ROTTNEST ISLAND AUTHORITY

PROGRAMMED

Quarterly Drinking Water Report to the Department of Health

1 January – 31 March 2025

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Contents

1. Water Provider Information

Rottnest Island Authority Contact Details	
Name of Company	Rottnest Island Authority
Company Address	1 Mews Road, Fremantle WA 6160
Company Phone	**Ph.** (08) 9432 9300
Company Website	www.rottnestisland.com
Company Email	enquiries@rottnestisland.com
Executive Director	Jason Banks
Director Environment Heritage and Parks	Arvid Hogstrom
Director Infrastructure	Martin Marerwa
Manager Approvals and Compliance	Rebecca Gabbitus
Environmental Compliance Officer (PFM)	Jay Petterwood

1.1 System Information

1.1.1 Consumers

The water demand on Wadjemup / Rottnest Island fluctuates with tenancy and follows a highly seasonal pattern, peaking in summer and decreasing in winter. In January 2025, ferry visitor numbers reached 126,251, followed by 80,629 in February 2025, with a total of 92,256 visitors recorded in March 2025.

The number of beds on Rottnest Island for guests is approximately 4,362 with the average length of stay being 2 nights. In addition to this, there are approximately 150 permanent residents on Wadjemup / Rottnest Island, which also fluctuates in accordance with high and low seasons.

1.1.2 Distribution System & Water Supply

The Rottnest Island water distribution system is a relatively small network comprising approximately 22 km of mains. Water supply for the island is sourced from six saline bores within the Longreach Borefield. The abstracted seawater is directed to the desalination plant, where it undergoes reverse osmosis (RO) treatment. Following desalination, the water is disinfected through a dual chlorination system, ensuring the provision of safe drinking water to consumers on the island.

The water demand on Rottnest Island is becoming more consistent throughout the year with reduced seasonal variability. Monthly consumption can range from approximately 14,000kL in July to 24,000kL in December.

Consumption levels for January 2025 were 22,722 kL, with 18,195 kL in February 2025 and 20,535 kL in March 2025.

Rottnest Island has a combined potable water storage capacity of 14,000 kL, providing approximately 18 days of supply at full capacity. Water security is managed to maintain a minimum of twelve days storage during peak periods. Trains 1 and 2 within the existing desalination plant are nearing end-of-life and are currently undergoing refurbishment. While the desalination plant has a theoretical maximum production capacity of 910 kL per day with Trains 1, 2, and 4 operational, production is currently limited to approximately 750 kL per day due to operational constraints at the Borefield, allowing only either Train 1 or Train 2 to operate alongside Train 4.

The RIA has appointed a contractor to deliver two new 500 kL/day seawater reverse osmosis desalination trains as part of a major plant upgrade. The scope of works has since been expanded to meet Water Corporation water quality requirements, which required a redesign of the plant infrastructure. Additional funding will need to be secured to achieve compliance with these standards. Design works are ongoing, with construction subject to funding approvals and planned to align with the island's future peak demand periods.

Remote locations outside the main settlement, such as the outer island ablutions, Wadjemup Lighthouse and surrounding area, are supplied with water via a tanker. The supplied water in these areas is deemed not suitable for drinking and warning signs are posted accordingly.

Figure 1 Example of Public Signage

1.1.3 Sampling Schedule & Procedure

Potable water sampling is carried out in accordance with the Australian Drinking Water Guidelines (ADWG) and is scheduled in accordance with the Rottnest Island *Drinking Water Quality Risk Management Plan* dated November 2022.

To respond to emerging trends, and to further ensure the safety of the drinking water quality, further monitoring or adjustment of the schedule can occur in response to:

- Risk assessment;
- New information or industry best practice;
- Guidance or specialist recommendations from Government Departments; or
- Post incident.

In addition to the sampling regime presented in the *Drinking Water Quality Risk Management Plan* (2022), the Rottnest Island Authority (RIA) are additionally testing:

- Tanks 4 and 7, however, the data does not form part of the statistical data required for analysis in this quarterly report.
- Drinking water fountains, as recommended by the Department of Health (DoH) in 2017.
- Bromate, following testing for additional minerals and metals in 2017. Bromate was identified, and weekly sampling occurs to monitor the results.

2. Performance Summary

Summary of Water Quality results compared to the ADWG January - March 2025			
Parameters	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**No. of ADWG exceedance events**
Microbial			
Bacterial (*E.coli*)	65[1]	65	0
Amoeba (Thermophilic *Naegleria)*	32[2]	32	0
Chemical & Physical			
Health	346[3]	346	0
Aesthetic	423[4]	306	117
Radiological[5]			
Gross Alpha	0	NA	NA
Gross Beta	0	NA	NA
PFAS[6]			
PFOS & PFHxS	0	NA	NA
PFOA	0	NA	NA

[1] This number does not include Tank 4 & 7

[2] Ibid

[3] Ibid

[4] Ibid

[5] Not taken this reporting period

[6] Not taken this reporting period

3. Microbial Performance

During the January - March 2025 reporting period, there were no reported exceedances of microbiological parameters compared against the ADWG in the potable water distribution system.

Section 3.1 presents an overall compliance summary for all microbial-related sample analyses.

3.1 Microbial – Compliance Summary

Rottnest Island Distribution System January - March 2025				
Microbial Characteristic	**Memorandum of Understanding Compliance Criteria**	**No. of Analyses**	**No. of Analyses Complying with Memorandum of Understanding**	**% Compliance**
Bacterial				
E.coli	Non-Detect	65	65	100%
Amoeba				
Thermophilic *Naegleria*	Non-Detect	32	32	100%

4. Chemical: Health Related Performance

During the January–March 2025 reporting period, no exceedances of the chemical health parameters outlined in the ADWG were recorded for the potable water distribution system.

Section 4.1 presents an overall compliance summary for all chemical health-related sample analyses.

4.1 Chemical: Health Related – Compliance Summary

Rottnest Island Distribution System January - March 2025					
Health Parameter	**ADWG Compliance Criteria (mg/L)**	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**% Compliance with ADWG**	**Max Value of Analysis (mg/L)**
Antimony (Sb)	0.003	27	27	100%	< 0.001
Bromate ($BrO3^-$)	0.02	108	108	100%	0.014
Chlorine Total (Cl2) *(in house testing Total Residual)*	5	117	117	100%	1.54
Copper (Cu)	2	4	4	100%	0.064
Fluoride (F)	1.5	36	36	100%	0.20
Lead (Pb)	0.01	4	4	100%	< 0.001
Nickel (Ni)	0.02	4	4	100%	< 0.001
Nitrate ($NO3^-$)	50	4	4	100%	< 0.001
Nitrite ($NO2^-$)	3	12	12	100%	< 0.01
Trihalomethanes (THMs)	0.25	12	12	100%	0.0053

5. Chemical: Aesthetic Performance

During the January – March 2025 reporting period, there were 117 sample exceedances of chemical aesthetic parameters in the potable water distribution system, the details of which are outlined in Section 5.2.

5.1 Chemical: Aesthetic - Compliance Summary

Rottnest Island Distribution System January - March 2025					
Aesthetic Parameter	**ADWG (mg/L unless stated)**	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**% Compliance with ADWG**	**Max Value of Analysis (mg/L)**
Aluminium (Al)	0.2	3	3	100%	< 0.05
Ammonia (NH3)	0.5	11	11	100%	< 0.02
Chloride (Cl^-)	250	1	1	100%	82
Chlorine Free Residual (Cl) *(in house testing)*	0.6	117	0	0%	1.66
Colour	15 (HU)	7	7	100%	< 5
Hardness (CaCO3)	200	1	1	100%	17
Hydrogen Sulphide	0.05	4	4	100%	< 0.05
Iron (Fe)	0.3	27	27	100%	0.2
pH	6.5 – 8.5	117	117	100%	7.18, 8.48[7]
Sodium (Na)	180	116	116	100%	69
Sulphate	250	0	0	N/A	N/A
TDS	600	0	0	N/A	N/A
Turbidity	5 (NTU)	11	11	100%	0.40 (NTU)
Zinc (Zn)	3	8	8	100%	0.038

[7] The two numbers represent the lowest and the highest pH values measured respectively.

5.2 Chemical: Aesthetic – Incident Specific Information

- **Chlorine (free):** During this reporting period, all 117 recorded samples exceeded the ADWG aesthetic limit of 0.6 mg/L for chlorine.

  The ADWG establishes an aesthetic odour threshold of 0.6 mg/L; however, these exceedances do not pose any health risks, as all values remained well below the health guideline limit of 5.0 mg/L.

  Aesthetic exceedances were observed across multiple distribution sampling points over the three-month period, with a maximum recorded concentration of 1.66 mg/L at R12/005 on 25 March 2025.

  While higher chlorine concentrations may affect the aesthetic quality of drinking water, maintaining adequate disinfection is essential to ensuring its safety.

6. Radiological Performance

No radiological water quality samples were collected during this reporting period.

7. PFAS Performance

No PFAS water quality samples were collected during this reporting period.

8. Planned Sample Summary

During the January–March 2025 reporting period, routine monitoring was conducted in accordance with the planned sampling schedule for microbial, chemical, and radiological parameters, with a total of 561 samples collected. A summary of sample numbers and compliance with the sampling program is provided in Section 8.1.

8.1 Planned Sample – Compliance Summary

Planned Samples January - March 2025								
Microbial			Chemical			Radiological		
Planned[8]	Taken[9]	% Taken	Planned	Taken	% Taken	Planned	Taken	% Taken
194	194	100%	363	346	95%	0	0	NA

8.2 Planned Sample - Exception Notifications

During the reporting period, 346 of the 363 planned chemical samples were collected, resulting in a completion rate of 95%. The discrepancy was due to the laboratory providing an incorrect number and type of sample bottles, which did not align with the sampling schedule issued. This misalignment affected the ability to collect all scheduled samples during certain weeks. The laboratory has been advised of the issue and will review its dispatch and chain of custody processes to ensure future bottle supplies meet the specific sampling requirements.

9. Customer Complaints

There were no customer complaints relating to drinking water quality performance during this reporting period. RIA has a Utilities Customer Complaint Procedure, which outlines how complaints can be submitted.

[8] A planned sample is defined as being included in the sampling schedule for this reporting period.

[9] A taken sample is the physical sample taken for this reporting period.

10. Comments

10.1 Bromate Management

The RIA continues to actively monitor and manage bromate formation across the distribution network, in line with the decisions made during the Quarterly Meeting held on 26 September 2019 between the RIA, PFM, and the Department of Health (DoH). To ensure water quality, bromate levels are tested weekly at the following locations: R12/001 - R12/008, Fays Bay, Tank 4, and Homestead. Additionally, bromide levels are monitored weekly at Tank 7 to support effective management of bromate formation.

10.2 Drinking Fountain Monitoring Initiative

The RIA initiated a drinking fountain monitoring program in December 2017, following a recommendation from the DoH. The findings from this sampling program played a key role in supporting the island's drinking fountain replacement project, which involved the replacement of all existing drinking fountains and the installation of new facilities throughout the settlement.

The drinking fountain monitoring program and its sampling results are reported separately from the broader distribution system or network. The results for the January - March 2025 quarter are provided in the table below. Sampling of the drinking fountains occurs on a four-week cycle. During this reporting period, there were no exceedance events recorded.

Rottnest Island Drinking Fountain January - March 2025					
Health Characteristic	**ADWG (mg/L)**	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**% Compliance with ADWG**	**Max Value of Analysis (mg/L)**
Antimony (Sb)	0.003	72	72	100%	< 0.001
Cadmium (Cd)	0.002	72	72	100%	< 0.0001
Copper (Cu)	2	72	72	100%	0.190
Lead (Pb)	0.010	72	72	100%	0.006
Nickel (Ni)	0.020	72	72	100%	0.010
Aesthetic Characteristic	**ADWG (mg/L)**	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**% Compliance with ADWG**	**Max Value of Analysis (mg/L)**
Zinc (Zn)	3	72	72	100%	0.150

10.2.1 Drink Fountain Exemption Notifications

There were no exceedance events during the reporting period.

10.3 Ad Hoc Monitoring

Ad hoc water quality samples were collected on 14 March 2025 at locations R12-001, Tank 4 and Tank 7 following a prolonged dry period and subsequent rainfall event. This sampling was conducted as per an agreement with DoH to ensure water quality in Tank 7 is maintained. To assess any potential impact on water quality, samples were taken for microbiological analysis, including Heterotrophic Plate Count (HPC), Total Coliforms, Faecal Coliforms, and *E. coli*. All results returned within the acceptable limits outlined in the ADWG, indicating no microbiological contamination was present at the time of sampling.

10.4 Other Sampling

10.4.1 Homestead

PFM initiated monthly sampling of a 3 kL potable water storage tank at the Rottnest Island Homestead shortly after its installation in November 2022. In February 2024, this tank was replaced with a larger 50 kL tank, which is directly supplied by the pressurised water main. The new tank is now sampled weekly for bromate levels and monthly for microbiological indicators to ensure water quality is maintained.

During the reporting period, two bromate exceedance events were recorded, with the ADWG limit for bromate set at 0.020 mg/L. The exceedances occurred on:

- 25 February 2025: Bromate level of 0.021 mg/L
- 4 March 2025: Bromate level of 0.024 mg/L.

Due to laboratory processing timeframes, the result for 25 February was only received after the 4 March sample had already been collected. In response, PFM implemented mitigation measures in accordance with *Protocol 10 – Chemical Exceedances*, including stakeholder management notification and targeted flushing. These actions addressed both exceedances, with subsequent monitoring confirming a return to ADWG-compliant bromate levels. The event was formally closed out on 25 March 2025.