from month to month and can range from 181-248
All Schemes	Chloride	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	250mg/L Aesthetic Limit	Nil	*Council was unable to test in April 2020 due to staff absences.

All Schemes	Copper	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	2mg/L Health Limit 1mg Aesthetic Limit	Nil	*Council was unable to test in April 2020 due to staff absences.
All Schemes	Fluoride	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	**Julia Creek** 2 per month **McKinlay** 2 per month **Kynuna** 2 per month **Nelia** 1 per month	1.5mg/L Health Limit	Twenty-Three (23)	*Council was unable to test in April 2020 due to staff absences. *Julia Creek Township has limits around 3mg/L and has an open incident with the Regulator. Monthly testing results are sent through by email. *New bore (Lions Bore) was tested before connection. 2.98 was the result from this test

Table 3. E. coli compliance with annual value – Julia Creek, McKinlay, Kynuna & Nelia

Drinking water scheme: Julia Creek

Year	*2020 to 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	26	26	26	26	26	26	26	26	24	24	24	24
No. of failures for previous 12 month period	1	1	1	1	1	1	1	1	0	0	0	0
% of samples that comply	96.2%	96.2%	96.2%	96.2%	96.2%	96.2%	96.2%	96.2%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES

Drinking water scheme: McKinlay

Year	*2020 to 2021*											
Month	***July***	***Aug***	***Sept***	***Oct***	***Nov***	***Dec***	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***
No. of samples collected	2	2	10	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	2	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	24	24	32	32	32	32	32	32	32	32	32	32
No. of failures for previous 12 month period	0	0	2	2	2	2	2	2	2	2	2	2
% of samples that comply	100.0%	100.0%	93.8%	93.8%	93.8%	93.8%	93.8%	93.8%	93.8%	93.8%	93.8%	93.8%
Compliance with 98% annual value	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Drinking water scheme: Kynuna

Year	*2020 to 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	100.0%	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: Nelia

Year	*2020 to 2021*											
Month	***July***	***Aug***	***Sept***	***Oct***	***Nov***	***Dec***	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***
No. of samples collected	1	1	1	1	1	1	1	1	1	1	1	1
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	12	12	12	12	12	12	12	12	12	12	12	12
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

5 Incidents reported to the regulator

The following section summarises incidents notified to the Regulator in accordance with sections 102 and 102A of the Act, detailing:

- Incidents reported during the year, including the preventive actions that were undertaken

A summary of incidents is detailed in the table below:

Table 4 – Incidents reported to the regulator

Incident date	Incident Reference	Scheme / location	Parameter / issue	Preventive actions
23/06/2020	DWI-84-08454	Julia Creek (Netterfield Street) McKinlay (Roadhouse) Additional Sites include: Nelia CWA, Kynuna Residence	Legionella pneumophila	**NOTE: THIS INCIDENT REMAINS OPEN FROM LAST FINANCIAL YEAR** • Advice received from QLD Health advising the levels are what are expected from an un-disinfected drinking water supply in North Queensland. Council to update community on ways to limit exposure. • Council continued to undertake flushing and scouring in Julia Creek, McKinlay and Kynuna. • Sample results varied between tests. Council continue to be in contact with both the Regulator and QLD Health to work out a plan on how levels can be reduced.
07/09/2020	DWI-84-20-08521	McKinlay Bore and McKinlay Residence, Landsborough Highway, MCKINLAY QLD 4823	E.coli	• Boil Water Alert was issued to the Community • Chlorination of system by dosing storage tank with chlorine and monitoring chlorine levels • Regular flushing of lines • Inspections were undertaken of storage tank and piping to ensure it was vermin proof • Follow up sampling occurred to ensure three (3) clear samples were received • On the day of the initial sample there were approx. 75km winds

Incident date	Incident Reference	Scheme / location	Parameter / issue	Preventive actions
				with dusty conditions that Council suspect may have been the source of contamination • HPC Levels of >300 was received. Council to commence scouring program and continue to update both the Regulator and QLD Health.

6 Customer complaints

McKinlay Shire Council received a total of eleven (11) complaints over the course of the 2020-2021 Financial Year. These were a few different issues including: blocked drains, low water pressure and discoloured water

All of the registered complaints were addressed in a timely manner and were closed off.

Table 5 – List of customer complaints about water quality

Scheme	Health concern	Dirty water	Taste and odour	Other
Julia Creek		1		7
Kynuna		3		
Total		**4**		**7**

7 DWQMP review outcomes

McKinlay Shire Council submitted an amendment application to the Regulator on the 9th November 2020. The Regulator approved Council's amended DWQMP subject to four (4) standard conditions and two (2) additional conditions.

Council was issued with an Information Notice for the Decision on the 15th February 2021 outlining the additional conditions imposed.

The two (2) additional conditions are:

- Undertake a site-specific risk assessment for each scheme and
- Update the Risk Management Improvement Program (RMIP) items for all hazards/hazardous events that are considered unacceptable risks by Council.

These actions are required to be completed/addressed by the next regular review to be completed no later than 1 March 2022.

8 DWQMP audit findings

Pursuant to subsection 99(2)(c) of the Water Supply (Safety and Reliability) Act 2008, McKinlay Shire Council was to conduct a regular audit of the approved Drinking Water Quality Management Plan (DWQMP) by 12 March 2021.

Bligh Tanner were engaged to conduct the audit. The audit was completed between 22 February 2021 and 12 March 2021.

The audit findings including any non-conformances and/or opportunities for improvement (OFI), including how these were actioned or will be actioned are summarised in Tables below.

Table 6 – DWQMP audit findings and status

Non-conformances from DWQMP Audit Report

Non-conformance	Auditors Comments	Recommended Actions	Timeframe for Completion
Identify existing preventive measures from catchment to consumer for each significant hazard or hazardous event and estimate the residual risk	Table 4.5 does not explicitly identify all preventative measures for managing the identified hazards. Examples include: • Vermin/bird proofing of water storages • Replacement of iron exchange resin at Kynuna This has been identified as a non-conformance.	Review and update the risk assessment in a scheme-by-scheme format, so that scheme specific circumstances can be captured	Council will develop a risk assessment for each scheme in the next review of the DWQMP. **Due date: 1 March 2022**
Review of preventive measures: Bores (physical integrity and site security)	The integrity of the Julia Creek Bores was generally found to be good, however the bore head integrity at	Seal Bore heads to prevent external contamination from entering the bores	The Water and Sewerage Officer will seal all bore heads. **Due Date: 30 July 2021**

	Kynuna and McKinlay was poor, with holes in bore heads in both schemes. Water temperatures of 50-55°C cannot be relied upon to disinfect all potential pathogens. This is a non-conformance with the DWQMP.		
Review of preventive measures: Cross connection / backflow prevention	There was some form of backflow prevention present at each bore visited during the audit, however the auditor was advised that there was no backflow prevention on customer connections. However, a program of backflow prevention device installation at individual households will begin shortly. This was identified to be a non-conformance with the DWQMP, as both the current and previous versions of the plan stated that backflow prevention devices were a current preventive measure mitigating the risk of backflow into the reticulation network.	Proceed with the program of backflow prevention device installation and amend the DWQMP accordingly	Program was completed on the 13 March 2021 for 100 connections in Julia Creek. Further programs will be scheduled in the future if funded. The DWQMP will be updated to reflect this in the next review of the DWQMP. **Due Date: 1 March 2022**
Document all procedures and compile into an operation manual	Current versions of the procedures were all printed and bound in the W & S Officer's manual. The non-conformance is that although a Reservoir Integrity procedure exists, there was a gap in the roofing at the Kynuna storage tower as shown in the photograph.	Address the integrity breach and to ensure the procedure is amended and/or implemented such that integrity breaches can be identified and addressed in a timely manner. An opportunity for improvement is to again review the procedures to ensure that the content accurately reflects current (or desired) operational practice	Water and Sewerage Officer will seal the Kynuna Storage Tank **Due Date: 30 April 2021** All procedures will be reviewed and updated where required at the next review of the DWQMP. **Due Date: 1 March 2022**

Verify implementation of the verification monitoring program as stated in the DWQMP	While the monitoring program is largely implemented as stated in the DWQMP (current approved and previous approved version), no sample results were recorded in the spreadsheet for January 2018, February 2019, and June 2019. The non-conformance is the failure to undertake verification monitoring in accordance with the approved DWQMP.	Ensure the verification monitoring program is implemented as stated in the DWQMP, and if staff absences occur (e.g., sick or annual leave), then sampling should be rescheduled for earlier or later in the month or alternative arrangements made.	Council will ensure that sampling will occur once every month as stated in the verification monitoring program in the DWQMP. If the Water and Sewerage Officer is scheduled to be away other staff trained in sampling will undertake the sampling in his absence. **Due Date: Immediately**
Review of improvement action (Mosse report) – Action 7 – Hygienic pipe storage	The response to the Mosse report indicates that pipes are stored undercover, however during the audit pipe storage rack at Julia Creek was inspected and was out in the open (though pipes were stored off the ground). Because Council's response was not implemented, this is a non-conformance with the DWQMP.	Store pipes under cover as already stated (or amend the response to the Mosse report) An opportunity for improvement is to develop some means of covering open pipe ends during storage to prevent contamination by vermin during storage (e.g. plastic bag & tape)	A roof will be erected over the pipe storage racks located next to the plumbers shed. The ends of the pipes will be sealed to prevent contamination. **Due Date: 30 April 2021**
Review of improvement action (Mosse report) – Action 30 – Kynuna Tower roof sealed	A large gap remains where the level sensor/indicator cable extends through the Kynuna Tower roof. The gap should be sealed	Seal the gap	Water and Sewerage Officer will seal the Kynuna Storage Tank **Due Date: 30 April 2021**
Review of improvement action (Mosse report) – Action 39 – Kynuna standpipe backflow prevention	There were two standpipes sighted at Kynuna, with no physical air gap at either one (long hoses on both, which could easily by submerged in a tanker). This is a non-conformance with the DWQMP as the response to the Mosse report clearly states that there is an air gap.	A backflow prevention device to be installed on the pipework upstream of the tanker filling point	The Water and Sewerage Officer will install a backflow prevention device on the pipework upstream of the tanker filling point **Due Date: 30 April 2021**
Review of improvement action (Mosse report) – Action 41 –	During the site audit, there were visible gaps/openings in both McKinlay bore	Seal the bore heads	The Water and Sewerage Officer will seal bore heads

McKinlay bore head integrity	heads. This is a non-conformance as the Mosse report response states that the bore heads have been sealed and re-sealed after any works.		**Due Date: 9 April 2021**
Review of improvement action (Mosse report) – Action 49 – McKinlay depot standpipe decommissioned	The McKinlay standpipe was still able to be operated by turning the valve on, and there was no signage to indicate that it should not be used. This is a non-conformance, as the DWQMP clearly states that it was decommissioned	Either install backflow prevention, or decommission the standpipe	The standpipe will be decommissioned. **Due Date: 30 April 2021**

Opportunity for Improvements (OFI) from DWQMP Audit Report

ADWG Element	Auditors Comments	Comments
DRINKING WATER QUALITY POLICY		
Ensure that the policy is visible and is communicated, understood and implemented by employees	Consider displaying the policy on the wall of the Council Depot, and include it in any staff induction manual	• Copy of Policy will be placed on notice board at Coyne Street Depot. • Copy will be sent to Payroll/HR to include in HR induction.
REGULATORY AND FORMAL REQUIREMENTS		
Identify and document all relevant regulatory and formal requirements	Include the Public Health Regulation 2018 within the list of legislation in the Policy as it contains key legislative requirements around E. coli monitoring frequencies	• Include the Public Health Regulation to the list of legislation in the Policy on next review of Policy in 2022
WATER SUPPLY SYSTEM ANALYSIS		
Verify the accuracy of the flow diagram and infrastructure details – Kynuna	* Ion Exchange resin used. Sand filters documented in plan * Flow diagram is not correct Make the information consistent and correct between the flow diagram, Table 2.1 Summary of Infrastructure Details and Section 2.2.3 Kynuna Water Supply	• Flow diagram needs to be accurate – **this will be amended in the plan at next review by March 2022** • Update what treatment is currently used at the plant **– this will be amended in the plan at next review by March 2022**

ASSESSMENT OF WATER QUALITY DATA		
Assemble historical data from source waters, treatment plants and finished water supplied to consumers (over time and following specific events)	Only 19-20 data has been included in the DWQMP. Council's data dates to 2017. No microbiological data included in the plan. Consider including summaries of all available data in future revisions of the plan.	• Include all available data including microbiological – **this will be amended in the plan at next review by March 2022**
List and examine exceedances	No E. coli detections noted in plan. Summarise E. coli incidents in plan	• Include E. coli incidents in the plan – **this will be amended in the plan at next review by March 2022**
HAZARD IDENTIFICATION AND RISK ASSESSMENT		
Identify and document hazards, sources and hazardous events for each component of the water supply system	Review the risk assessment so that there is a standalone risk assessment for each scheme, noting that some risks can be grouped as 'whole of system' such as staff training.	• Develop risk assessments for each scheme – **this will be amended in the plan at next review by March 2022**
Determine significant risks and document priorities for risk management	Consider incorporating the information from Table 5.1 - Management of Risks into the risk register and/or the risk management improvement plan, this would make the linkages clearer. The DWQMP should explicitly state the cut-off for acceptable vs unacceptable risks, and if a risk remains unacceptable but cannot be lowered further, it could be stated to be ALARP (as low as reasonably practicable)	• Update Risk Assessment section of plan - **this will be amended in the plan at next review by March 2022**
PREVENTIVE MEASURES AND MULTIPLE BARRIERS		
Evaluate alternative or additional preventive measures where improvement is required	Clarify links between the risk assessment and risk management improvement plan (RMIP)	• Update Risk Assessment section of plan - **this will be amended in the plan at next review by March 2022**
Review of preventive measures: Reservoir/Storage inspections	Implement record keeping for the reservoir inspections	• Ensure checklist is completed when inspections occur
Review of preventive measures: Mains repair procedures	Clarify the chlorination process; as the process described verbally differed from the process outlined in the documented procedure	• Mains repair procedure has been amended to reflect current processes
OPERATIONAL PROCEDURES		

Identify procedures required for processes and activities from catchment to consumer	Develop procedure for maintenance of the Kynuna iron and manganese removal plant	• Procedure to be developed and implemented. Estimated completion date: December 2021
OPERATIONAL MONITORING		
Develop monitoring protocols for operational performance of the water supply system, including the selection of operational parameters and criteria, and the routine analysis of results.	List the Kynuna operational monitoring in the DWQMP (e.g. filter pressures, tank scour water quality)	• Update operational monitoring in DWQMP for Kynuna - **this will be amended in the plan at next review by March 2022**
CORRECTIVE ACTION		
Establish and document procedures for corrective action to control excursions in operational parameters	Update the procedures to provide more information on corrective actions, including triggers	• Update procedures to include corrective actions required - **this will be amended in the plan at next review by March 2022**
EQUIPMENT CAPABILITY AND MAINTENANCE		
Ensure that equipment performs adequately and provide sufficient flexibility and process control	Consider long term future of the Kynuna Scheme, and determine whether additional treatment is required (either at the source, or at individual customer connections given the very limited number)	• Council to review treatment processes to determine whether further treatment is required.
DRINKING WATER QUALITY MONITORING		
Establish and document a sampling plan for each characteristic, including the location and frequency of sampling	List additional sample sites in the DWQMP and include the monitoring frequency if they are used on a rotational basis. Clarify that the Kynuna bore sample is reflective of 'raw' water prior to treatment, and as such this should not be included in the verification monitoring summaries (as the high iron and manganese is reduced significantly through treatment)	• Council to update DWQMP with additional sites and frequencies and not include the Kynuna bore sample in the verification monitoring summaries - **this will be amended in the plan at next review by March 2022**
Ensure monitoring data are representative and reliable	Review all sample taps and take measures to ensure the risk of sample contamination is minimised. This may include replacement of tap heads (for example, some utilities now use stainless steel pip without a hose fitting for their dedicated water sampling points)	• Council to review sample points to see if a designated tap can be installed just for water sampling purposes.
SHORT-TERM EVALUATION OF RESULTS		

Establish procedures for the daily review of drinking water quality monitoring data and consumer satisfaction	Ensure that matching sample site terminology is used between the DWQMP, results spreadsheet, and external laboratory reports. This will avoid potential confusion upon receipt of non-compliant results	• Council to update the DWQMP and results spreadsheet to align to laboratory reports- **this will be amended in the plan at next review by March 2022**
CORRECTIVE ACTION		
Establish and document procedures for corrective action in response to non-conformance or consumer feedback	Update and resolve the broken document references to corrective actions in the Incident and Emergency Response Plan (IERP)	• Amend IERP within DWQMP - **this will be amended in the plan at next review by March 2022**
EMPLOYEE AWARENESS AND INVOLVEMENT		
Develop mechanisms and communication procedures to increase employee's awareness of and participation in drinking water quality management	Consider displaying the Drinking Water Quality Policy on the wall at the Council Depot and include it in any staff induction manual	• Copy of Policy will be placed on notice board at Coyne Street Depot. • Copy will be sent to Payroll/HR to include in HR induction.
DESIGN OF EQUIPMENT		
Validate the selection and design of new equipment and infrastructure to ensure continuing reliability	Ensure that any proposed change to the treatment process at Kynuna is validated for effectiveness at treating the levels of iron and manganese in the raw water, and is able to operate at higher temperatures	• Council to ensure any changes to the treatment process at Kynuna is validated.
MANAGEMENT OF DOCUMENTATION AND RECORDS		
Periodically review documentation and revise as necessary	Review the operational procedures to ensure that the content accurately reflects current (or desired) operational practice	• Procedures will be reviewed and updated as required and as part of the regular review of the DWQMP
REPORTING		
Produce an annual report to be made available to consumers, regulatory authorities and stakeholders	Consider preparing summaries of water quality results for DWQMP reports (e.g. number of samples, min/max/average, number exceeding ADWG health guideline, reported by scheme) as opposed to the current format. The existing spreadsheet could be amended slightly to make this process simple for Council	• Noted. No action taken at this stage however will be reviewed in future reports.
DRINKING WATER QUALITY MANAGEMENT IMPROVEMENT PLAN		

Develop a drinking water quality management improvement plan	Integrate the existing RMIP with the action plan from the Mosse Report (unless the Regulator has requested that the actions from the Moss Report are reported via a standalone action plan	• Council will integrate the existing RMIP with the action plan from the Mosse Report - **this will be amended in the plan at next review by March 2022**
Review of improvement action – repairs and operational inspections of reticulation pipework	Consider clarifying what operational inspections of reticulation pipework means for the McKinlay Bore pipework replacement as auditees were unsure	• RMIP actions will be made clearer in DWQMP - **this will be amended in the plan at next review by March 2022**
Review of improvement action – Identify outdated procedures, update, obtain approval and implement	Review the operational procedures to ensure that the content accurately reflects current (or desired) operational practice	• Procedures will be updated to reflect current operations - **this will be amended in the plan at next review by March 2022**
Review of improvement action – Bore & Retic inspection programs and condition reports	Catch up on the nominated bore logging timeframes	• Council have secured a bore logger and bores are expected to be logged late 2021 early 2022
Review of improvement action – (Mosse report) – Action 15 – Naegleria & Legionella testing	Request clear guidance from QLD Health before undertaking further testing for Legionella and/or Naegleria, as to what actions (if any) should be undertaken upon their detection	• Council is currently addressing this with both the Regulatory and QLD Health
Review of improvement action – (Mosse report) – Action 19 – Julia Creek-Disconnection of Hickman St Bore	Either disconnect the tanker standpipe to eliminate the risk of water being used for potable purposes, or to put up a clear non-drinking water sign next to the tanker filling point	• A non-drinking water sign is to be erected next to the tanker filling point – expected completion timeframe is by end of December 2021
Review of improvement action – (Mosse report) – Action 36 – Kynuna high level tank automatic desludge	Seek to implement automatic sludge draining at the Kynuna Tower	• Council is currently looking into options for this. No firm completion date is specified at this stage
Review of improvement action – (Mosse report) – Action 44 – McKinlay tank vermin proofing	Seal small holes in McKinlay Tank	• Holes have been sealed. Completed in August 2021.