
DWQMP Annual Report 2018-19
Napranum Aboriginal Shire Council

September 2019



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Viridis Consultants Pty Ltd
PO Box 131
Bulimba Qld 4171
Australia
www.viridis.net.au
ABN: 49 129 185 271

Telephone: 1300 799 310

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1. Introduction

This is the Drinking Water Quality Management Plan (DWQMP) annual report for Napranum Aboriginal Shire Council (NASC or council) for the financial year 2018-19.

The DWQMP has been established and is being adhered to in order to protect public health through the identification and minimisation of public health related risks associated with drinking water. Council is operating under an approved DWQMP, with the approval granted by the Water Supply Regulation unit, Department of Natural Resources, Mines and Energy (WSR, DNRME).

This annual report summarises Council's drinking water quality performance for the reporting period, outcomes of the DWQMP audit undertaken and progress on the implementation of the improvement plan. The report is made available to customers on Council's website and for inspection upon request at the Council office.

1.1. Scope

The report has been prepared to fulfil the legislative DWQMP reporting requirements set out in the *Water Supply (Safety and Reliability) Act 2008* (the Act).

1.2. Purpose

This annual report aims to:

- be a reference document for the Regulator, as well as customers, on Council's performance in relation to the DWQMP reporting obligations under the Act, for the reporting period
- provide a summary of Council's performance in implementing the DWQMP.

2. Drinking Water Scheme

With the introduction of the Act, water service providers are required to register as a drinking water service provider for the delivery of a drinking water service. Council is a registered drinking water service provider, with the service provider identification (SPID) number as 144.

Council manages the Napranum drinking water supply scheme and distributes treated water to the township of Napranum. The water supply scheme is comprised of raw water sources, a water treatment plant, pump stations, service reservoirs and distribution network.

3. DWQMP Implementation

The implementation of the DWQMP is discussed in this section, and also captured in the other sections that follow.

3.1. Risk Management

The process of keeping drinking water safe is one of risk management. Through efficient operations and implementation of the DWQMP, Council has ensured effective risk management to assure safe quality of drinking water to our customers.

During the reporting period, Council supplied drinking water that complied with the water quality criteria set in the Australian Drinking Water Guidelines. There was no major incident or event that compromised Council's ability to supply safe quality drinking water to customers.

3.2. Monitoring

Council maintains comprehensive monitoring programs to ensure that the quality of water supplied to customers is safe. The monitoring programs assist to identify any issue before it becomes a significant water quality incident. The results from the verification monitoring for the reporting period are discussed in section 5.

Council also undertakes operational monitoring, which includes the planned sequence of measurements and observations to assess and confirm the performance of our preventive or control measures. Measurements are of operational parameters that indicate whether processes are functioning effectively.

Quality assurance is important to guarantee consistently reliable and legally defensible results and ensure customers are provided with the best quality water.

Council has the following quality management systems in place:

- microbiology samples are sent to the Cairns Regional Council Water Laboratory, which is a NATA accredited laboratory
- operations staff have been appropriately trained to undertake sampling

3.3. Staff Awareness

Implementation of the DWQMP is the responsibility of the Operations Division Manager. The Operations Division Manager discusses issues relating to the implementation with water (and sewer) staff using informal meetings as required. The Operations Division Manager is responsible for ensuring that all staff have appropriate training and undertake appropriate procedures while implementing the DWQMP.

There were no staff changes during the reporting period.

3.4. Improvement Plan

Council maintains a culture of continuous improvement and are implementing the Improvement Plan of the DWQMP and making progress towards strengthening the management of the water supply. During the reporting period, Council implemented a number of actions including:

- upgrading pumps and manholes and purchasing a new generator to prevent sewer leaking into aquifer
- turbidity monitoring in each bore
- programming a minimum alarm for chlorine in SCADA

Detailed status on the Improvement Plan implementation is presented in Appendix A.

4. Reporting to the Regulator

During the reporting period there were no issues or incidents that were reportable to the regulator.

5. Compliance with Water Quality Criteria

Verification of drinking water quality provides an assessment of the overall performance of the system and the ultimate quality of the drinking water being supplied to customers. It confirms compliance with water quality criteria set by DNRME, Queensland Health and any other formal requirements. Council undertakes regular sampling and testing to assess whether water quality is complying with the DWQMP water quality criteria.

Details of data used in the report and treatments applied to the data are as follows:

- data sources: verification monitoring data
- data analysis: undertaken using Microsoft Excel software
- identified errors, if any: removed from statistical analysis, and noted at the respective place.

- <LOD and >UL: <LOD (limit of detection) was treated as LOD/2 and >UL (upper limit specified for test) was taken as UL.
- Outliers: considered in the statistical analysis, uncles classed as specific error.

5.1. Source Water

Amendments to the DWQMP made in 2018 included the addition of annual detailed source water testing. This was undertaken by the Cairns Regional Council Laboratory in August 2018. Testing was conducted by the lab for a typical suite of parameters and as such some parameters listed in the DWQMP were missed. A new procedure will be implemented to ensure all listed parameters are tested for future verification monitoring.

Table 1 Snapshot monitoring of source water

Parameter	Minimum Number of Samples	Number of Samples Taken	August 2018 result (Bore 1)	August 2018 result (Bore 2)	Spec (ADWG Guideline Value)	OoS
Aluminum (mg/L)	2	2	< 0.015	< 0.015	0.2 (A)	0
Arsenic (mg/L)	2	0	-	-	0.01 (H)	n/a
Boron (mg/L)	2	2	< 0.05	< 0.05	4 (H)	0
Cadmium (mg/L)	2	2	< 0.0001	< 0.0001	0.002 (H)	0
Calcium (mg/L)	2	2	< 0.1	< 0.1	n/a	n/a
Chloride (mg/L)	2	0	-	-	250 (A)	0
Copper (mg/L)	2	2	0.004	0.007	2 (H) 1 (A)	0
Fluoride (mg/L)	2	2	< 0.02	< 0.02	1.5 (H)	0
Iron (mg/L)	2	2	< 0.008	< 0.008	0.3 (A)	0
Lead (mg/L)	2	2	0.0009	0.0096	0.01 (H)	0
Magnesium (mg/L)	2	2	0.22	0.23	n/a	n/a
Manganese (mg/L)	2	0	-	-	0.5 (H) 0.1 (A)	n/a
Nickel (mg/L)	2	2	< 0.0005	< 0.0005	0.02 (H)	0
Nitrate (mg/L)	2	2	0.2	0.21	50 (H)	0
pH	2	2	5.2	5.6	6.5 – 8.5 (A)	2
Potassium (mg/L)	2	0	-	-	n/a	n/a
Silicon (mg/L)	2	0	-	-	n/a	n/a
Sodium (mg/L)	2	0	-	-	180 (H)	n/a
Sulphate (mg/L)	2	2	< 1	< 1	500 (A)	0
Total Alkalinity (mg/L CaCO ₃)	2	2	1.5	47	n/a	n/a

Total Dissolved Solids (mg/L)	2	2	17	18	600 (A)	0
True Colour (Hazen)	2	2	< 1	< 1	15 (A)	0
Turbidity (NTU)	2	2	< 0.1	0.2	5 (A)	0
Zinc (mg/L)	2	2	< 0.008	< 0.008	3 (A)	0

* (A) – Aesthetic based ADWG value, (H) – Health based ADWG value

5.2. Treated Water

The verification monitoring data for the Napranum scheme reticulation sites (combined), and level of compliance are presented in Table 2.

E. coli performance of the system is verified using weekly in-house sampling, and samples are sent to Cairns Regional Council’s NATA accredited laboratory on a monthly basis to confirm in-house testing results.

A revised DWQMP for 2018 increased the frequency of *E. coli* verification monitoring to weekly. In-house *E. coli* sampling was conducted in accordance with the DWQMP (weekly samples at treated water sites), however monitoring data was not recorded for the reporting period. No *E. coli* detections occurred during the reporting period. This was discussed with NASC during the preparation of this report, and NASC will work on an internal processes improvement to ensure verification monitoring data is recorded going forward.

Table 2 - Verification Monitoring Results

Source	Parameter	N	Min	Max	Mean	Spec	OoS	% Meeting Spec	Comments
Napranum - Overhead Tank	<i>E. coli</i>	56	-	-	<1	ND	0	100	Compliant with water quality criteria, which is the <i>Public Health Regulation (2018)</i> .
	Total coliforms	4	-	-	<1	n/a	n/a	n/a	Not of health significance and are used as an indicator of system integrity and disinfection performance.
	Heterotrophic Plate Count	4	-	-	<10	n/a	n/a	n/a	Not of health significance and are used as an indicator of system integrity and disinfection performance.
Napranum - School	<i>E. coli</i>	56	-	-	<1	ND	0	100	Compliant with water quality criteria, which is the <i>Public Health Regulation (2018)</i> .
	Total coliforms	4	-	-	<1	n/a	n/a	n/a	Not of health significance and are used as an indicator of system integrity

									and disinfection performance.
	Heterotrophic Plate Count	4	-	-	<10	n/a	n/a	n/a	Not of health significance and are used as an indicator of system integrity and disinfection performance.
Napranum - Hospital	<i>E. coli</i>	56	-	-	<1	ND	0	100	Compliant with water quality criteria, which is the <i>Public Health Regulation (2018)</i> .
	Total coliforms	4	-	-	<1	n/a	n/a	n/a	Not of health significance and are used as an indicator of system integrity and disinfection performance.
	Heterotrophic Plate Count	4	-	-	<10	n/a	n/a	n/a	Not of health significance and are used as an indicator of system integrity and disinfection performance.

6. Customer Complaints

No water quality complaints have been received from the community in the reporting period. There is currently no formal mechanism for recording customer complaints, however community members raise issues through the Council offices.

7. DWQMP Review

A review of the DWQMP was undertaken during the reporting period (July 2018). This review identified that the DWQMP required updates and found areas for continual improvement of the DWQMP. A revised DWQMP was created and submitted to the regulator on 6/9/2018. The following required actions were identified:

- Updated provider contact details in the plan
- Updated the population demand values in the plan
- Updated the configuration of the plant in the schematics and control philosophy
- Updated chemical suppliers table in the plan
- Updated the DWQMP to capture operational and verification monitoring data storage procedure
- Updated the CCP procedures
- Updated the chemical supplier details in the DWQMP
- Updated the incident reporting flow charts and contacts for ease of use
- Incident and emergencies section of the DWQMP updated
- Updated monitoring plan of the DWQMP to include testing of standard water analysis chemical samples
- Updated DWQMP to change references from the Department of Energy and Water Supply to DNRME

8. DWQMP Audit

No audit of the DWQMP was undertaken in the 2018-2019 financial year.

Glossary

Notation	Description
DNRME	Department of Natural Resources, Mines and Energy
DWQMP	Drinking Water Quality Management Plan
NASC	Napranum Aboriginal Shire Council
NATA	National Association of Testing Authorities
WSR	Water Supply Regulation

Appendix A

Improvement Plan

Napranam Aboriginal Shire Council Improvement Plan

Current as of: 31 August 2018

Action No.	Component	Hazardous event	Improvement Action or Follow up Action	Priority	Responsibility	Due/Review date set	Status	Comments	Date completed
1	Catchment and source infrastructure	Sewer Leaking into Aquifer	Develop plan to identify priority areas for sewer main replacement	Medium	Manager Operations Division		Completed	Grant acquired and pumps replaced with a generator for sewerage treatment plant 3 upcoming.	2019
2	Catchment and source infrastructure	Intake pipe failure	Develop plan to allow isolation of individual bore lines	High	Manager Operations Division		Completed	All been upgraded	2015
3	Treatment and Disinfection processes	Underdosing	Investigate SCADA for disinfection or increased frequency of monitoring	High	Manager Operations Division		Completed		2018
4	Treatment and Disinfection processes	pH correction	Investigate operating Bore 1 and 2 simultaneously all times so that source water pH is constant	High	Manager Operations Division		Completed		2015
5	Retreatment	Backflow	Retreatment is not thought to meet current plumbing code - upgrade recommended, but will require significant funding - develop proposal for council.	Medium	Manager Operations Division		Completed	Funding has been secured for water and sewer upgrades	2018
6	Whole of Service	Untrained staff (formally)	Investigate opportunities for formal training for existing staff.	High	Manager Operations Division		Completed	Current operator have cert. III, and plumbers are also being trained.	2018
7	Whole of Service	Information management - data storage	Develop electronic record keeping	High	Manager Operations Division		Completed		2015
8	Whole of Service	Lack of written operating procedures	Development of written operating procedures as identified in the operation and maintenance procedures section.	Medium	Manager Operations Division	Jul-20	Ongoing		
9	Whole of Service		Ensure the monitoring data is reported accurately. (REC)	-	Manager Operations Division		Completed	New spreadsheets have been developed, and will be used to prepare reports to regulators	2018
10	Whole of Service		Record monitoring data in a format that makes annual reporting easy (e.g. single spreadsheet for the financial year, with data stored in columns) - (OFI)	-	Manager Operations Division		Completed	New spreadsheets have been developed, and will be used to prepare reports for regulators	2018
11	Whole of Service		Ensure regulatory deadlines are met and records are correspondance with the regular air kept. (REC)	-	Manager Operations Division		Completed	Discussed at review and noted by Council	2018
12	Whole of Service		Check the reservoirs for vermin proofing and ensure that they are secure. (REC)	-	Manager Operations Division		Completed	Investigation undertaken by Council	2018
13	Whole of Service		Consider developing a checklist for inspections and routine operational and maintenance activities. (OFI)	-	Manager Operations Division	Jul-21	Ongoing	Checklist being developed	
14	Whole of Service		Consider storing electronic data in a location that is accessible by others at council (e.g. Workis manager) and is backed up, such as networked drive. (OFI)	-	Manager Operations Division		Completed	New spreadsheets have been developed, and will saved on shared drive	2018
15	Whole of Service		Operational procedures are one of the key measures to come out of risk management plans and must be diligently implemented. If the procedures don't reflect best practice ensure that they are amended and remain current. (REC)	-	Manager Operations Division	Jul-21	Ongoing	Discussed at review, Council to undertake this	
16	Whole of Service		Update the chemical supplier details in the DWQMP (REC)	-	Manager Operations Division		Completed	Undertaken as part of review	2018
17	Whole of Service		Ensure that once the pH and chlorine online instruments are fully commissioned a calibration program is documented and implemented. (OFI)	-	Manager Operations Division	Dec-19	Ongoing	Both are commissioned, documentation will be undertaken, having issues with pH adjustment	
18	Whole of Service		Correct the typographical error in the Level 2 Incident table, which references the Wujal DWQMP Plan. Currency of the rest of the section should also be reviewed at the same time. (OFI)	-	Manager Operations Division		Completed	Corrected as part of review	2018
19	Whole of Service		The verification samples must be sent to the external NATA certified laboratory, as stated in the DWQMP or the plan amended to reflect the current practice. (REC)	-	Manager Operations Division		Completed	Verification samples are sent to Cairns Regional Council monthly	2018
20	Whole of Service		Consider sending a weekly sample to a NATA certified laboratory for E. coli analysis, or if in-house microbiological testing is continued, then a well documented laboratory QA/QC program should be established and implemented. (OFI)	-	Manager Operations Division	Jul-21	To start	Council to investigate this	
21	Whole of Service		Ensure that the currency of the RMIP is maintained and actions closed out within the given timeframe. (REC)	-	Manager Operations Division		Completed	Undertaken as part of review 2018	2018
22	Whole of Service		When developing improvement actions ensure that they are achievable. Try not to set NASC up to fail by setting too aggressive targets, or items where funding may not be available, an alternative would be to specify an investigation or application for funding. (OFI)	-	Manager Operations Division		Completed	Undertaken as part of review 2018	2018
23	Whole of Service		Maintain the RMIP in an editable format, such as a spreadsheet, so it can be kept current. (OFI)	-	Manager Operations Division		Completed	Undertaken as part of review 2018	2018

24	Whole of Service	It is strongly advised to improve the records management section of the DWQMP. Records are how NISC demonstrates compliance and that all the risk identified have been managed appropriately. (DFI)	-	Manager Operations Division	Completed	Records are now backed up in shared Council drive	2018
25	Whole of Service	Ensure that the regulatory deadlines are met for review and other items specified in the approval notice. (DFI)	-	Manager Operations Division	Completed	2018 Review undertaken	2018
26	Whole of Service	The corrosive nature of the water needs to be considered in the risk assessment. (REC)	-	Manager Operations Division	Completed	Undertaken as part of review 2018	2018
27	Whole of Service	Undertake a full suite of analysis on the water, in the reticulation, once per year. (REC)	-	Manager Operations Division	Completed	Discussed at review 2018, testing done, annual analysis added to verification monitoring plan	2018
28	Whole of Service	Include the integrity of the bores in the risk assessment with appropriate preventive measures. The bores must be watertight. (REC)	-	Manager Operations Division	Completed	Undertaken as part of review 2018	2018
29	Whole of Service	Monitor turbidity in each bore, no less than once per month, to identify surface water influences. This may need to be increased (e.g. daily-weekly) during heavy rain events. (REC)	-	Manager Operations Division	Completed	Council is currently monitoring turbidity in each bore	2019
30	Whole of Service	The use of the undercover ICB storage areas should be investigated, if these cannot be utilised then an alternative must be found. The storage of sodium hypochlorite must minimise both age and temperature of the chemical. (REC)	-	Manager Operations Division	Completed	Storage is out of direct sunlight	2018
31	Whole of Service	Update details of the infrastructure, including schematics, with the new chlorine gas system. (DFI)	-	Manager Operations Division	Completed	Undertaken as part of review/update 2018	2018
32	Catchment and source Infrastructure	Council to investigate elevating bore head collar, a reseal and a CCTV camera to monitor the bore casings	Medium	Manager Operations Division	Ongoing	Council has sealed bore casing and is planning on conducting CCTV monitoring with grant	
33	Treatment and Disinfection processes	Ask SCADA contractor to program minimum chlorine 0.7 mg/L for alarm	Medium	Manager Operations Division	Completed	SCADA programming complete	2019
34	Reticulation	Low or negative pressure / backflows	Medium	Manager Operations Division	To Start		



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