



**Quarterly Drinking Water Report
to the
Department of Health**

1 April – 30 June 2024





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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.rotnnestisland.com
Company Email	enquiries@rotnnestisland.com
Executive Director	Jason Banks
Director Environment Heritage and Parks	Arvid Hogstrom
Director Infrastructure	Martin Marerwa
Manager Environment and Compliance	Rebecca Gabbitus
Quality and Compliance Officer (PFM)	Jason Vogel

1.1 System Information

1.1.1 Consumers

The water demand on Wadjemup / Rottnest Island is related to tenancy and is highly seasonal, being low in winter and high in summer. During the 2023-2024 reporting period there were 823,403 visitors to the Island.

A total of 80,274 ferry visitor numbers were recorded for April 2024, 47,502 for May 2024 and 35, 486 for June 2024.

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 distribution system is relatively small, consisting of approximately 22 km of mains. Water is supplied by six saline (seawater) bores located in the Longreach Borefield. Water abstracted from the saline bores feed into the desalination plant, where reverse osmosis (RO) occurs. Desalinated water is then disinfected through a dual chlorination system, which ensures the provision of safe drinking water to Rottnest Island customers.

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 April 2024 were 19,927 kL, with 16,112 kL in May 2024 and 12,839 kL in June 2024. During the summer months an additional RO train is used to provide more potable water.

Rottnest Island has a combined storage capacity of 14,000 kL, which provides approximately 18 days of potable water storage at full capacity, however, water security is targeted at a minimum of seven days storage during peak periods. At the time of reporting two trains in the desalination plant are nearing the end of life. Trains 1 and 2 are being refurbished and with the new Train 4 in operation the three RO trains are capable of producing 910 kL of potable water per day. The RIA is proposing to appoint a contractor to upgrade the existing desalination plant with two new 500 m³/day SWRO desalination trains. It is expected this work will be completed by the end of 2025. 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			
April - June 2024			
Parameters	No. of Analyses	No. of Analyses Complying with ADWG	No. of ADWG exceedance events
Microbial			
Bacterial (<i>E.coli</i>)	53 ¹	53	0
Amoeba (Thermophilic <i>Naegleria</i>)	21 ²	21	0
Chemical & Physical			
Health	274 ³	274	0
Aesthetic	338 ⁴	238	100
Radiological⁵			
Gross Alpha	0	NA	NA
Gross Beta	0	NA	NA
PFAS			
PFOS & PFHxS	2	2	0
PFOA	2	2	0

¹ This number does not include Tank 7

² Ibid

³ Ibid

⁴ Ibid

⁵ Not taken this reporting period



3. Microbial Performance

During the April - June 2024 reporting period, there were no reported exceedances of microbiological parameters compared against the ADWG in the potable water distribution system.

3.1 Microbial – Compliance Summary

Rottnest Island Distribution System April - June 2024				
Microbial Characteristic	Memorandum of Understanding Compliance Criteria	No. of Analyses	No. of Analyses Complying with Memorandum of Understanding	% Compliance
Bacterial				
<i>E.coli</i>	Non-Detect	53	53	100%
Amoeba				
Thermophilic <i>Naegleria</i>	Non-Detect	21	21	100%

4. Chemical: Health Related Performance

During the April - June 2024 reporting period no results reported in exceedance of the chemical health parameters outlined in the ADWG in the potable water distribution system, the details of which are outlined in Section 4.3.

4.1 Chemical: Health Related – Compliance Summary

Rottnest Island Distribution System April - June 2024					
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	22	22	100%	< 0.001
Bromate (BrO ₃ ⁻)	0.02	95	95	100%	0.015
Chlorine Total (Cl ₂) <i>(in house testing Total Residual)</i>	5	101	101	100%	1.65
Copper (Cu)	2	4	4	100%	0.012
Fluoride (F)	1.5	22	22	100%	0.20
Lead (Pb)	0.01	4	4	100%	< 0.001
Nickel (Ni)	0.02	4	4	100%	< 0.001
Nitrate (NO ₃ ⁻)	50	4	4	100%	0.020
Nitrite (NO ₂ ⁻)	3	9	9	100%	< 0.01
Trihalomethanes (THMs)	0.25	9	9	100%	0.013

4.2 Chemical: Health Related – Exception Notifications

Nothing to report.

4.3 Chemical: Health Related Incident Specific Information

Nothing to report.

5. Chemical: Aesthetic Performance

5.1 Chemical: Aesthetic - Compliance Summary

During the April - June 2024 reporting period, there were 100 sample exceedances of chemical aesthetic parameters in the potable water distribution system, the details of which are outlined in Section 5.2.

Rottneest Island Distribution System April - June 2024					
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	1	1	100%	< 0.05
Ammonia (NH ₃)	0.5	9	9	100%	< 0.02
Chloride (Cl ⁻)	250	1	1	100%	96
Chlorine Free Residual (Cl) <i>(in house testing)</i>	0.6	98	0	0%	1.58
Colour	15 (HU)	7	7	100%	< 5
Hardness (CaCO ₃)	200	1	1	100%	13
Hydrogen Sulphide	0.05	4	4	100%	< 0.05
Iron (Fe)	0.3	22	20	91%	0.57
pH	6.5 – 8.5	95	95	100%	6.75, 8.46 ⁶
Sodium (Na)	180	87	87	100%	74
Sulphate	250	1	1	100%	1.70
TDS	600	1	1	100%	200
Turbidity	5 (NTU)	7	7	100%	0.6 (NTU)
Zinc (Zn)	3	4	4	100%	0.037

⁶ 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, 98 out of 98 recorded samples were reported with chlorine values above the ADWG aesthetic limit of 0.6 mg/L.

The ADWG state that chlorine has an aesthetic odour threshold of 0.6 mg/L, however, the reported concentrations exceeding this threshold do not pose any health risks, as all values are below the specific health guideline value of 5.0 mg/L.

The aesthetic exceedances were reported across multiple distribution sampling points over the three-month period. All results were reported well below the health limit, with the maximum value of 1.58 mg/L reported at R12-002 (Longreach) on 30 April 2024.

Whilst impacts to the aesthetic quality of drinking water may occur due to greater concentrations of chlorine, it is important to note that adequate disinfection is paramount for the provision of safe drinking water.

- **Iron:** There were two values in exceedance of the ADWG aesthetic limit of 0.30 mg/L. No health limit is currently available in the ADWG. The exceedances were recorded at the following dates and locations:
 - 9 April 2024: 0.57 mg/L at R12-008
 - 7 May 2024: 0.46 mg/L at R12-008



6. Radiological Performance

No samples were taken during the reporting period. Radiological performance sampling is undertaken once annually and is next due in October 2024.



7. PFAS Performance

Annual sampling for perfluoroalkyl sulfonamido substances took place on 28 May 2024 at R12-002 (Longreach) and R12-008 (Nursery). Results are reported as summations of Perfluorohexanesulphonic acid (PFHxS) + Perfluorooctanesulfonic acid (PFOS) and PFOS and Perfluorooctanoic acid (PFOA). No results reported above the limit of detection of 0.01 µg/L.



8. Planned Sample Summary

8.1 Planned Sample – Compliance Summary

Planned Samples April - June 2024								
Microbial			Chemical			Radiological		
Planned ⁷	Taken ⁸	% Taken	Planned	Taken	% Taken	Planned	Taken	% Taken
160	148	93%	643	612	95%	0	0	NA

8.2 Planned Sample - Exception Notifications

Both samples to test for thermophilic amoebae and thermophilic naegleria were missed on 18 June 2024 due to human error as they were not properly packaged for transport. The rest of the missing samples were all for sample point R12-007 (Geordie Bay). On 16 April 2024 renovation and demolition work commenced at Geordie Bay preventing access to the R12-007 water sampling point. Access was restored on 25 June 2024. During that time all weekly samples were missed including all microbiological, bromate, chlorine and pH.

⁷ A planned sample is defined as being included in the sampling schedule for this reporting period.

⁸ A taken sample is the physical sample taken for this reporting period.



9. Customer Complaints

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

10. Comments

10.1 Bromate Management

The RIA continues to monitor and manage bromate formation across the distribution network based on the decision from the Quarterly Meeting held between the RIA, PFM and DoH on 26 September 2019. Bromate is tested weekly at locations R12/001 – R12/008, Tank 4 and the Homestead. Bromide is tested weekly at Tank 7.

Previous investigations into bromate exceedances have concluded that prolonged retention of chlorinated water increases bromate concentration. The Homestead is at the furthest limit of the distribution network so the water that arrives there has had a relatively long retention time in the pipework. Previously the Homestead was connected to the gravity water distribution system; however, the supply has been upgraded to now connect to the pressurised system reducing the retention time in pipe.

10.2 Drinking Fountain Monitoring Initiative

The RIA commenced a drinking fountain monitoring initiative in December 2017 following a recommendation from DoH. Results obtained from the sampling program supported the island's drinking fountain replacement project, which included the replacement of all existing drinking fountains and the addition of new amenities around the settlement.

The drinking fountain monitoring program and sampling results are reported separately to the distribution system or network. The drinking fountain results are represented in the below table for the April - June 2024 quarter. Drinking fountain sampling occurs once every four weeks. There was one exceedance event reported this period. There was an exceedance in zinc reported at the Barracks fountain, see section 10.2.1 for further details.

Rottnest Island Drinking Fountain April - June 2024					
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	82	82	100%	< 0.001
Cadmium (Cd)	0.002	82	82	100%	< 0.0001
Copper (Cu)	2	82	82	100%	0.280
Lead (Pb)	0.010	82	82	100%	0.006
Nickel (Ni)	0.02	82	82	100%	0.016
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	82	81	99%	9.400



10.2.1 Drink Fountain Exemption Notifications

There was one value in exceedance for zinc reported in the first flush from the Barracks (Kingstown Barracks Parade Ground) drink fountain on 30 April 2024 at 9.40 mg/L against the ADWG aesthetic limit of 3 mg/L. The second flush reported a zinc concentration of 0.0270 mg/L. Subsequent sampling on 28 May 2024 from the same drink fountain returned a zinc concentration of 0.024 mg/L in the first flush and 0.016 mg/L in the second flush, both below the 3.0 mg/L aesthetic limit.

10.3 Ad Hoc Monitoring

There was no ad-hoc monitoring of the drinking water network during the reporting period.

10.4 Other Sampling

10.4.1 Homestead

PFM commenced monthly sampling of a potable water storage tank installed at the Rottnest Island Homestead Staff Accommodation shortly after its installation in November 2022. Currently the Homestead water tank is sampled weekly for bromate and monthly for microbiological parameters.

During the reporting period there were no exceedances in bromate or microbiological parameters.