ROTTNEST ISLAND AUTHORITY

PROGRAMMED

Quarterly Drinking Water Report to the Department of Health

1 April – 30 June 2025

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Contents

1. Water Provider Information

Rottnest Island Authority Contact Details	
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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

Water demand on Wadjemup / Rottnest Island is highly seasonal, reflecting fluctuations in visitor numbers and accommodation occupancy. Peak demand occurs during the summer months, with lower consumption during winter. In April 2025, ferry arrivals reached 94,806 visitors, with 49,882 in March and 37,017 in June.

The Island offers approximately 4,362 guest beds, with an average visitor stay of two nights. During the April–June 2025 reporting period, an additional 50 beds were temporarily allocated for the workers' camp associated with the Longreach and Fays Bay Accommodation Refurbishment Project. Further accommodation expansions are anticipated by the end of July but fall outside the current reporting period.

The Island also maintains a fluctuating population of around 150 permanent residents, which varies in response to seasonal demand.

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 14,000 kL in July to 24,000kL in December. Consumption levels for April 2025 were 23,822 kL, with 17,833 kL in May 2025 and 14,552 kL in June 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 and will include the MMF filtration as well as the second pass train.

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 quality monitoring on Rottnest Island is conducted in line with the Australian Drinking Water Guidelines (ADWG) and follows the sampling schedule outlined in the Rottnest Island Drinking Water Quality Risk Management Plan (November 2022).

All sampling, reporting, and compliance assessments are based on the ADWG Version 3.7 as per direction from Department of Health (DoH).

The monitoring program is adaptable and may be revised in response to:

- Updated risk assessments;
- Emerging industry trends or best practice;
- Guidance or specialist recommendations from Government Departments; and
- Incident investigations or post incident reviews.

In addition to routine sampling under the 2022 risk management plan, RIA also undertakes targeted monitoring of:

- 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 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 2025			
Parameters	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**No. of ADWG exceedance events**
Microbial			
Bacterial (*E.coli*)	61[1]	61	0
Amoeba (Thermophilic *Naegleria)*	25[2]	25	0
Chemical & Physical			
Health	300[3]	297	3

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

[2] Ibid

[3] Ibid

Aesthetic	382[4]	272	110
Radiological[5]			
Gross Alpha	0	NA	NA
Gross Beta	0	NA	NA
PFAS[6]			
PFOS & PFHxS	1	1	0
PFOA	1	1	0

3. Microbial Performance

During the April - June 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 April – June 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	61	61	100%
Amoeba				
Thermophilic *Naegleria*	Non-Detect	25	25	100%

[4] Ibid

[5] Not taken this reporting period

[6] Only one sample collected due to site inaccessibility during the Longreach and Fays Bay Accommodation Refurbishment Project.

4. Chemical: Health Related Performance

During the April – June 2025 reporting period, there were 3 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 April - June 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	24	24	100%	< 0.001
Bromate ($BrO3^-$)	0.02	108	105	97%	0.025
Chlorine Total (Cl2) *(in house testing Total Residual)*	5	108	108	100%	1.54
Copper (Cu)	2	3	3	100%	0.085
Fluoride (F)	1.5	25	25	100%	0.30
Lead (Pb)	0.01	3	3	100%	< 0.001
Nickel (Ni)	0.02	3	3	100%	< 0.001
Nitrate ($NO3^-$)	50	3	3	100%	< 0.001
Nitrite ($NO2^-$)	3	11	11	100%	< 0.01
Trihalomethanes (THMs)	0.25	12	12	100%	0.0067

5.2 Chemical: Aesthetic – Incident Specific Information

- **Bromate**: On 06/05/2025, three samples collected from different locations exceeded the ADWG health guideline limit of 0.02 mg/L for bromate. The exceedances were investigated, including repeat sampling of the distribution system, which did not detect any exceedances. It is suspected that the initial results may have been due to a laboratory error. No ongoing exceedances have been identified since.

5. Chemical: Aesthetic Performance

During the April – June 2025 reporting period, there were 108 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 April – June 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%	0.07
Chloride (Cl^-)	250	1	1	100%	96
Free Chlorine (Cl) *(in house testing)*	0.6	108	0	0%	1.68
Colour	15 (HU)	5	5	100%	< 5
Hardness (CaCO3)	200	1	1	100%	11
Hydrogen Sulphide	0.05	4	4	100%	< 0.05
Iron (Fe)	0.3	24	24	100%	0.29
pH	6.5 – 8.5	108	108	100%	6.99, 7.53[7]
Sodium (Na)	180	108	108	100%	89
Sulphate	250	1	1	100%	1.9
TDS	600	1	1	100%	220
Turbidity	5 (NTU)	5	5	100%	0.20 (NTU)
Zinc (Zn)	3	3	3	100%	0.059

[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 108 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 1.68 mg/L at R12/008 on 8 April 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

During the April – June 2025 reporting period, there were no sample exceedances of chemical PFAS parameters in the potable water distribution system, the details of which are outlined in Section 7.1.

7.1 Chemical: PFAS – Compliance Summary

Rottnest Island Distribution System April - June 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)**
PFOS & PFHxS	0.07	1[8]	1	100%	< 0.01
PFOA	0.56	1	1	100%	< 0.01

[8] Only one sample collected due to site inaccessibility during the Longreach and Fays Bay Accommodation Refurbishment Project.

8. Planned Sample Summary

During the April – June 2025 reporting period, routine monitoring was conducted in accordance with the planned sampling schedule for microbial, chemical, and radiological parameters, with a total of 472 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 April – June 2025								
Microbial			Chemical			Radiological		
Planned[9]	Taken[10]	% Taken	Planned	Taken	% Taken	Planned	Taken	% Taken
172	172	100%	301	300	99%	0	0	NA

8.2 Planned Sample - Exception Notifications

During the reporting period, 300 of the 301 scheduled chemical samples were successfully collected, resulting in a completion rate of 99%. Sampling at the Fays Bay location was not possible on the scheduled date of 06/05/2025 due to restricted site access caused by the Longreach and Fays Bay Accommodation Refurbishment Project. As a result, the samples were recollected at a later date under a separate chain of custody. While this follow-up collection addressed most of the required parameters, one analyte was inadvertently omitted during the resampling process.

Additionally, sampling at location R12/002 (Longreach sample point) was suspended from 06/05/2025 due to ongoing construction activities. From this date, the site was formally removed from the sampling schedule and is therefore not included in the total expected sample count for the reporting period.

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.

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

[10] 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 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 April – June 2025 quarter are provided in the table below. Sampling of the drinking fountains occurs on a four-week cycle. During this reporting period, there was one exceedance event recorded, as outlined in section 10.2.1.

Rottnest Island Drinking Fountain April – June 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	66	66	100%	< 0.001
Cadmium (Cd)	0.002	66	66	100%	0.0001
Copper (Cu)	2	66	66	100%	0.79
Lead (Pb)	0.010	66	65	99%	0.022
Nickel (Ni)	0.020	66	66	100%	0.014
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	66	66	100%	0.61

10.2.1 Drink Fountain Exemption Notifications

On 25 June 2025, routine monitoring of the drinking fountain located at the Basin recorded a lead concentration of 0.022 mg/L, exceeding the ADWG health limit of 0.01 mg/L. In response, follow up sampling was conducted using the 30MS method, and samples were submitted to the laboratory for analysis. Additional testing was also carried

out at surrounding locations to determine whether the exceedance was localised. Subsequent results confirmed that lead concentrations at the Basin and nearby locations had returned to below the ADWG guideline limit. No further exceedances were identified, and the matter was considered resolved at the time of reporting.

10.3 Ad Hoc Monitoring

10.3.1 P Hut Investigations

An investigation was initiated in response to persistent low free chlorine levels and elevated pH readings observed near the Homestead sampling location. Non-routine water quality samples were collected from adjacent sites not typically included in the scheduled monitoring program, to assess the extent and potential cause of the anomalies.

Initial microbiological sampling was carried out on 11 April 2025 at Army Jetty and P Hut. The parameters tested included HPC, total coliforms, faecal coliforms, and *E. coli*. All results complied with the ADWG's, indicating no microbiological contamination at the time of sampling.

Due to continued observations of low chlorine residuals and high pH, further testing was undertaken on 2 May 2025 at Army Jetty, P Hut, and the Kingstown Flushpoint. This round included repeat microbiological sampling as well as bromate analysis. Elevated bromate concentrations were detected at Army Jetty (0.027 mg/L) and P Hut (0.057 mg/L), exceeding the ADWG value of 0.02 mg/L.

During this reporting period, a water main upgrade was completed at P Hut, transitioning the system from gravity-fed to pressurised supply. Prior to commissioning, an extensive suite of tests was conducted, including microbiological, heavy metals, alkali metals, THMs, and amoebae. All results were within acceptable limits.

Following activation of the new system, chlorine and pH levels were closely monitored in-field over a two-week period. No further issues were observed, and the investigation was formally closed out on 27 May 2025.

10.3.2 Network Wide Bromate Spike

Routine drinking water sampling on 6 May 2025 identified bromate concentrations exceeding the Australian Drinking Water Guidelines (ADWG) health threshold at several locations across the island, including R12-006 (Government House Circle), R12-007 (Geordie Bay), R12-008 (Nursery), and the Homestead Tank.

Due to the number and geographic spread of these exceedances, an ad hoc investigation was initiated. On 9 May 2025, follow-up bromate testing was conducted at multiple locations, including the original sites along with R12-001, Tank 4, and Tank 7. The Desalination Plant intake was also sampled for both bromate and bromide to assess whether source water chemistry may have contributed to the elevated results.

All follow-up samples returned results within acceptable limits, with no exceedances detected. Given the consistency of the compliant results across all resampled sites, the initial exceedances from 6 May are considered likely to have been caused by laboratory error. The investigation has since been closed out.

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, five bromate exceedance events were recorded above the ADWG aesthetic guideline value of 0.020 mg/L. These occurred on the following dates:

- 8 April 2025: Bromate level of 0.022 mg/L
- 15 April 2025: Bromate level of 0.024 mg/L
- 6 May 2025: Bromate level of 0.027 mg/L
- 17 June 2025: Bromate level of 0.026 mg/L
- 24 June 2025: Bromate level 0.022 mg/L

Due to standard laboratory turnaround times (typically six business days), the result for 8 April was not available until after the 15 April sample had already been collected, and similarly, the 17 June result was received after the 24 June exceedance. As a result, these exceedances were identified and responded to in close succession.

In accordance with Protocol 10 – Chemical Exceedances, PFM implemented appropriate mitigation measures, including notification of relevant stakeholders and targeted flushing of the affected infrastructure. These actions were effective in resolving the April and early May events, with post-flushing monitoring confirming a return to bromate levels within ADWG limits. These exceedances are believed to be associated with low water turnover in the Homestead system, particularly during periods of reduced occupancy over the winter season.

Event close-out dates are as follows:

- 8 and 15 April exceedances: closed on 22 April 2025
- 6 May exceedance: closed on 13 May 2025
- 17 and 24 June exceedances: remain open, as bromate levels are still exceeding ADWG limits despite flushing efforts

Ongoing monitoring continues, and further actions will be considered if exceedances persist.