ROTTNEST ISLAND AUTHORITY

PROGRAMMED

Annual Drinking Water Report

July 2024 – June 2025

ROTTNEST ISLAND AUTHORITY

PROGRAMMED

Contents

Foreword

The Rottnest Island Authority (RIA) is committed to providing safe, reliable, and high-quality drinking water that meets the requirements of the Australian Drinking Water Guidelines (ADWG), relevant regulatory standards, and consumer expectations in a sustainable manner.

This Annual Water Quality Report outlines Rottnest Island's drinking water quality performance for the 2024–2025 reporting period. The RIA remains dedicated to transparency by ensuring that accurate and representative information is made publicly available. This report demonstrates the ongoing commitment to the sustainable production and supply of high-quality drinking water for residents, visitors, and businesses on Rottnest Island.

Further information on RIA's commitment to drinking water quality can be found in the *Rottnest Island Drinking Water Quality Policy*, available on the Rottnest Island website. Supporting documents such as *the Rottnest Island Management Plan 2023-28*, *Drinking Water Source Protection Plan*, and *Groundwater Licence Operating Strategy* outline the strategies, procedures, and frameworks that guide the achievement of these objectives.

Programmed Facility Management (PFM) continues to operate key utilities infrastructure and deliver essential services on behalf of the RIA. Water management forms a core part of PFM's utilities responsibilities, including the production, distribution, and monitoring of drinking water across the island.

The 2024–2025 Annual Water Quality Report confirms that both the RIA and PFM have maintained strong performance consistent with previous years in the management and delivery of Rottnest Island's drinking water supply.

Acronyms

ADWG	Australian Drinking Water Guidelines	The Australian Drinking Water Guidelines provides a framework for management of drinking water supply.
Bq/L	Becquerels per litre	Becquerels per litre is the unit of activity of radioactivity per unit volume
DOH	Department of Health	The Department of Health oversee compliance of Western Australia's health system.
DWQMP	Drinking Water Quality Management Plan	The Drinking Water Quality Management Plan describes how the production, distribution and monitoring of drinking water is managed on Rottnest Island.
HU	Hazen Unit	A Hazen unit is a measurement of colour.
kL	Kilolitre	A kilolitre is a unit of volume in the metric system, equal to one thousand litres.
km	Kilometre	A kilometre is a unit of length in the metric system, equal to one thousand metres.
mg/L	Milligrams per litre	Milligrams per litre is the mass of a chemical per unit volume of water.
mg-$N0_2$/L	Milligrams of nitrite	Milligrams per litre is the mass of nitrite per unit volume.
mg-$N0_3$/L	Milligrams of nitrate	Milligrams per litre is the mass of nitrate per unit volume.
ML	Megalitre	A megalitre is a unit of volume in the metric system, equal to one million litres.
MoU	Memorandum of Understanding	The memorandum of understanding is an agreement between the RIA and DOH and demonstrates the agreed commitments to drinking water quality.
NTU	Nephelometric Turbidity Unit	A nephelometric turbidity unit is a measurement of turbidity.
PFAS	Per- and polyfluoroalkyl substances	A group of over 4,000 synthetic chemicals that are used for a variety of household and industrial purposes.
PFM	Programmed Facility Management	Programmed Facility Management (ABN 23001382010) is contracted to manage drinking water supply on Rottnest Island.
RIA	Rottnest Island Authority	Rottnest Island Authority is a statutory body who manage Rottnest Island.
TDS	Total Dissolved Solids	Total Dissolved Solids is a measurement of inorganic salts and organic matter dissolved in water.
µg/L	Micrograms per litre	Micrograms per litre is a unit of volume in the metric system. One microgram is equal to one millionth of a gram.

1. Introduction

Rottnest Island is located 19 kilometres west of Fremantle, Western Australia, and is 11 kilometres long and 4.5 kilometres at its widest point. The total land area measures approximately 1,900 hectares and is managed by the RIA. The island is a Class A Reserve and a popular destination for local, interstate and international visitors.

Water production facilities include saline groundwater bores, desalination plant, drinking water storage tanks, and distribution system. The distribution and supply to customers is via a reticulated network. PFM is contracted by the RIA to manage the production, distribution and monitoring of the drinking water supply to customers, Rottnest Island residents, and visitors.

The source of drinking water on Rottnest Island processed through the desalination plant is six saline production bores located within the Longreach Borefield. Historically Wadjemup Borefield has been used for the supply of drinking water which ceased in 2017.

1.1. Drinking Water Quality Risk Management

The Drinking Water Quality Risk Management Plan (DWQRMP) is the principal framework guiding the RIA and PFM in the effective management of the island's drinking water distribution system. The DWQRMP forms part of the Memorandum of Understanding (MoU) between the RIA and the Department of Health (DoH) and is supported by a series of Drinking Water Binding Protocols. It also incorporates the Drinking Water Incident Response Protocols and other statutory documentation required to ensure compliance with the ADWG. The MoU is currently linked to Version 3.7 of the ADWG.

The ADWG, published and maintained by the National Health and Medical Research Council (NHMRC), represent the national standards for drinking water quality in Australia. The guidelines require water providers to adopt a risk management framework to ensure safe and reliable drinking water from the source through to the point of consumption. A key principle of the ADWG is the implementation of a preventative, multi-barrier approach that protects public health by identifying and managing risks at every stage of the water supply process. The framework consists of twelve elements recognised as best practice for the systematic management of drinking water quality.

The Rottnest Island DWQRMP has been developed in alignment with this framework, applying the ADWG principles across all elements of the island's drinking water system, including:

- Longreach (saline) Borefield
- Desalination Plant
- Storage Tanks
- Treatment System (Chlorination)

- Pumping System
- Distribution and Reticulation Network
- Water Sampling and Monitoring Points.

To ensure that the production, supply, and monitoring of Rottnest Island's drinking water remain of the highest standard, the DWQRMP is reviewed at scheduled intervals. Any updates to the plan are subject to consultation and review by key stakeholders, with outcomes reflected in subsequent Quarterly and Annual Drinking Water Reports.

1.2. Memorandum of Understanding

In April 2012 the MoU between DOH and RIA commenced. This commitment to the MoU by both parties ensures a strong cooperative relationship for the management of drinking water and the protection of public health. The MoU was updated and re-signed by the RIA and DOH in December 2019 for a period of five years and has been periodically extended since then. A copy of the 2019 Memorandum of Understanding is available to view on the RIA website.

Another important component of the MoU is the requirement for the Licensee (RIA) to notify DOH of the provision of other forms of water supply. That is, the supply of water not intended for drinking purposes. The specific items pertaining to management of this commitment as described within the MoU, and how these items are complied with on Rottnest Island, are detailed within the table below. Primarily, provision of non-drinking water on Rottnest Island occurs for the toilet facilities at the western end of Rottnest Island.

Memorandum of Understanding and the provision of non-drinking Water on Rottnest Island	
MoU	**RIA Provision**
Ensure advice is given to customers and their tenants or visitors that this water supply is not to be used for drinking or food preparation.	Where water provided is unsuitable for drinking/food preparation, public signage has been installed. Example provided below. 
Annual requirement by way of written reminders of water quality. Inspections to ensure affected taps are labelled with “non-drinking water”.	Water quality is reported annually and quarterly. Points have been labelled where the water provided is unsuitable for drinking.
If the Licensee provides non-drinking water to public open space areas, accessible to general public or via standpipes, then adequate signage advising “not suitable for drinking” is required.	Where non-drinking water is used in public open spaces, and areas accessible to the general public, appropriate signage has been installed clearly stating non-drinking water is in use.

2. 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
A/Manager Approvals and Compliance	David Pond
Manager Water and Wastewater	Beata Rakowska
Environmental Compliance Officer (PFM)	Jay Petterwood

2.1.System Information

2.1.1. 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 the 2024-2025 reporting period, ferry arrivals reached 892,745 visitors, with the lowest being 35,855 in July 2024 and the highest being 126,251 in January 2025.

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.

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

2.1.2. Distribution System & Water Supply

The Rottnest Island water distribution system is a relatively small network comprising approximately 22 kilometres 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 in volume. Monthly consumption can range from approximately 12,000 kilolitres in July to 24,000 kilolitres in December.

The RIA has appointed a contractor to deliver two new seawater reverse osmosis desalination trains as part of a major plant upgrade. The new plant will be up to the equivalent of Water Corporation water quality standard and will include Multi Media Filtration as well as a 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

2.1.3. Sampling Schedule & Procedure

Potable water quality monitoring on Rottnest Island is conducted in line with the ADWG and follows the sampling schedule outlined in the Rottnest Island Drinking Water Quality Risk Management Plan (November 2022). The selected sampling locations are shown in **Figure 2** and **Figure 3.**

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

ROTTNEST ISLAND AUTHORITY

PROGRAMMED

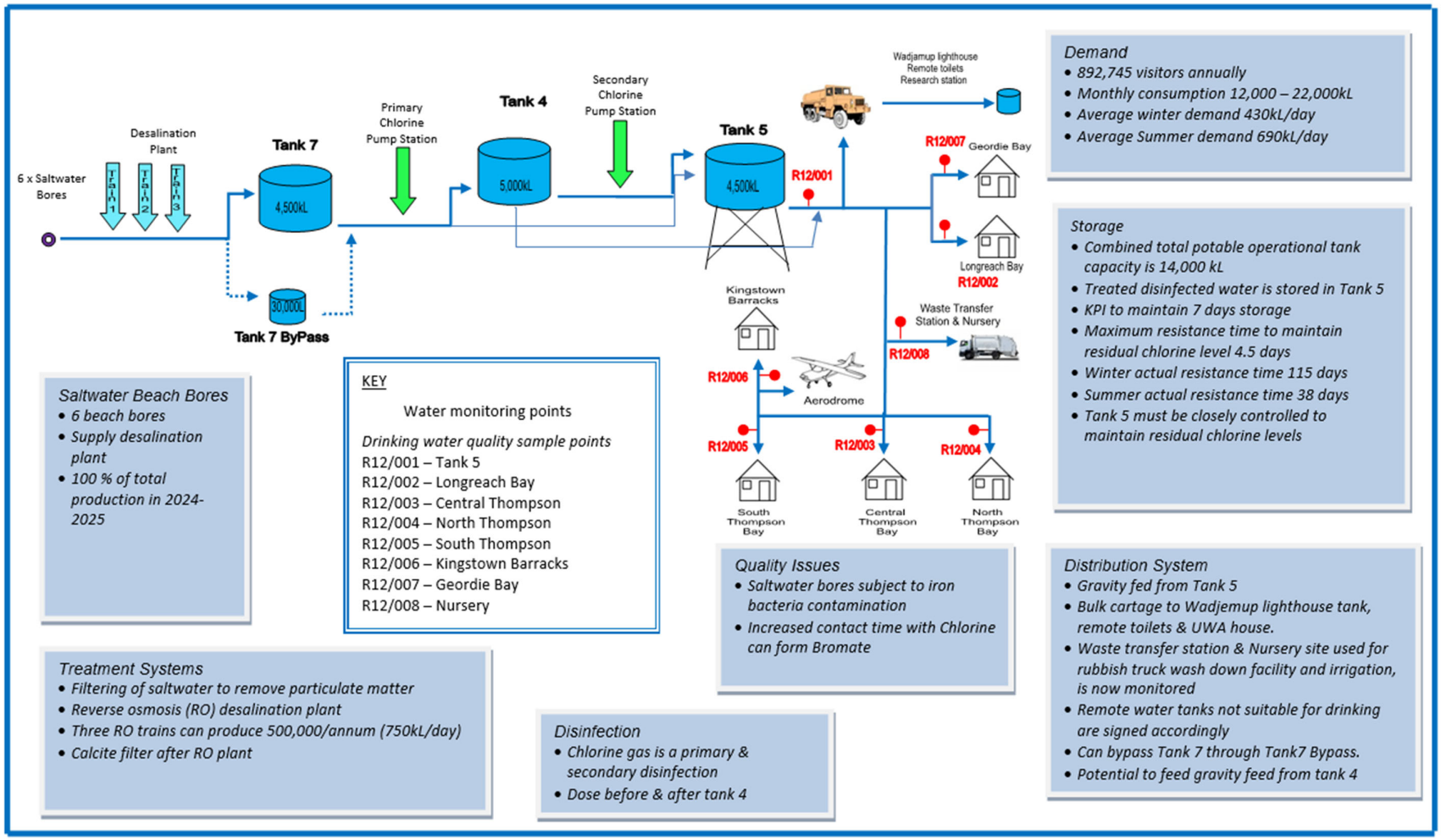

Figure 2: Rottnest Island Water Distribution System

ROTTNEST ISLAND AUTHORITY

PROGRAMMED

Figure 3: Map of Sampling Locations

3. Performance Summary

Summary of Water Quality results compared to the ADWG 2024-25			
Parameters	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**No. of ADWG exceedance events**
Microbial			
Bacterial (*E.coli*)	252[1]	252	0
Amoeba (Thermophilic *Naegleria)*	108[2]	108	0
Chemical & Physical			
Health	1280[3]	1274	6
Aesthetic	1604[4]	1143	461
Radiological[5]			
Gross Alpha	9	9	0
Gross Beta	9	9	0
PFAS[6]			
PFOS & PFHxS	1	1	0
PFOA	1	1	0

[1] This number does not include Tank 4 & 7
[2] Ibid
[3] Ibid
[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. Microbial Performance

The results presented in Section 4.1 summarise the outcomes of microbial monitoring conducted during the 2024–2025 reporting period. All eight nominated sampling locations achieved 100% compliance, consistent with the performance recorded in 2023–2024.

4.1. Microbial Compliance Summary

Rottnest Island Distribution System 2024-25				
Microbial Characteristic	**Memorandum of Understanding Compliance Criteria**	**No. of Analyses**	**No. of Analyses Complying with Memorandum of Understanding**	**% Compliance**
Bacterial				
E.coli	Non Detect	252	252	100%
Amoeba				
Thermophilic *Naegleria*	Non Detect	108	108	100%

4.2. Microbial Incident Specific Information

No microbial non-conformances for *E. coli*, thermotolerant coliforms, or thermophilic *Naegleria* were recorded at any of the eight nominated sampling locations during the 2024–2025 reporting period.

5. Chemical: Health Related Performance

During the 2024-2025 reporting period there were six Bromate results reported as exceeding the chemical health parameters outlined in the ADWG in the potable water distribution system, the details of which are outlined in Section 5.1 and a detailed exceedance explanation provided in Section 5.2.

Section 5.1 provides an overall compliance summary for all Chemical health related sample analysis.

5.1. Chemical: Health Related Compliance Summary

Rottnest Island Distribution System 2024-25					
Health Characteristic	**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	102	102	100%	< 0.001
Bromate (BrO_3-)	0.02	439	433	99%	0.080
Cadmium (Cd)	0.002	17	17	100%	< 0.002
Chlorine Total (Cl)	5	446	446	100%	1.73
Copper (Cu)	2	14	14	100%	0.085
Fluoride (F)	1.5	112	112	100%	0.40
Lead (Pb)	0.01	14	14	100%	0.003
Manganese (Mn)	0.5	17	17	100%	0.01
Nickel (Ni)	0.02	14	14	100%	< 0.001
Nitrate (NO_3)	50 mg-NO_3/L	14	14	100%	0.1
Nitrite (NO_2)	3 mg-NO_2/L	45	45	100%	< 0.01
[7]Trihalomethanes (THM)	0.25	46	46	100%	0.021

[7] Trihalomethanes can be present in drinking water as a by-product of chlorination or chloramination. Chlorine is the only source of disinfection currently used on Rottnest.

5.2. Chemical: Health Related Incident Specific Information

Health-related parameters monitored during the 2024–2025 reporting period returned results that were higher than in previous years. Bromate was the only parameter to exceed the ADWG health guideline value, with a total of six detections recorded during the period.

There were six distinct bromate exceedance events recorded during 2024–2025. The results are summarised in the table below.

Chemical: Health Related Water Quality Exceptions 2024-25						
Date	**Chemical Characteristic**	**Memorandum of Understanding Alert Level**	**Level reported**	**Sample Location**	**Department of Health Notified**	**Close Out Date**
2 July 2024	Bromate	0.02 mg/L	0.058 mg/L	R12-007 (Geordie Bay)	Yes	13 August 2024
16 July 2024	Bromate	0.02 mg/L	0.059 mg/L	R12-007 (Geordie Bay)	Yes	13 August 2024
23 July 2024	Bromate	0.02 mg/L	0.080 mg/L	R12-007 (Geordie Bay)	Yes	13 August 2024
30 July 2024	Bromate	0.02 mg/L	0.063 mg/L	R12-007 (Geordie Bay)	Yes	13 August 2024
3 December 2024	Bromate	0.02 mg/L	0.030 mg/L	R12-005 (Parker Point)	Yes	17 December 2024
6 May 2025	Bromate	0.02 mg/L	0.025 mg/L	R12-008 (Nursery)	Yes	19 May 2025
6 May 2025	Bromate	0.02 mg/L	0.024 mg/L*	R12-006 (Governors Circle)	Yes	19 May 2025
6 May 2025	Bromate	0.02 mg/L	0.022 mg/L*	R12-007 (Geordie Bay)	Yes	19 May 2025

*It is noted that with rounding, the concentrations reported to DoH on 6 May 2025 at R12-006 and R12-007 are not exceedances, however, given they were reported to DoH at the time then these will remain in this table although are not included in the exceedance numbers.

5.2.1. Geordie Bay Exceedances – July 2024

Early works were underway at the Geordie Bay accommodation units during July 2024, with all units unoccupied due to renovation activities. Elevated bromate concentrations detected at this location were attributed to reduced water turnover within the localised pipe network as a result of the lack of occupancy. Previous investigations have shown that prolonged retention of chlorinated water in distribution systems can promote bromate formation. In accordance with *Drinking Water Response Protocol 10 – Chemical Exceedance*, the following actions were undertaken after each of the four Geordie Bay bromate exceedance events:

- **Laboratory verification**: Each exceedance result was confirmed with the analytical laboratory.
- **Notification**: A *Do Not Drink* advisory was issued to all staff involved in renovation works at Geordie Bay.
- **Remedial flushing:** Flushing was conducted in accordance with the *Rottnest Island Flushing Plan*. For each exceedance, the nearest flush point was operated for 24 hours, followed by weekly flushing until bromate concentrations were below the ADWG health limit of 0.020 mg/L for two consecutive samples.
- **Investigation**: The affected supply line was inspected and confirmed to have contained stagnant water, likely enabling bromate formation.
- **Follow-up sampling**: Resampling occurred at the original exceedance site and all other distribution points under the weekly monitoring program.
- **Critical Control Point verification**: RO membranes and chlorination stations were checked and confirmed to be operating within prescribed control limits for pH, chlorine, and turbidity.
- **Recommissioning verification**: Prior to the re-occupancy of the Geordie Bay units on 18 September 2024, sampling was carried out in accordance with *Incident Response Protocol #12 – Recommissioning of Buildings*. Samples were collected from five units on 23 August, 4 September, and 10 September 2024, all of which reported results within ADWG health limits. The event was subsequently closed out with the Department of Health (DoH), and no further exceedances were detected.

5.2.2. Bromate Management

Bromate testing was introduced into the agreed drinking water monitoring schedule during the 2017–2018 reporting period, following a request from the DoH for Rottnest Island to participate in a voluntary bromate monitoring program. Since that time, the RIA and PFM have continued to actively manage bromate formation through both proactive and reactive measures.

5.2.3. Proactive Management

Proactive management strategies focus on preventing bromate formation through operational control and system optimisation, including:

- **Monitoring of tank levels and retention times:** Regular review of water storage volumes and turnover rates to minimise stagnation, which is a known contributing factor to bromate formation.
- **Optimisation of disinfection processes:** Chlorine dosing is carefully managed to avoid excessive chlorination and oxidation of bromide to bromate, particularly in storage tanks prior to network distribution.
- **Membrane maintenance and replacement:** Routine inspection and replacement of reverse osmosis membranes improve permeate quality and reduce bromide concentrations in treated water.

5.2.4. Reactive Management

Reactive management focuses on corrective actions when bromate exceedances are detected including a flushing regime. Targeted flushing of the affected sections of the distribution network is undertaken whenever bromate concentrations exceed the ADWG health limit (0.02 mg/L), in accordance with the *Rottnest Island Flushing Plan*.

5.2.5. Bromate Monitoring

In addition to the island-wide monitoring program, RIA commenced monthly bromate sampling of a 3 kilolitre 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 50 kilolitre unit directly supplied by the pressurised water main to improve supply reliability. Following the upgrade, weekly bromate sampling has been conducted on a voluntary basis.

During the 2024–2025 reporting period, one of 52 sampling events recorded bromate concentrations above the ADWG health limit at the Homestead. These results and subsequent management actions are detailed in Section 9.3 of this report.

5.3. Pesticides

As part of the RIA's commitment to maintaining a sustainable environment, the use of pesticides on Rottnest Island is minimised and carefully controlled.

Pesticide testing was last conducted in February 2021 at monitoring location R12/001, in accordance with the DoH Pesticides Monitoring Exclusion Policy (2018) and the MoU between the RIA and DoH. All results complied with the health-related guideline values specified in the ADWG, as documented in the 2020–2021 Annual Report.

Under the Pesticides Monitoring Exclusion Policy (2018), where the likelihood of pesticide presence is considered low, monitoring may be undertaken infrequently or excluded altogether. On this basis, no pesticide analysis was required or conducted during the 2024–2025 reporting period.

5.4. PFAS

Per- and poly-fluoroalkyl substances (PFAS) are a group of synthetic chemicals that do not occur naturally in the environment. Common PFAS compounds include perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and perfluorohexane sulfonate (PFHxS), among many others. These substances are environmentally persistent, have the potential for bioaccumulation and biomagnification, and have been shown in animal studies to cause developmental, reproductive, and systemic toxicity.

PFAS have historically been used in a wide range of industrial and consumer applications, including surface treatments (e.g. non-stick cookware, stain-resistant fabrics) and aqueous film-forming foams (AFFF) previously used for firefighting purposes.

Following the Drinking Water Quarterly Meeting on 5 June 2019, the Department of Health (DoH) recommended a one-off sampling event for PFAS at two points within the Rottnest Island drinking water distribution system. Since then, PFAS monitoring has been incorporated into the annual testing program.

For the 2024–2025 reporting period, samples were collected on 20 May 2025. All results were below the laboratory limit of reporting (LoR) of 0.01 µg/L and below the ADWG Version 3.7 health-based values. The results are presented in the table below.

Rottnest Island Distribution System 2024-25					
Health Characteristic	**ADWG compliance criteria (µg/L)**	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**% Compliance with ADWG**	**Max Value of Analysis (µg/L)**
Sum of Perfluorooctane sulfonate (PFOS) and perfluorohexane sulfonate (PFHxS)	0.07	1[8]	1	100%	< 0.01
Perfluorooctanoic acid PFOA	0.56	1[9]	1	100%	< 0.01

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

6. Chemical: Aesthetic Related Performance

6.1. Chemical: Aesthetic Compliance Summary

The following table summarises the outcomes for specific aesthetic related characteristics during the 2024-2025 reporting period.

Rottnest Island Distribution System 2024-25					
Aesthetic Characteristic	**ADWG compliance criteria (mg/L)**	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**% Compliance with ADWG**	**Max Value of Analysis (mg/L)**
Aluminium (Al)	0.2	12	11	92%	6.5
Ammonia (NH_3)	0.5	44	44	100%	0.07
Chloride (Cl^-)	250	4	4	100%	140
Colour (True Colour)	15 (HU)	25	25	100%	< 5 (HU)
Hardness ($CaCO_3$)	200	4	4	100%	18
Iron (Fe)	0.3	113	99	88%	5.50
pH	6.5 - 8.5	446	446	100%	6.90 – 8.48[10]
Sodium (Na)	180	446	446	100%	91
Sulfate (SO_4^{2-})	250	3	3	100%	2.4
Hydrogen Sulphide (H_2S)	0.05	14	14	100%	< 0.05
TDS	600	3	3	100%	260
Turbidity	5 (NTU)	29	29	100%	1 (NTU)
Zinc (Zn)	3	15	15	100%	0.059

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

6.2. Chemical: Aesthetic Incident Specific Information

Whilst exceedances of aesthetic guidelines can affect consumer experience, it is important to note that exceedances to aesthetic guidelines refer only to palatability to consumers, including appearance, taste and odour. There were several instances where analytical results exceeded the aesthetic guidelines for chemical and physical properties as follows:

- **Free Chlorine:** The ADWG states 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 values are below the specific health guideline value of 5 mg/L. Whilst impacts to 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. In the interest of maintaining microbiological safety across the entire drinking water distribution system, the RIA intends to continue operating the distribution system using higher levels of chlorine that may exceed the ADWG aesthetic values to maintain disinfection. No complaints were recorded during the year with regards to odour.

- **Iron:** Of the 113 samples collected during the reporting period, 14 recorded iron concentrations above the ADWG aesthetic guideline value of 0.3 mg/L. The highest concentration, 5.50 mg/L, was detected in July 2024 at monitoring location R12-008 (Nursery). The exceedances are likely attributable to corrosion and rusting within older sections of pipework.

- **Aluminium:** One sample result exceeded the ADWG aesthetic limit of 0.2 mg/L. The exceedance occurred on 16 July 2024 at monitoring location R12-001, with a reported concentration of 6.5 mg/L. The elevated aluminium result was not identified in the laboratory report or during data entry into the internal water-quality tracker, resulting in no immediate investigation or remedial action. The oversight was detected on 23 October 2024, prompting a review that included the following actions:

    1. The water-quality tracker was updated to automatically flag exceedances of both health and aesthetic parameters.
    2. Historical data (over six years) for R12-001 was reviewed; no previous aluminium exceedances were found, with the next-highest value being 0.09 mg/L.
    3. Operational conditions at the time of sampling were examined, with no anomalies identified that could explain the elevated result. Given its isolated nature and absence of a known source, sample contamination during collection was considered a possible cause, although this could not be confirmed.
    4. Follow-up samples collected on 13 August, 10 September, and 8 October 2024 were all below the laboratory limit of reporting (< 0.05 mg/L) and well within ADWG limits.

7. Special Interest Performance

7.1. Compliance Summary for Drinking Fountains

The following tables summarise the results of the Drinking Water Quality Monitoring Program undertaken at the Rottnest Island drinking fountains during the 2024–2025 reporting period. The program assesses both health and aesthetic water quality parameters to ensure continued compliance with the ADWG.

A total of 12 drinking fountains are currently installed across the island, including a new unit commissioned in January 2025 at Digby Drive. The Army Jetty and Kingstown Bus Stop drinking fountains were out of service between May and July 2025 due to maintenance works.

Health - Rottnest Island Drinking Fountain Network 2024-25					
Health Characteristic	**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	265	265	100%	0.002
Cadmium (Cd)	0.002	265	265	100%	0.0001
Copper (Cu)	2	265	265	100%	0.79
Lead (Pb)	0.01	265	264	99.6%	0.022
Nickel (Ni)	0.02	265	265	100%	0.020

Aesthetic - Rottnest Island Drinking Fountain Network 2024-25					
Aesthetic Characteristic	**ADWG compliance criteria (mg/L)**	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**% Compliance with ADWG**	**Max Value of Analysis (mg/L)**
Zinc (Zn)	3	265	265	100%	0.61

7.1.1. Drinking water health related incident specific information

There was one exceedance event for lead during the reporting period, as presented in the table below.

Drinking Fountains: Health Related Water Quality Exceptions 2024-25						
Date	**Chemical Characteristic**	**Memorandum of Understanding Alert Level**	**Level reported**	**Sample Location**	**Department of Health Notified**	**Close Out Date**
25 June 2025	Lead	0.01 mg/L	0.022 mg/L	Basin	Yes	7 July 2025

A lead concentration above the ADWG health guideline value was detected in the first-flush sample collected from the Basin drinking fountain on 25 June 2025. The result was reported by the analytical laboratory on 2 July 2025.

In accordance with the Drinking Water Response Protocols, the following actions were undertaken:

- **Laboratory verification:** The result was confirmed with the analytical laboratory to ensure accuracy.
- **Fountain inspection:** The Basin drinking fountain was inspected for signs of corrosion or component deterioration that could contribute to lead release.
- **Component assessment:** An investigation was initiated to confirm whether fountain fittings complied with the WaterMark certification standard and to identify any potential lead-containing materials.
- **Follow-up sampling:** Resampling was conducted on 3 July 2025 at the Basin drinking fountain and the adjacent ablution block, the nearest connection point on the same supply line. Samples were collected using the 30-minute stagnation (30MS) method recommended by the DoH. No lead exceedances were detected.
- **Manufacturer confirmation:** The fountain manufacturer verified that all components meet WaterMark standards, contain no lead, and showed no evidence of corrosion.
- **Subsequent monitoring:** Routine distribution sampling conducted on 22 July 2025 also reported no lead exceedances.
- **Critical Control Point verification:** Key treatment components, including RO membranes and chlorination stations, were checked and confirmed to be operating within the prescribed critical control limits.

The above actions confirmed the event could be closed-out in accordance with the Drinking Water Response Protocols.

8. Radiological Performance

Radiological sampling for gross alpha and gross beta is required annually. Testing occurred in October 2024 at the nine designated distribution sampling locations. There were no exceedances identified for Gross Alpha and Gross Beta (corrected for potassium-40).

Rottnest Island Distribution System 2024-25					
Radiological Characteristic	**ADWG screening values (Bq/L)**	**No. of Analyses**	**No. of Analyses Complying with ADWG screening value**	**% Compliance with ADWG**	**Max Value of Analysis (Bq/L)**
Gross Alpha	0.5	9	9	100%	< 0.044
Gross Beta less K-40	0.5	9	9	100%	< 0.076

9. Customer Service & Notifiable Incidents

9.1. 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.

9.2. Notifiable Incidents

During the 2024–2025 reporting period, a total of 16 health-related notifications were reported to the Department of Health (DoH) in relation to the drinking water distribution system. Of these, 15 notifications were associated with bromate and one was associated with lead although it is noted that 8 of the bromate notifications were not exceedances of the ADWG given the concentrations were rounded down as per the ADWG.

In addition, 14 aesthetic exceedances for iron were reported to DoH during the same period and one was associated with Aluminium. Section 6.2 contains further details on these exceedances.

9.3. Bromate at the Homestead

It was agreed upon in the June 2023 Quarterly Drinking Water meeting between DOH, RIA and PFM that any exceedances noted at the Homestead would be reported to DOH.

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.

During the reporting period, one bromate exceedance event was recorded on 17 June 2025 above the ADWG health guideline value of 0.02 mg/L (0.026 mg/L). Notifications were made to DoH on six other occasions (25 February 2025, 4 March 2025, 8 April 2025, 15 April 2025, 6 May 2025 and 24 June 2025) where the concentrations of Bromate were above 0.02 mg/L but did not exceed the ADWG due to rounding.

In accordance with *Incident Response 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 event, with post-flushing monitoring confirming a return to bromate levels within ADWG limits. The exceedance is 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 date for the 17 June exceedance was 1 July 2025.

10. Comments

Mock Incident Scenario

The Rottnest Island Mock Incident Scenario was held on 26 March 2025, simulating a compromise to drinking water quality. The exercise aimed to assess the effectiveness of the Incident Response Protocols (IRPs) and staff familiarity with the Drinking Water Quality Management Plan (DWQMP).

The scenario involved relevant managers, operational staff and relevant PFM staff who all focused on their role in the relevant response protocol. The scenario detailed an event of trespass and vandalism to water storage tanks. The team reviewed the scenario and elected to implement IRP #3 - Potable Water Suspected/Confirmed: Storage Integrity Breach.

Summary of actions:

- The RIA will review and update the relevant Incident Response Protocol flowcharts to ensure response consistency across all protocols.
- The DWQMP will be reviewed and updated to ensure it remains current, with the revision incorporating recent updates to Incident Response Protocols, Critical Control Points , and outcomes from recent mock incident exercises. The updated plan will align with the latest DoH requirements.

Preserved Supply Register

During the reporting period and also the previous four reporting periods, RIA did not have any customers that required a preserved supply of water, hence RIA was not required to publish a Preserved Supply Register.

11. References

Hrudey S E, Hrudey E J, *Ten Commandments For Safe Drinking Water* Canadian Water Network 2020, and American Water and Wastewater Association, 2014.

12. Acknowledgements

The RIA acknowledges the work of PFM in managing Drinking Water Quality at Rottnest Island, and the assistance of DOH throughout the year.

This report was produced by PFM on behalf of the RIA.

The RIA recognises and supports the ongoing work of the Advisory Committee for the Purity of Water[11].

13. Enquiries

To request further information, or to seek clarification on information provided within this Rottnest Island Annual Drinking Water Report, please contact the RIA Administration by phone at (08) 9432 9300 (8:30 am to 5:00 pm, Monday to Friday). Alternatively, enquiries may be sent by e-mail to rottnest.compliance@dbca.wa.gov.au.

[11] More information on the Advisory Committee for the Purity of Water can be found at: http://ww2.health.wa.gov.au/Articles/A_E/Advisory-Committee-for-the-Purity-of-Water

ROTTNEST ISLAND AUTHORITY

PROGRAMMED

14. Appendices

Appendix A: Annual Data Summary

		July-September 2024				October-December 2024				January-March 2025				April-June 2025				2024-2025 Summary			
Health Characteristic	Australian Drinking Water Guidelines (mg/L)	No. of Analyses	No. of Analyses Complying with ADWG	% Compliance with ADWG	Max Value of Analysis (mg/L)	No. of Analyses	No. of Analyses Complying with ADWG	% Compliance with ADWG	Max Value of Analysis (mg/L)	No. of Analyses	No. of Analyses Complying with ADWG	% Compliance with ADWG	Max Value of Analysis (mg/L)	No. of Analyses	No. of Analyses Complying with ADWG	% Compliance with ADWG	Max Value of Analysis (mg/L)	No. of Analyses	No. of Analyses Complying with ADWG	% Compliance with ADWG	Max Value of Analysis (mg/L)
Antimony	0.003	33	33	100%	0	18	18	100%	0	27	27	100%	0	24	24	100%	0	102	102	100%	0
Bromate	0.02	106	102	96%	0.08	117	116	99%	0.03	108	108	100%	0.014	108	107	99%	0.025	439	433	99%	0.08
Cadmium	0.002	8	8	100%	0	0	0	-	0	9	9	100%	0	0	0	-	0	17	17	100%	0
Chlorine (Total Residual)	5	104	104	100%	1.73	117	117	100%	1.62	117	117	100%	1.54	108	108	100%	1.7	446	446	100%	1.73
Copper	2	3	3	100%	0.046	4	4	100%	0.009	4	4	100%	0.064	3	3	100%	0.085	14	14	100%	0.085
Fluoride	1.5	24	24	100%	0.4	27	27	100%	0.3	36	36	100%	0.2	25	25	100%	0.3	112	112	100%	0.4
Lead	0.01	3	3	100%	0.003	4	4	100%	0	4	4	100%	0	3	3	100%	0	14	14	100%	0.003
Manganese	0.5	8	8	100%	0.01	0	0	-	0	9	9	100%	0	0	0	-	0	17	17	50%	0.01
Nickel	0.02	3	3	100%	0	4	4	100%	0	4	4	100%	0	3	3	100%	0	14	14	100%	0
Nitrate (as NO3-)	50	3	3	100%	0.1	4	4	100%	0	4	4	100%	0	3	3	100%	0	14	14	100%	0.1
Nitrite (as NO2-)	3	10	10	100%	0	12	12	100%	0	12	12	100%	0	11	11	100%	0	45	45	100%	0
Total THM	0.25	10	10	100%	0.021	12	12	100%	0.0068	12	12	100%	0.0053	12	12	100%	0.0067	46	46	100%	0.021

		July-September 2024				October-December 2024				January-March 2025				April-June 2025				2024-2025 Summary			
Aesthetic Characteristic	Australian Drinking Water Guidelines (mg/L)	No. of Analyses	No. of Analyses Complying with ADWG	% Compliance with ADWG	Max Value of Analysis (mg/L)	No. of Analyses	No. of Analyses Complying with ADWG	% Compliance with ADWG	Max Value of Analysis (mg/L)	No. of Analyses	No. of Analyses Complying with ADWG	% Compliance with ADWG	Max Value of Analysis (mg/L)	No. of Analyses	No. of Analyses Complying with ADWG	% Compliance with ADWG	Max Value of Analysis (mg/L)	No. of Analyses	No. of Analyses Complying with ADWG	% Compliance with ADWG	Max Value of Analysis (mg/L)
Aluminium	0.2	3	2	67%	6.5	4	4	100%	0	2	2	100%	0	3	3	100%	0	12	11	92%	6.5
Ammonia	0.5	10	10	100%	0.04	12	12	100%	0	11	11	100%	0	11	11	100%	0.07	44	44	100%	0.07
Chloride	250	1	1	100%	140	1	1	100%	110	1	1	100%	82	1	1	100%	96	4	4	100%	140
Chlorine (Free Residual)	0.6	104	0	0%	1.72	117	0	0%	1.59	117	0	0%	1.66	108	0	0%	1.58	446	0	0%	1.72
True Colour	15HU	6	6	100%	<5	7	7	100%	<5	7	7	100%	<5	5	5	100%	<5	25	25	100%	<5
Hardness	200	1	1	100%	18	1	1	100%	13	1	1	100%	17	1	1	100%	13	4	4	100%	18
Iron	0.3	35	25	71%	5.5	27	25	93%	1.2	27	26	96%	0.2	24	23	96%	0.57	113	99	89%	5.5
pH	6.5-8.5	104	104	100%	8.41	117	117	100%	7.99	117	117	100%	8.48	108	108	100%	8.46	446	446	100%	8.48
Sodium	180	105	105	100%	89	117	117	100%	91	116	116	100%	69	108	108	100%	74	446	446	100%	91
Sulfate	250	1	1	100%	2.4	1	1	100%	1.9	0	0	-	0	1	1	100%	1.7	3	3	75%	2.4
Sulfide	0.05	3	3	100%	<0.05	4	4	100%	<0.05	4	4	100%	<0.05	3	3	100%	<0.05	14	14	100%	<0.05
TDS	600	1	1	100%	260	1	1	100%	230	0	0	-	0	1	1	100%	200	3	3	75%	260
Turbidity	5NTU	6	6	100%	1	7	7	100%	0.5	11	11	100%	0.4	5	5	100%	0.6	29	29	100%	1
Zinc	3	0	0	-	0	4	4	100%	0.028	8	8	100%	0.038	3	3	100%	0.059	15	15	75%	0.059

ROTTNEST ISLAND AUTHORITY

PROGRAMMED

		July-September 2024			October-December 2024			January-March 2025			April-June 2025			2024-2025 Summary		
Microbial Characteristic	**Memorandum of Understanding Compliance Criteria**	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**% Compliance with ADWG**	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**% Compliance with ADWG**	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**% Compliance with ADWG**	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**% Compliance with ADWG**	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**% Compliance with ADWG**
Bacterial																
E.coli	Non Detect	61	61	100%	65	65	100%	65	65	100%	61	61	100%	252	252	100%
Amoeba																
Thermophilic *Naegleria*	Non Detect	25	25	100%	22	22	100%	36	36	100%	25	25	100%	108	108	100%

		July-September 2024				October-December 2024				January-March 2025				April-June 2025				2024-2025 Summary			
Drinking Fountain Analytes	**Australian Drinking Water Guidelines (mg/L)**	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**% Compliance with ADWG**	**Max Value of Analysis (mg/L)**	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**% Compliance with ADWG**	**Max Value of Analysis (mg/L)**	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**% Compliance with ADWG**	**Max Value of Analysis (mg/L)**	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**% Compliance with ADWG**	**Max Value of Analysis (mg/L)**	**No. of Analyses**	**No. of Analyses Complying with ADWG**	**% Compliance with ADWG**	**Max Value of Analysis (mg/L)**
Health Characteristics																					
Antimony	**0.003**	60	60	100%	0	67	67	100%	0	72	72	100%	0	66	66	100%	0	265	265	100%	0
Cadmium	**0.002**	60	60	100%	0.0001	67	67	100%	0	72	72	100%	0.0001	66	66	100%	0.0001	265	265	100%	0.0001
Lead	**0.01**	60	60	100%	0.008	67	67	100%	0.01	72	72	100%	0.006	66	65	98%	0.022	265	264	99.6%	0.022
Nickel	**0.02**	60	60	100%	0.02	67	67	100%	0.017	72	72	100%	0.01	66	66	100%	0.014	265	265	100%	0.02
Aesthetic Characteristics																					
Copper	**1**	48	48	100%	0.5	67	67	100%	0.19	72	72	100%	0.13	66	66	100%	0.79	253	253	100%	0.79
Zinc	**3**	48	48	100%	0.35	67	67	100%	0.18	72	72	100%	0.15	66	66	100%	0.61	253	253	100%	0.61

Appendix B: ADWG Sample Point Graph Summaries (Health)

The following graphs present a summary of all data collected during the 2024–2025 monitoring period for each health-related parameter.

There were no detections or only isolated, low-level detections for several analytes during the reporting period. As such, graphs have not been included for the following parameters:

- Antimony
- Cadmium
- Copper
- Fluoride *(note: Rottnest Island's drinking water is not fluoridated)*
- Lead
- Manganese
- Nickel
- Nitrite
- Trihalomethanes (THMs).

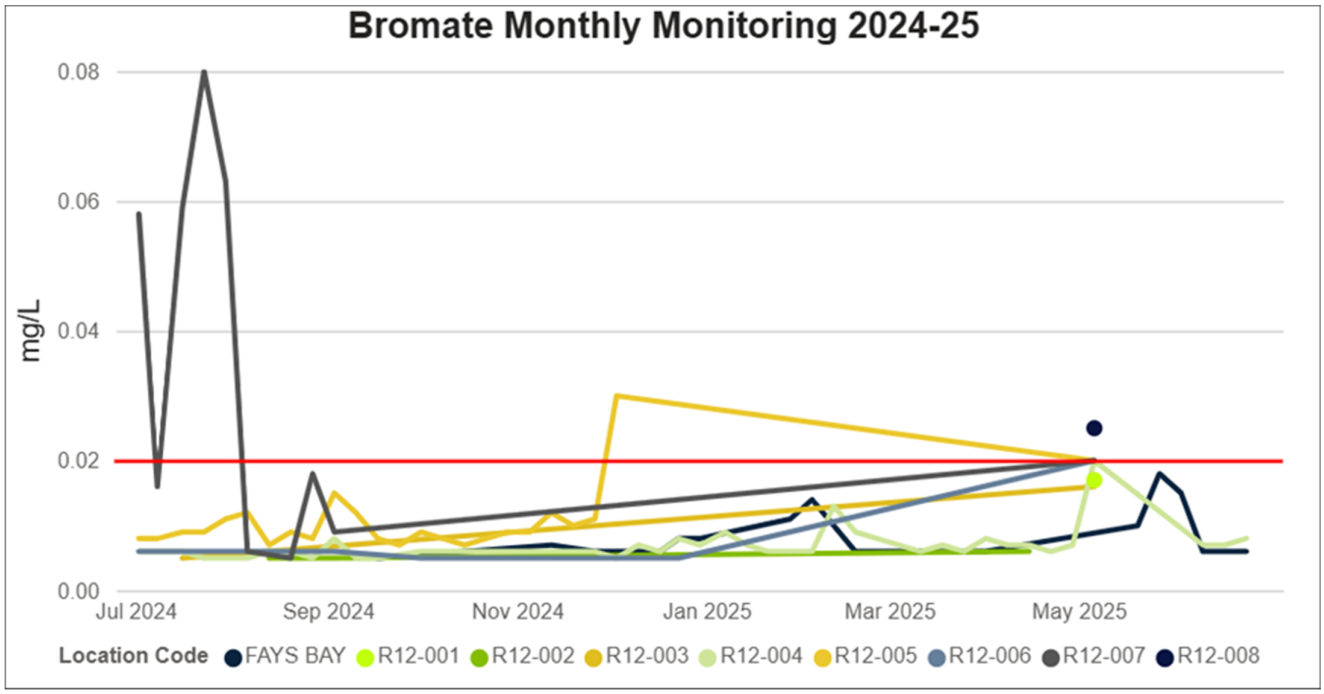

Figure B.1 – Bromate Monthly Monitoring 2024-2025

Note: *The red line indicates the ADWG bromate limit of 0.02 mg/L.*

Appendix C: ADWG Sample Point Graph Summaries (Aesthetic)

The following graphs present a summary of all data collected during the 2024–2025 monitoring period for each aesthetic-related parameter.

Graphs have not been included for the following analytes, as there were no detections or only minimal detections recorded during the reporting period:

- Ammonia
- Chloride
- Colour
- Hardness
- Sulfate
- Sodium
- Total Dissolved Solids (TDS)
- Turbidity
- Hydrogen Sulphide

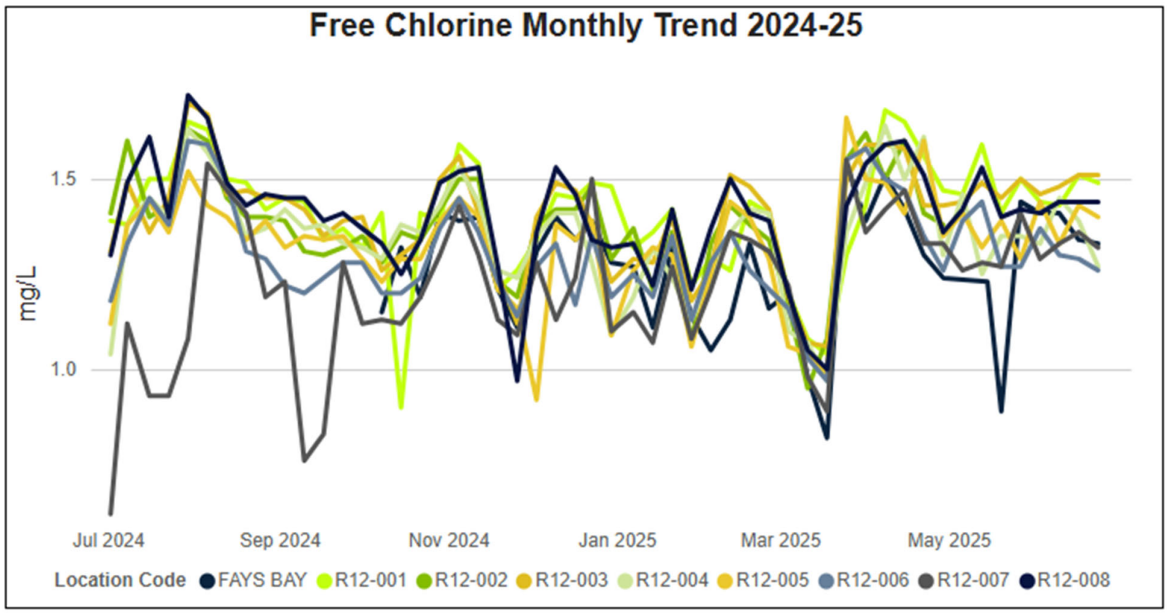

Figure C.1 – Free Chlorine Monthly Monitoring 2024-2025

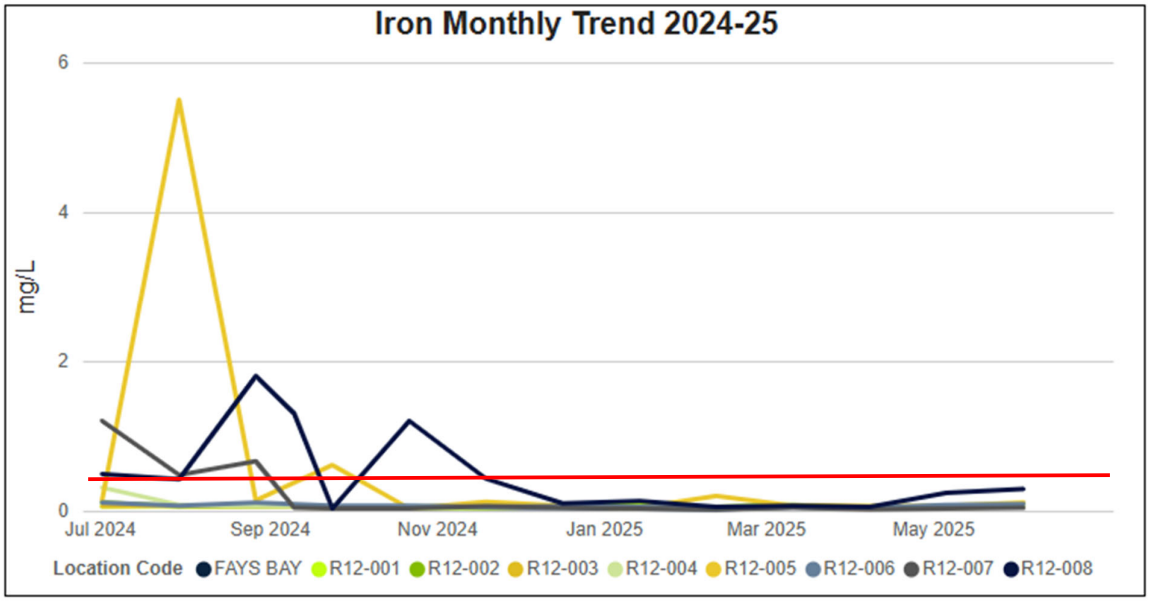

Figure C.2 – Iron Monthly Monitoring 2024-2025

Note: *The red line indicates the ADWG iron aesthetic limit of 0.3 mg/L.*

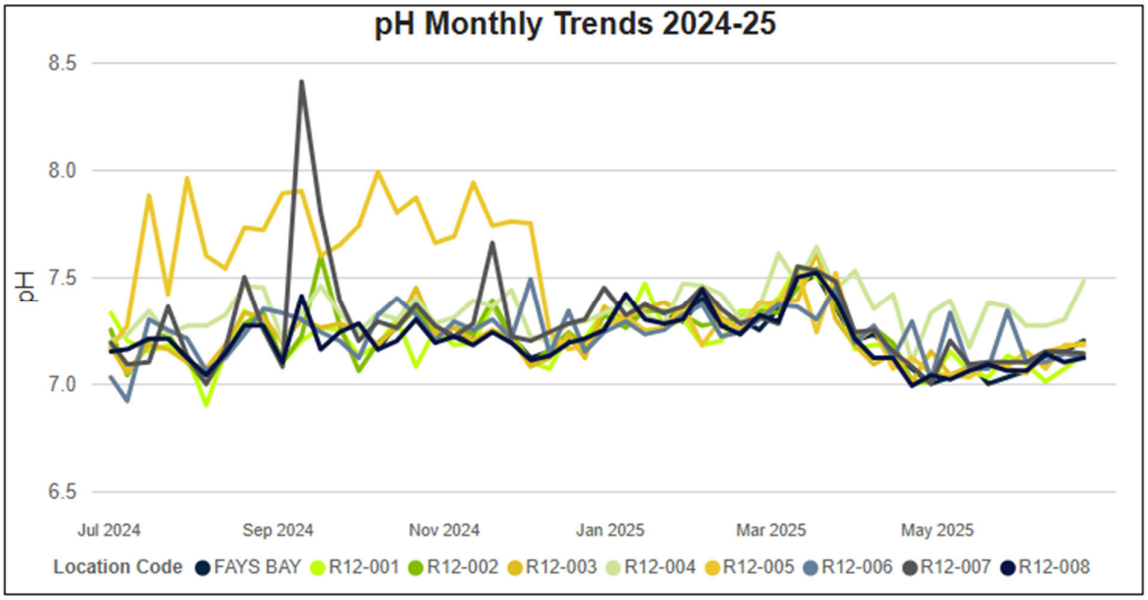

Figure C.3 – pH Monthly Monitoring 2024-2025