



Port of Townsville Limited

Drinking Water Quality Management Plan

Report 1 July 2022 to 30 June 2023

Service Provider Identification Number (SPID): 570

PORT Water Distribution Scheme

CONTENTS

1.	Introduction	2
2.	Overview of Operations	2
3.	Compliance with water quality criteria for drinking water.....	4
3.1	Appropriateness of Operational Monitoring Program	4
3.2	Appropriateness of Verification Monitoring Program	4
3.3	Risk Management Improvement Program (RMIP)	6
3.6	Incidents and complaints	6
4.	DWQMP review.....	7
5.	Acronyms and Glossary	18
	Table 1: Infrastructure Details	3
	Table 2: Risk management improvement program implementation status.....	6
	Table 3: Operational Program Monitoring Results 2022-23	8
	Table 4: E.coli Verification Monitoring Results 2022-23.....	9
	Table 5: Verification Program Monitoring Results 6 monthly 2022-23	10

Whilst Port of Townsville Limited (Port) has taken care in the preparation of all information, neither Port, any related body corporate of Port nor any of their officers, employees, consultants, advisors or agents gives any warranty, nor makes any representations (express or implied) as to the completeness, adequacy, suitability or accuracy of that information.

1. INTRODUCTION

This report documents the performance of Port of Townsville Limited's (Port) drinking water service with respect to water quality and performance in implementing the actions detailed in its drinking water quality management plan (DWQMP- 2 Feb 2023) as required under the *Water Supply (Safety and Reliability) Act 2008* (the Act). Port has been registered as a service provider under the *Water Supply (Safety and Reliability) Act 2008* (the Act) since 19 January 2015.

The report has been prepared in accordance with the *Guideline for the preparation, review and audit of drinking water quality management plans* by the Department of Regional Development, Manufacturing and Water (RDMW), which provides a mechanism for providers to report publicly on their performance in managing drinking water quality.

2. OVERVIEW OF OPERATIONS

Port is responsible for its on-site potable water distribution network within the Port of Townsville, namely the Port Water Distribution Scheme, which includes Port owned and maintained potable water distribution mains across Port owned lands. This distribution scheme only services Port owned buildings, lease held lands and facilities and the port berths for visiting ship connection.

The Port Water Distribution Scheme draws its drinking water supply from Townsville City Council's (TCC) reticulated supply through two metered supply points. Port does not store or have the capacity to treat potable water. Port has no influence over the quality of water distributed through its scheme and has no opportunity to treat water distributed through its scheme. Port relies solely on the municipal potable water supplier in providing potable water that meets all necessary standards and no recycled water or alternate potable water sources are distributed by Port within the Port of Townsville. The management of water quality, until it is supplied to Port of Townsville, is the responsibility of TCC. On a monthly basis, Port requests and is supplied with a summary Certificate of Analysis on the potable water quality at the nearest reservoir to the Port to confirm compliance with the ADWG. Port is committed to ensuring that the water scheme is managed so that the supply does not constitute a hazard to employees or the public.

Table 1 details the water source, treatment processes, disinfection processes and other infrastructure of the scheme along with the context of the supply in terms of current population and demand.

Table 1: Infrastructure Details

Component		Details
Name of Scheme		Port Water Distribution Scheme
Operator		Port of Townsville Limited
Sources	Name	Townsville City Council Municipal Water Supply
	Type	Treated Water Supply
	% of supply	100%
Sourcing Infrastructure	Type (pumped/gravity/equipped bore/etc.)	Supply Mains
	Description	The Port Water Distribution Scheme is supplied by two water mains from the TCC Municipal Water Supply. One 200mm pipeline services the Western area of the port and a second 300 mm pipeline services the Eastern area of the port.
Are there any sources that do not undergo treatment prior to supply?		No
Treatment Plant	Not applicable. The Port Water Distribution Scheme has no treatment plants. All treatment is performed by the TCC Municipal Water Supply prior to water entering the Port Water Distribution Scheme.	
Are there any sources that do not undergo disinfection prior to supply?		No
Disinfection	Not applicable. The Port Water Distribution Scheme has no disinfection processes. All disinfection is performed by the TCC Municipal Water Supply prior to water entering the Port Water Distribution Scheme.	
Distribution and Reticulation Scheme	Pipe material	Ductile Iron/Polyethylene, PVC, copper, galvanized and stainless steel.
	Age range	15~ 50 years
	Approximate percentage % of total length	60% @ 50 year 40% @ 15 year
	Areas where potential long detention periods could be expected	N/A
	Areas where low water pressure (example < 12 m) could be expected during peak or other demand periods)	N/A
	Communities served	Port of Townsville Workplaces
	Population served	approx. 600
	Connections	106
	Demand	approx. 550 kL/d
Reservoirs	Not applicable. The Port Water Distribution Scheme has no reservoirs. All water storage is performed by the TCC Municipal Water Supply prior to water entering the Port Water Distribution Scheme.	
Water Quality Responsibility Changes	Upstream location	Townsville City Council – bulk supplier
	Downstream location	None

3. COMPLIANCE WITH WATER QUALITY CRITERIA FOR DRINKING WATER

Tables 3, 4 and 5 provide a summary of the results of the operational and verification monitoring programs for the Port Water Distribution Scheme. Both monitoring programs were carried out as per the specifications stated in the DWQMP.

The results from the operational and verification monitoring programs have been compared against the levels of the water quality criteria specified by the Regulator in the *Water Quality and Reporting Guideline for a Drinking Water Service*. The water quality criteria means the health guideline values in the most current Australian Drinking Water Guidelines (ADWG), as well as the standards in the *Public Health Regulation 2018*.

The water quality results met the recommended values in the *E. coli* and fluoride standards and health guidelines in the ADWG.

It should be noted that the laboratory limit of reporting (LOR) for Selenium is the same as the guideline limit.

3.1 Appropriateness of Operational Monitoring Program

Port does not store or treat water in its Water Distribution Scheme. The only operational parameter under Port's control is residence time of water in its distribution scheme. Long residence times in the Port scheme may result in low disinfectant residuals, microbial growth or regrowth and high concentrations of contaminants due to leaching or corrosion of system materials. Residual chlorine remains a useful measure of the potential for microbial growth and residence time of water in a system.

In the DWQMP Operational Limits for Residual Chlorine are assigned as between 0.2 to 0.5 mg/L. During 2022/23 there were no results below 0.2 mg/L for the operational monitoring sites.

3.2 Appropriateness of Verification Monitoring Program

All parameters tested as part of the verification monitoring program met the ADWG. Port will continue to review the scope of testing and/or the frequency of testing for particular parameters as continual improvement and knowledge of risks improve through monitoring and understanding of Port water distribution scheme.

Port has monitored Polynuclear Aromatic Hydrocarbons since 2016 and the results during this period remain below the LOR. However, it is noted that only one parameter (Benzo(a)pyrene) has applicable drinking water guidelines. Previous testing was undertaken with the standard level analysis LOR for Benzo(a)pyrene (2 ug/l), which is higher than the guideline limit (0.01 ug/l). In 2018/19 Port identified a low-level laboratory test able to undertake analysis with a lower LOR (0.005 ug/l) which enabled comparison to the guideline limit of 0.01 ug/l. Port has undertaken this low-level analysis since the 2019/20 period which showed that PAH's were not present to this low concentration. Port will continue to test PAH using this low-level laboratory test then review whether to retain PAH analysis or not in the verification program in the next review of the DWQMP.

Berth monitoring (RMIP#8) action item was completed after the 2020 DWQMP review when annual testing of potable water at Berths was incorporated into the Verification Monitoring Program.

Annual monitoring was conducted in May 2023 at Berths 3, 4, 5, 9, and 10 for water that is provided to vessels. This sampling occurred directly from the outlet and then from the hose (attached to the outlet) following a short period of flushing. The results from the outlets and hoses met the ADWG guidelines for all parameters tested, including total metals, fluoride, nitrite, nitrate and *E-coli*.

The ADWG (amended August 2018) now includes health guidance values for PFOS (0.07 ug/l) and PFOA (0.56 ug/l). Port undertook PFAS sampling in November 2018 at the Operational monitoring sites under the DWQMP. Results showed for standard and TOPA analysis, that PFOS and PFOA was not detectable at any site. The results indicate that PFOS/PFOA is not present in the incoming water from TCC. No PFAS testing was conducted in 2022/23 and no further testing of PFAS is proposed at this time.

3.3 Risk Management Improvement Program (RMIP)

Table 2 details the status of the improvement actions as detailed in the DWQMP.

Table 2: Risk management improvement program implementation status

Action	Component	Improvement Actions	Target Date*	Status*	Updated status and revised target date	Responsible Parties
7	Drinking water supply to vessels	Upgrade backflow protection devices at key connection points on berths to ensure contaminants and pathogens are not introduced to distribution scheme.	30/03/2023	Procurement and commissioning	One of four water supply carts have been fitted with a back flow prevention valve and supporting information developed. Remaining three to be fitted by September 2024.	Manager Maintenance
13	Develop agreement between TCC & the Port	A recommendation from the 2020 DWQMP audit recognised the complex nature of infrastructure on Port land and suggested a specific agreement with TCC and the Port to clearly identify asset ownership where responsibility is shared and/or transferred.	30/09/2023	Port have contacted TCC to develop a customised agreement.	Undertaken updated ground survey of TCC and Port drinking water asset infrastructure. Custom agreement will be finalized with TCC in 2024 with updated GIS schematic.	Manager Maintenance Manager Climate & Environment

* As specified in DWQMP v5.1 dated 2/02/2023

3.6 Incidents and complaints

No incidents that affected water supply occurred in 2022/23.

No complaints were received about potable water during 2022/23.

4. DWQMP REVIEW

A review of the DWQMP was undertaken in September 2020 which incorporated audit findings (refer 5. DWQMP Audit). Revisions were made to the DWQMP and submitted to the RDMW with the DWQMP (revision 4) approval dated 4 June 2021.

The outcome of the 2020 review were reported in the 2020-2021 Annual Report.

A review was subsequently undertaken in September 2022. As the DWQMP was significantly reviewed and updated in 2021 (post the 2020 review and audit) and there were no changes to the drinking water network since the last update only minor updates were identified. Principally the review identified that the DWQMP needed minor updates to two tables (Table 10 and 12). The DWQMP was updated and submitted to the Department in November 2022. Following review by the Department a number of additional minor changes were requested and an updated DWQMP was submitted on 2nd February (version 5.1). This version was approved by the Department and is the current version of the DWQMP.

The first audit of Port's DWQMP was undertaken in September 2020 through engagement of Bligh Tanner who are Exemplar Global Drinking Water-Quality Management System certified auditors. The auditor submitted the report to the regulator on 18 September 2020. Revisions were made to the DWQMP and submitted to the RDMW with the DWQMP (revision 4) approval dated 4 June 2021.

The outcome of the 2020 audit were reported in the 2020-2021 Annual Report. The next audit is due in September 2024.

Table 3: Operational Program Monitoring Results 2022-23

Scheme Name		Port Water Distribution Scheme									
Scheme Component		Distribution									
Parameter	Units	Limit of reporting	Frequency of sampling	No. samples required to be collected per annum (as per approved DWQMP)	Total No. samples collected	Water Quality criteria (ADWG health guideline mg/L)	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
Residual Chlorine	mg/L	0.02	monthly	48	48	-	N/A	0.24	1.38	0.77	Field test

Table 5: Verification Program Monitoring Results 6 monthly 2022-23

Scheme Name		Port Water Distribution Scheme									
Scheme Component		Distribution									
Parameter	Units	Limit of reporting	Frequency of sampling	No. samples required to be collected per annum (as per approved DWQMP)	Total No. samples collected	Water Quality criteria (ADWG health guideline mg/L)	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
pH	pH unit	0.01	six-monthly /annually	12	18	-	N/A	7.44	7.69	7.60	ALS
Turbidity	NTU	0.1	six-monthly /annually	12	18	-	N/A	<0.10	2.0	0.62	ALS
Fluoride	mg/L	0.1	six-monthly /annually	12	18	1.5	0	0.1	0.80	0.53	ALS
Sulphate	mg/L	1	six-monthly /annually	12	18	-	N/A	<1.0	<1.0	<1.0	ALS
Chloride	mg/L	1	six-monthly /annually	12	18	-	N/A	18	24	19.61	ALS
Calcium	mg/L	1	six-monthly /annually	12	18	-	N/A	8	12	10.22	ALS

Scheme Name		Port Water Distribution Scheme									
Scheme Component		Distribution									
Parameter	Units	Limit of reporting	Frequency of sampling	No. samples required to be collected per annum (as per approved DWQMP)	Total No. samples collected	Water Quality criteria (ADWG health guideline mg/L)	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
Magnesium	mg/L	1	six-monthly	12	18	-	N/A	2	3	2.22	ALS
Potassium	mg/L	1	six-monthly	12	18	-	N/A	2	4	3	ALS
Sodium	mg/L	1	six-monthly /annually	12	18	-	N/A	17	21	18.56	ALS
Nitrite	mg/L	0.01	six-monthly /annually	12	18	3	0	<0.01	<0.01	<0.01	ALS
Nitrate	mg/L	0.01	six-monthly /annually	12	18	50	0	0.03	0.07	0.04	ALS
Aluminium (Total)	mg/L	0.01	six-monthly /annually	12	18	-	N/A	0.02	0.12	0.06	ALS
Antimony (Total)	mg/L	0.001	six-monthly /annually	12	18	0.003	0	<0.001	<0.001	<0.001	ALS

Scheme Name		Port Water Distribution Scheme									
Scheme Component		Distribution									
Parameter	Units	Limit of reporting	Frequency of sampling	No. samples required to be collected per annum (as per approved DWQMP)	Total No. samples collected	Water Quality criteria (ADWG health guideline mg/L)	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
Arsenic (Total)	mg/L	0.001	six-monthly /annually	12	18	0.01	0	<0.001	<0.002	<0.001	ALS
Barium (Total)	mg/L	0.001	six-monthly /annually	12	18	2	0	0.031	0.053	0.04	ALS
Boron (Total)	mg/L	0.05	six-monthly /annually	12	18	4	0	<0.05	0.05	<0.05	ALS
Cadmium (Total)	mg/L	0.0001	six-monthly /annually	12	18	0.002	0	<0.0001	<0.0001	<0.0001	ALS
Chromium (Total)	mg/L	0.001	six-monthly /annually	12	18	0.05	0	<0.001	<0.001	<0.001	ALS
Copper (Total)	mg/L	0.001	six-monthly /annually	12	18	2	0	0.001	0.156	0.02	ALS

Scheme Name		Port Water Distribution Scheme									
Scheme Component		Distribution									
Parameter	Units	Limit of reporting	Frequency of sampling	No. samples required to be collected per annum (as per approved DWQMP)	Total No. samples collected	Water Quality criteria (ADWG health guideline mg/L)	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
Iron (Total)	mg/L	0.05	six-monthly /annually	12	18	-	N/A	<0.05	<0.05	<0.05	ALS
Lead (Total)	mg/L	0.001	six-monthly /annually	12	18	0.01	0	<0.001	<0.001	<0.001	ALS
Manganese (Total)	mg/L	0.001	six-monthly /annually	12	18	0.5	0	<0.001	0.057	0.01	ALS
Molybdenum (Total)	mg/L	0.001	six-monthly /annually	12	18	0.05	0	<0.001	<0.001	<0.001	ALS
Nickel (Total)	mg/L	0.001	six-monthly /annually	12	18	0.02	0	<0.001	<0.001	<0.001	ALS
Selenium (Total)	mg/L	0.01	six-monthly /annually	12	18	0.01	0	<0.01	<0.01	<0.01	ALS

Scheme Name		Port Water Distribution Scheme									
Scheme Component		Distribution									
Parameter	Units	Limit of reporting	Frequency of sampling	No. samples required to be collected per annum (as per approved DWQMP)	Total No. samples collected	Water Quality criteria (ADWG health guideline mg/L)	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
Silver (Total)	mg/L	0.001	six-monthly /annually	12	18	0.1	0	<0.001	<0.001	<0.001	ALS
Uranium (Total)	mg/L	0.001	six-monthly /annually	12	18	0.017	0	<0.001	<0.001	<0.001	ALS
Zinc (Total)	mg/L	0.005	six-monthly /annually	12	18	-	N/A	<0.005	0.014	0.01	ALS
Mercury (Total)	mg/L	0.0001	six-monthly /annually	12	18	0.001	0	<0.0001	<0.0001	<0.0001	ALS
Acenaphthene	µg/L	0.02	six-monthly /annually	12	18	-	N/A	<0.02	<0.02	<0.02	ALS
Acenaphthylene	µg/L	0.02	six-monthly /annually	12	18	-	N/A	<0.02	<0.02	<0.02	ALS

Scheme Name		Port Water Distribution Scheme									
Scheme Component		Distribution									
Parameter	Units	Limit of reporting	Frequency of sampling	No. samples required to be collected per annum (as per approved DWQMP)	Total No. samples collected	Water Quality criteria (ADWG health guideline mg/L)	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
Anthracene	µg/L	0.02	six-monthly /annually	12	18	-	N/A	<0.02	<0.02	<0.02	ALS
Benz(a)anthracene	µg/L	0.02	six-monthly /annually	12	18	-	N/A	<0.02	<0.02	<0.02	ALS
Benzo(a)pyrene	µg/L	0.005	six-monthly /annually	12	18	0.01	0	<0.005	<0.005	<0.005	ALS
Benzo(a)pyrene TEQ (zero)	µg/L	0.005	six-monthly /annually	12	18	-	N/A	<0.005	<0.005	<0.005	ALS
Benzo(b+j) & Benzo(k)fluoranthene	µg/L	0.02	six-monthly /annually	12	18	-	N/A	<0.02	<0.02	<0.02	ALS
Benzo(g,h,i)perylene	µg/L	0.02	six-monthly /annually	12	18	-	N/A	<0.02	<0.02	<0.02	ALS

Scheme Name		Port Water Distribution Scheme									
Scheme Component		Distribution									
Parameter	Units	Limit of reporting	Frequency of sampling	No. samples required to be collected per annum (as per approved DWQMP)	Total No. samples collected	Water Quality criteria (ADWG health guideline mg/L)	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
Chrysene	µg/L	0.02	six-monthly /annually	12	18	-	N/A	<0.02	<0.02	<0.02	ALS
Dibenz(a.h)anthracene	µg/L	0.02	six-monthly /annually	12	18	-	N/A	<0.02	<0.02	<0.02	ALS
Fluoranthene	µg/L	0.02	six-monthly /annually	12	18	-	N/A	<0.02	<0.02	<0.02	ALS
Fluorene	µg/L	0.02	six-monthly /annually	12	18	-	N/A	<0.02	<0.02	<0.02	ALS
Indeno(1.2.3.cd)pyrene	µg/L	0.02	six-monthly /annually	12	18	-	N/A	<0.02	<0.02	<0.02	ALS
Naphthalene	µg/L	0.02	six-monthly /annually	12	18	-	N/A	<0.02	0.15	<0.02	ALS

Scheme Name		Port Water Distribution Scheme									
Scheme Component		Distribution									
Parameter	Units	Limit of reporting	Frequency of sampling	No. samples required to be collected per annum (as per approved DWQMP)	Total No. samples collected	Water Quality criteria (ADWG health guideline mg/L)	No. of samples exceeding water quality criteria	Min	Max	Average (Mean)	Laboratory name
Phenanthrene	µg/L	0.02	six-monthly /annually	12	18	-	N/A	<0.02	<0.02	<0.02	ALS
Pyrene	µg/L	0.02	six-monthly /annually	12	18	-	N/A	<0.02	<0.02	<0.02	ALS
Sum of polycyclic aromatic hydrocarbons	µg/L	0.005	six-monthly /annually	12	18	-	N/A	<0.005	0.15	<0.005	ALS

Note: “-“ indicates that no guideline value is specified.

5. ACRONYMS AND GLOSSARY

ADWG	Australian Drinking Water Guidelines
ALS	Australian Laboratory Services
CFU/100ml	Colony forming units per 100 millilitres
DNRME	Department of National Resources, Mines and Energy
<i>E. coli</i>	<i>Escherichia coli</i> , a bacterium which is considered to indicate the presence of faecal contamination and therefore potential health risk
LOR	Limit of Reporting
mg/L	Milligrams per litre
NTU	Nephelometric Turbidity Units
org/100ml	Organisms per 100 millilitres
Port	Port of Townsville Limited
TCC	Townsville City Council
<	Less than