



Drinking Water Quality Management Plan Report

Kowanyama Aboriginal Shire Council

SPID: 142

2020-2021 Financial Year

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

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1 Introduction

This is the Drinking Water Quality Management Plan (DWQMP) report for Kowanyama Aboriginal Shire Council (KASC) for the financial year 2020–21.

KASC is a registered service provider with identification (SPID) number 142. KASC is operating under an approved DWQMP to ensure consistent supply of safe quality drinking water in order to protect public health. This is done through proactive identification and minimisation of public health related risks associated with drinking water.

This DWQMP report includes:

- the activities undertaken over the financial year in operating our drinking water service
- drinking water quality summary
- summary of our performance in implementing our approved DWQMP

This report is submitted to the Regulator to fulfil our regulatory requirement, and is also made available to our customers through our website or for inspection upon request at council office.

2 Summary of scheme/s operated

Council manages the Kowanyama drinking water supply scheme and distributes treated water to the township of Kowanyama. The water supply scheme is comprised of multiple bore water sources, chlorination plant, service reservoirs, a pump station and distribution network.

Details of the scheme are noted in Table 1.

Table 1 – Summary of schemes

<i>Scheme</i>	<i>Water Source</i>	<i>Treatment processes</i>	<i>Treatment capacity</i>	<i>Towns supplied</i>
Kowanyama Water Supply	Great Artesian Basin – Kowanyama Bore 1,2 and 3	Chlorination	2ML/d	Kowanyama

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 generally supplied drinking water that complied with the water quality criteria set in the Australian Drinking Water Guidelines. There was one incident in the reporting year where the level of flouride in the water leaving the reservoir exceeded the maximum level in the Guidelines, however this was corrected after reprogramming the blending ratio of the town bore supply.

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.

To ensure timely actions on operational monitoring data, Council uses a water quality spreadsheet to track and provide weekly summaries of water quality data. These actions will provide Council with additional information to act of water quality data.

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 and chemical parameter 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 Essential Services Manager (ESM). The ESM discusses issues relating to the implementation with water (and sewer) staff using informal meetings as required. The ESM is responsible for ensuring that all staff have appropriate training and undertake appropriate procedures while implementing the DWQMP.

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:

- reviewing the improvement program to better reflect the current operational conditions
- updating the DWQMP to reflect the changes in the installed infrastructure

A number of improvement plan items will be reworked following the update to the chlorination system.

The actions undertaken to implement the risk management improvement program are discussed in Table 2. Previous tasks which had been reported as completed in last year's annual report have been deleted

Table 2 – Risk management improvement program implementation status

Scheme name	Ref	Component	Event	Improvement actions	Target date	Actions taken to date	Status and revised target date	Responsible Officer / Position
Kowanyama Water Supply	3	Catchment and source infrastructure	Significant change to scheme setup when third bore becomes operational	Update plan when operational E.g. schematic, risk assessment; monitoring and resubmit plan to DNRME	Late 2020	New bore has been installed and in operation. DWQMP to be updated 2020 to included details	Completed in 2021 DWQMP Update	ESM, Council
Kowanyama Water Supply	15	Whole of Service	Operation and maintenance procedures #filling large chlorine tank up from drums #E.coli testing #daily water sampling #other procedures as required	Include document control on procedures and records, including adding version identifiers on procedures/checklists.	Ongoing	O & M procedures continually being updated	Completed in 2021 DWQMP Update	ESM

Kowanyama Water Supply	16	Whole of Service	Preventive measures not undertaken per DWQMP	Review to see that all maintenance activities and procedures are documented (as per preventive measures). Ensure these are accessible to staff.	Late 2019	Checklists produced, although update required to match current plan. Checklists updated in 2021 DWQMP update	Completed in 2021 DWQMP Update	ESM
Kowanyama Water Supply	17	Whole of Service	Incident and Emergency response in event of cyclone etc.	Prepare community alert templates in preparation (e.g. obtain Qld Health templates), to ensure measures are in place in event of an emergency	2022	Water supply component to be included in Council's cyclone management plan	Ongoing	ESM
Kowanyama Water Supply	18	Whole of Service	Insufficient disinfection, chlorate formation	Develop a sodium hypochlorite management procedure, including a written agreement with the chemical supplier to supply the newest stock available, onsite stock rotation to ensure oldest stock is used first and the application of relevant Australian Standards.	March 2022	Process to be reviewed upon incorporation of salt water chlorine generator. Use of Hypo 10 anticipated to be significantly reduced	Council to include plant in current chlorine program and monitor performance	ESM
Kowanyama Water Supply	23	Whole of Service	Reservoir integrity breach	Repair rust damage to both reservoirs and replace the rubber seals on the roofs, which have been attacked by birds	May 2022	Roof on main reservoir is deteriorating due to corrosion of hold down screws	Roof temporarily re-screwed. Whole roof to be replaced May 2022	ESM

						- Proposal is to review a replacement of the entire roof structure under ICCIP		
Kowanyama Water Supply	24	Whole of Service	Misinterpretation of schematics	Find/develop drawings for critical parts of the system as required. Improve labelling of valves, sample points and dosing points to increase ease of operation, particularly for staff who are less familiar with the equipment/system.	2022	To be rectified with the chlorination upgrade.	update in line with introduction of new plant	ESM
Kowanyama Water Supply	25	Whole of Service	Erroneous sampling results	Plan dedicated laboratory area, away from general office area.	2022	Current proposal is to construct a small dedicated lab adjacent to the office or the treatment plant to be funded under current ICCIP program	Funding secured to construct dedicated lab in June 2022	ESM
Kowanyama Water Supply	28	Whole of Service	Preventive measures not undertaken per DWQMP	Implement Updated DWQMP Task Checklist	Late 2019	Checklists produced, although update required to match current plan	Completed in 2021 DWQMP Update	ESM

Kowanyama Water Supply	30	Whole of Service	All Hazards	Undertake training on incident and emergency management. This should include working through a scenario.	Early 2020	ESM is currently reviewing WH&S procedures and has identified some training programs	Ongoing, dependent on introduction of new staff	ESM
Kowanyama Water Supply	31	Disinfection Process	Degradation of hypochlorite	Upgrade chlorination plant to reduce issues with degrading hypochlorite.	2022	New chlorine generator undergoing commissioning	Plant has been tested and is producing chlorine, however implementation with hypo system to be completed	ESM
Kowanyama Water Supply	32	Whole of Service	Lack of plant documentation and as-constructed drawings.	Upgraded hypochlorite plant to include OMM, drawings and valve labelling to improve documentation.	2022	Documentation to be provide by Contractor upon commissioning of new plant	Ongoing	ESM
Kowanyama Water Supply	33	Whole of Service	Staff Continuity	Plan for alternative staff to assist ESM with ES Infrastructure with supervision and implementation of the DWQMP.	2022	Need has been identified by Council - ESM attempting to acquire and train suitable staff	Ongoing. Council is experiencing difficulty in obtaining suitable staff	ESM
Kowanyama Water Supply	34	Whole of Service	Calibration of instruments	Develop a calibration procedure and logsheet for benchtop analysers	Late 2019	new analysers have been introduced - calibration procedure to be implemented	To Start	ESM

Kowanyama Water Supply	36	Whole of Service	PFOS/PFHxS	5-yearly PFOS/PFHxS sampling	Late 2023	5-yearly PFOS/PFHxS currently in DWQMP, however has not been undertaken withing last 5 years. ESM to organise samples for analysis	To Start	ESM
Kowanyama Water Supply	37	Reticulation	Unknown dead ends or underutilised services. Poorly understood isolation requirements.'	Services survey to locate all services.	2022	A Digital asset drawing completed for of all water/wastewater infrastructure from existing as-cons. Council to confirm accuracy as some items appear to be of position.	Ongoing, Council has obtained radiodetyection equipment to confirm water pipelines	ESM
Kowanyama Water Supply	38	Whole of Service	Poor calibration of instruments.	Procedure for calibrating instruments and logsheet	2022	new analysers have been introduced - calibration procedure to be implemented	To Start	ESM
Kowanyama Water Supply	39	Catchment and source infrastructure	Lack of integrity at Bore 2	Install a concrete pad to seal Bore 2. Ensure that the bore penetration is sealed with a hydrophilic seal.	March 2022	New concrete surrind to be installed	Concrete collar programmed for installation March 2022	ESM

4 Verification monitoring - water quality information and summary

This section discusses the compliance with the water quality criteria.

Verification and operational data have been taken from the data recorded on SWIMs during the period.

All laboratory data has been taken directly from external certified lab results.

Table 3 – 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
Kowanyama Water Supply	E. Coli	Monthly at 4 sites (48)	76	< 1 CFU/100mL	0	Results from Cairns Regional Council Water Laboratory.
Kowanyama Water Supply	Total Coliforms	Monthly at 4 sites (48)	76	<1 CFU/100mL	0	Results from Cairns Regional Council Water Laboratory
Kowanyama Water Supply	Heterotrophic Plate Counts	Monthly at 4 sites (48)	76	<10 CFU/mL	0	Results from Cairns Regional Council Water Laboratory
Kowanyama Water Supply	E. Coli	Weekly at 8 town sites	0	0 MPN/100ml	0	Results from in-house lab sampling. Note that in-house testing is currently not being undertaken.
Kowanyama Water Supply	Multiple chemical parameters, including metals, compounds, conductivity,	Quarterly at Bores 1 and 2 (New Bore 3 now also included)	2 full chemical tests at bores 1,2 and 3 2 full chemical tests at water reservoir 27 additional flouride test at bores and reservoir	various	1 fluoride sample from water reservoir (1.6mg/L on 08/06/21)	Flouride levels generally fluctuate around and sometimes exceed the NHMRC guideline of 1.5mg/L

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
	TDS, hardness and turbidity					
Kowanyama Water Supply	Chlorates and Trihalomethanes	6-Monthly at the Treatment Plant Outlet (tests are actually undertaken quarterly and includes an additional town site)	10	0.25mg/L THM level	0	No recordings of high THM's since last reporting year

Table 4. E. coli compliance with annual value

Drinking water scheme: Kowanyama Water Supply – E-Coli results from certified **laboratory** (excludes in-house testing)

Year	2020– 2021											
	Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
No. of samples collected	7	6	7	7	7	4	7	4	7	7	6	7
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	2	0	0	0
No. of samples collected in previous 12 month period (assumed)	6	6	6	6	6	8	7	9	3	7	3	6
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 5 – Incidents reported to the regulator

Incident date	Scheme / location	Parameter / issue	Preventive actions
8/6/21	Kowanyama Water Supply	High flouride level in town supply above NHMRC Guideline.	One incident of the blended bore water from the reservoir exceeded the 1.5mg/L guideline due to incorrect blending ratios, Corrected via SCADA control

7 DWQMP review outcomes

A review of the 2018 DWQMP was undertaken 11 September 2020 and submitted to the Regulator. The review found that changes to the current 2018 DWQMP were required due to the significant upgrades to the infrastructure that have occurred and are still occurring. An updated 2021 DWQMP has been submitted to the Regulator. A summary of the outcomes of the review and how issues/changes raised in the review, were actioned is provided in this section.

Table 7 – DWQMP review outcomes

Review Date: DD/MM/YY

Review component	Findings	Outcomes	Status of actions	Responsible Officer / Position
Service description	Service Provider contact details have changed	Update DWQMP	completed	Micheal Leslie, Essential Services Manager
Details of infrastructure	System description, infrastructure and controls have changed	Update DWQMP	completed	Micheal Leslie, Essential Services Manager
Water quality and catchment characteristics	New bore requires inclusion	Update DWQMP	completed	Micheal Leslie, Essential Services Manager
Risk assessment	Risk register requires updating	Update DWQMP	completed	Micheal Leslie, Essential Services Manager
Operations and maintenance procedures	Some procedures and practices require updating, new measuring equipment requires inclusion	Update DWQMP	completed	Micheal Leslie, Essential Services Manager
Management of incidents and emergencies	Emergency contacts and procedures to be updated	Update DWQMP	Contacts completed, staff training ongoing	Micheal Leslie, Essential Services Manager
Risk management improvement program	Requires review and updating	Review program and update DWQMP	completed	Micheal Leslie, Essential Services Manager
Service wide information management	Staff not using current versions of documents	Review all documents and update DWQMP	completed	Micheal Leslie, Essential Services Manager

Review component	Findings	Outcomes	Status of actions	Responsible Officer / Position
Operational monitoring	Requires updating to include new bore and new monitoring equipment. Monitoring equipment not being correctly calibrated	Update DWQMP and commence correct equipment calibration	DWQMP updated. Calibration to be undertaken	Micheal Leslie, Essential Services Manager
Verification monitoring	Bore 3 to be monitored, Flouride levels to have increased monitoring. Test locations require updating	DWQMP to be updated and revised monitoring to commence	DWQMP updated and revised monitoring program is on operation	Micheal Leslie, Essential Services Manager

8 DWQMP audit findings

The audit findings and any recommendations and/or opportunities for improvement (OFI), including how these were actioned are discussed below.

No audits were undertaken during the 2020/2021 reporting period.

The actions undertaken to address the audit recommendations are outlined in Table 8.

Table 8 – DWQMP audit findings and status

Item	Recommendation or OFI	Action	Status of actions	Responsible Officer / Position
Nil audits undertaken				