Ardmore Water Treatment Plant
2024 – 2025 Annual Report

Final - August 2025

Watercare

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Revision History

Rev	Revision Date	Name	Position	Signature
1	21/07/2025	Michiel Jonker	Environmental Care Manager	
2	25/08/2025	Stu Urquhart	Operations Controller	
3	12/08/2025	Tom Wallace	Production Manager South	

Approved

Date	Name	Position	Signature
28/08/2025	Michiel Jonker	Environmental Care Manager	

CONSENT CHANGE AND MONITORING HISTORY

Change type	Description	Effective date	Reference / condition	Reporting / monitoring implications
Management Plan Establishment	Implementation of the Ardmore Filter Station Stormwater Lagoon Management Plan, designed to manage site stormwater, overflows, and occasional tank washings, and provide safeguard against chemical spills.	June 2008	Condition 7 of Consents 39614 and 39613	The plan outlines management of chemical storage, clarifier/filter operations, sludge press, and spill contingency. It requires an annual maintenance inspection of the Lagoon 3 outlet structure. Provision to update: Allows for "any replacement management plan which has received the prior approval of the Team Leader."
Management Plan Establishment	Implementation of the Ardmore Filter Station Sludge Monofill Site Erosion and Sediment Control Management Plan, supporting the resource consent application for sludge monofill site operations.	June 2008	Condition 17 of Consent 39221; Condition 18	The plan details sediment control through fill stability, runoff control, and sediment retention measures. It prescribes erosion and sediment control measures, including sizing of decanting earth bunds, diversion of clean water, and regular inspections after rain events. Provision to update: "Any amendments to the erosion and sediment control methodology shall be approved by the Team Leader - Earthworks and Contaminated Land in writing".
Management Plan Establishment	Implementation of the Ardmore Water Treatment Plant Discharges Management Plan, detailing protocols for scheduled and contingency overflow discharges of raw and off-spec water to the Taitaia Stream tributaries.	June 2009	Condition 4 of Discharge Permit No. 36125	Provides protocols for pH dosing, dechlorination, and stream maintenance. Outlines monitoring for scheduled (water quality, macroinvertebrate, channel erosion) and contingency overflows (baseline surveys, inspections). Provision to update: Condition 4 specifies that the plan must be "prepared, to be approved by the Manager in writing prior to exercising this consent". Consent 36125 has a general review condition that could lead to updates.
Consent Alteration/ Cancellation	Conditions 8 to 13 of consents 36162 (stormwater discharge) and 38438 (discharge other) were cancelled, and condition 7(i)d was altered, to ensure consistency with the new earthworks consent 39221.	27 February 2012	Consents 36162, 38438, 39221; Condition 7(i)d, Conditions 8-13	Reporting frequency for permits 36162 and 38438 changed from quarterly to annually. This change was assessed as having "no impact on the quality of discharge from the site". No effects on discharge parameters, standards, or monitoring.
Consent Variation	Condition 6 of consent 39613 was changed to allow for a greater daily rate of sludge to be discharged to land for a specific period.	18 March 2014	Consent 39613, Condition 6	The daily discharge, averaged over seven consecutive days, could exceed 30 cubic metres, up to 500 cubic metres, specifically for the period from 1 February 2014 until May 2014. The "2024-2025 Ardmore Water Treatment Plant Annual Report" confirms no exceedances of sludge volume limits in that reporting period.

EXECUTIVE SUMMARY

The Ardmore Water Treatment Plant is the largest potable water treatment plant in Auckland, treating water from four dams in the Hunua Ranges. This report details the annual compliance for the plant's discharge consents. Specifically, this report covers compliance with the following resource consents for 1 July 2024 to 30 June 2025 (inclusive):

- Consent 42796 – authorising sludge disposal to land
- Consent 39614 – authorising stormwater, chemical unloading procedure and tank wash discharges to water
- Consent 36125 (DIS60267254) – authorising raw and off-spec water discharges to water.

In summary:

- Consent 42796 was fully compliant with sludge discharge volume limits
- Consent 39614 was fully compliant with discharge quality limits
- Consent 36125 recorded 11 discharges during 2024–2025, with all post-discharge requirements met.

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1 INTRODUCTION

1.1 Background

The Ardmore Water Treatment Plant (WTP) is Watercare's largest water treatment plant, processing the water from four dams in the Hunua Ranges to meet potable water quality standards. The plant exercises resource consents to permit discharges of wash water, off-spec water, raw water, stormwater and process sludge to land and water.

1.2 Scope

This report covers the consent reporting requirements of discharge consents 42796 and 39614 and supplementary information for consent 36125 (DIS60267254). This report is for the period 1 July 2024 to 30 June 2025 reporting year. Specifically, this report comprises:

- The results of water quality monitoring (Section 2; Consent 39614)
- Sludge volumes to landfill (Section 3; Consent 42796)
- Outfall structure integrity (Section 4; Consent 36125)

An extension was granted by Auckland Council's Environmental Monitoring Officer, for the submission of this report beyond the deadline in consent 42796 condition 13.

2 WATER QUALITY

2.1 Introduction

Resource consents 39614 and 42796 require a weekly measurement of the water quality parameters at the discharge point from lagoon three and compare these results to a control site, which is on the Taitaia Stream tributary located upstream of lagoon two. The water quality parameters tested are:

- pH
- Fluoride
- Total suspended solids
- Soluble aluminium
- Total aluminium

This section summarises results for each of these parameters from 1 July 2024 to 30 June 2025. Appendix A provides the tabulated discharge water quality data. Samples could not be taken on 13 occasions due to low flows at the control site, primarily in January, February and March 2025. Samples at the discharge point were taken every week of the reporting period.

No desludging of lagoons one, two or three occurred in the reporting period.

2.2 pH

Figure 1 shows pH results for 2024-2025. The pH measured at the control site was consistently lower than at the compliance discharge site. The pH at the lagoon three discharge point was within the consented range of 6 to 9 during the reporting period, ranging between 6.8 and 8.5 with an average of 7.46.

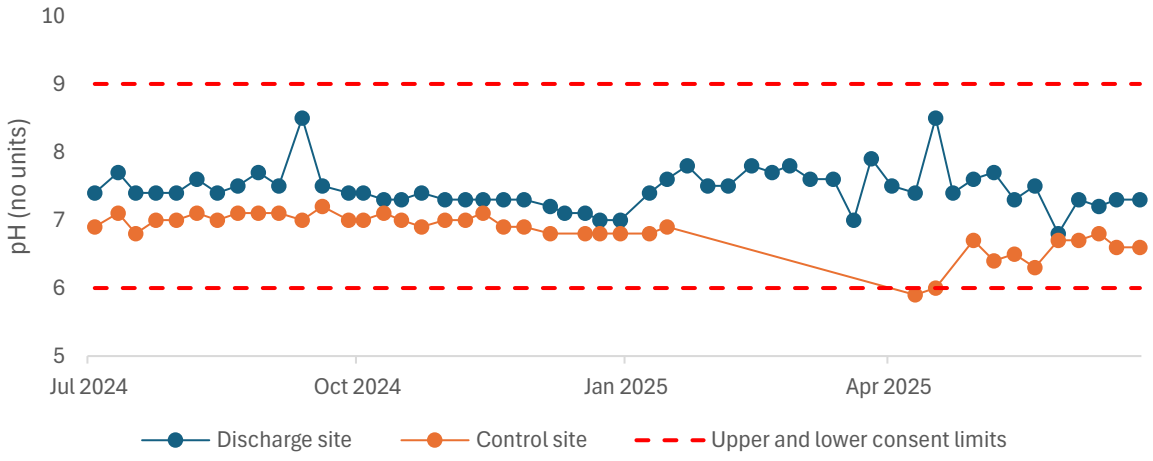

Figure 1: pH results for 2024-2025

2.3 Fluoride

Figure 2 shows results for fluoride. In 2024-2025, there were no exceedances of the consent limit for fluoride at the lagoon three discharge monitoring site. Fluoride concentrations at the compliance site were consistently higher than at the control site, with an average of 0.24 mg/L and 0.03 mg/L, respectively.

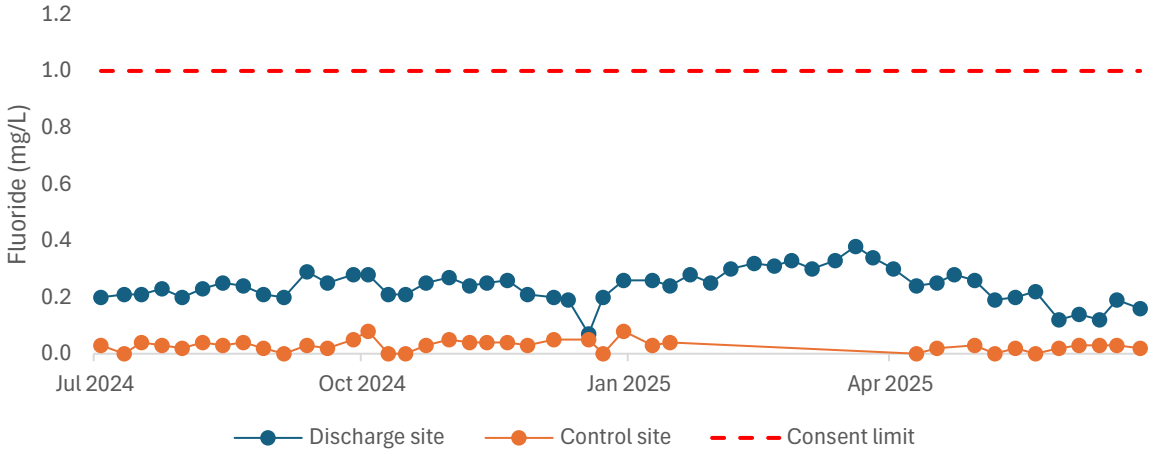

Figure 2: Fluoride results for 2024-2025

2.4 Total suspended solids

As shown in Figure 3, there were no breaches of the consent limit for total suspended solids at the lagoon three discharge monitoring site. The control site had some elevated readings, including a peak of 3,500 mg/L on 9 January 2025, contrasting sharply with the low values at the discharge site.

The differences in total suspended solids and aluminium (section 2.5) between the control site and the discharge site are largely due to the environmental buffering provided by the onsite lagoons located between the two sampling sites. These lagoons mitigate the impact of rapid changes caused by rainfall and other environmental variables, resulting in more stable water quality conditions at the discharge site. Consequently, the water quality at the discharge site differs from that of the control site.

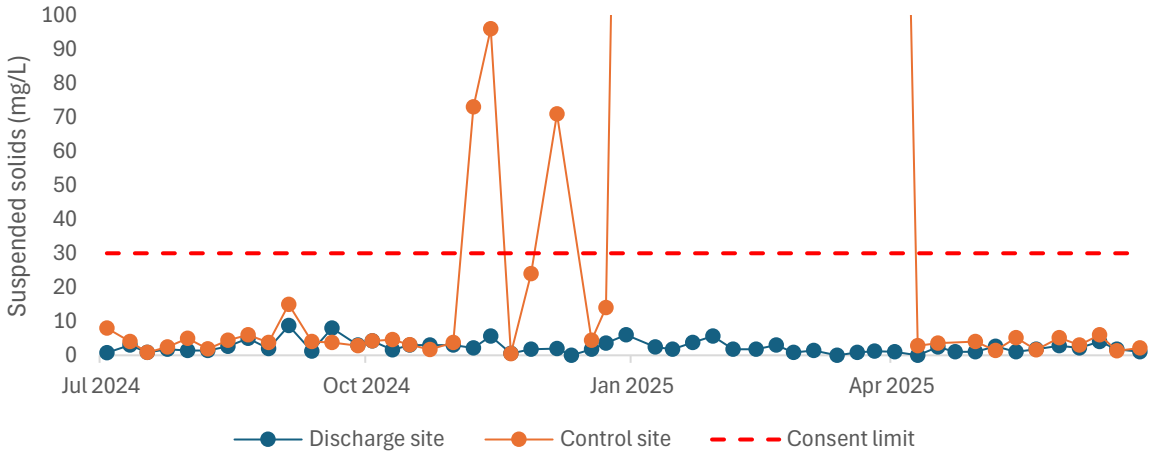

Figure 3: Total suspended solids results for 2024-2025. Results higher than 100 mg/L are not presented.

2.5 Aluminium

The soluble aluminium results in Figure 4 show that the discharge site frequently has lower soluble aluminium than the control site. As shown in Figure 5, there were no breaches in the consented limit for total aluminium at the lagoon three discharge monitoring site during the reporting period. However, there were some elevated results at the control site.

The median value calculated from all total aluminium samples collected from the discharge site was 0.094 mg/L for the reporting year. As Figure 6 shows, the median for the aluminium readings at the discharge site did not exceed the 24-month rolling 80th percentile calculated for the control site.

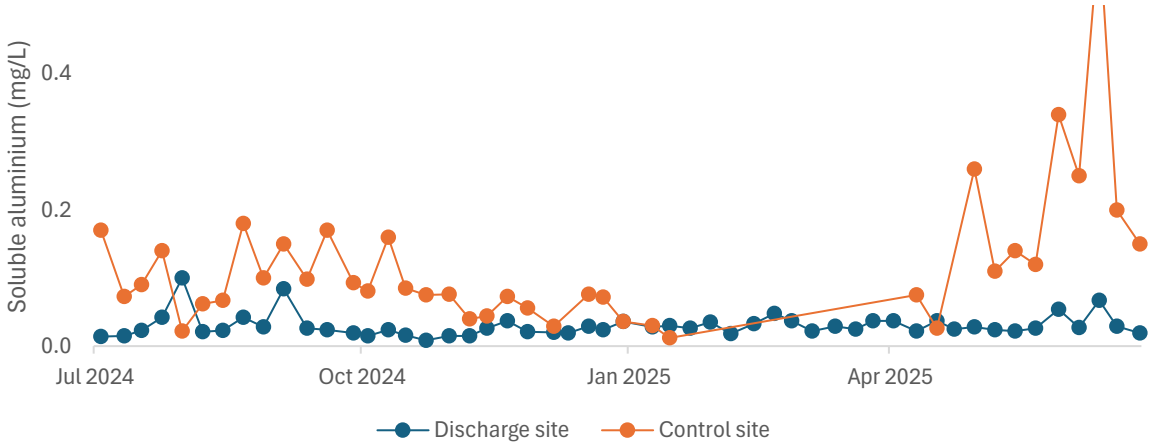

Figure 4: Soluble aluminium results for 2024-2025. Results higher than 0.5 mg/L are not presented.

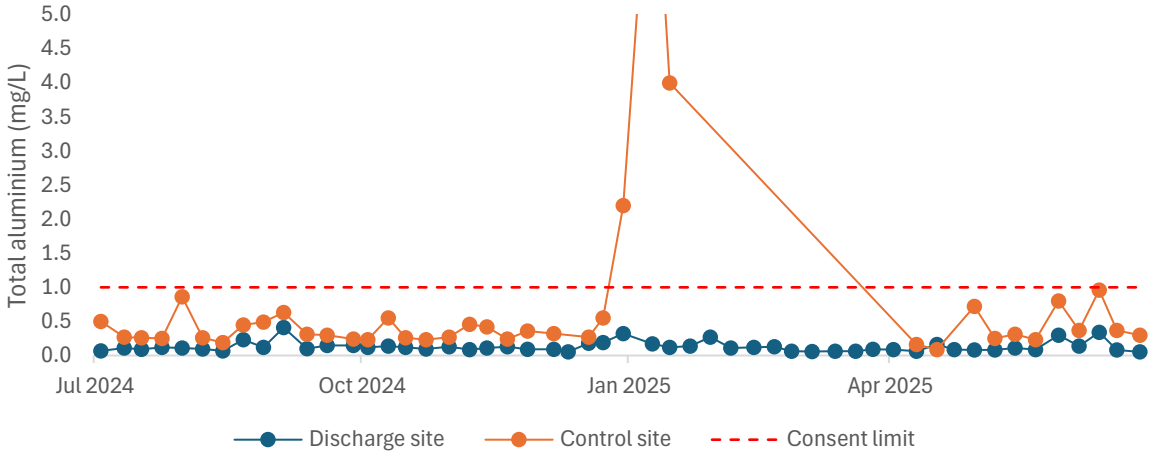

Figure 5: Total aluminium results for 2024-2025. Results higher than 5.0 mg/L are not presented.

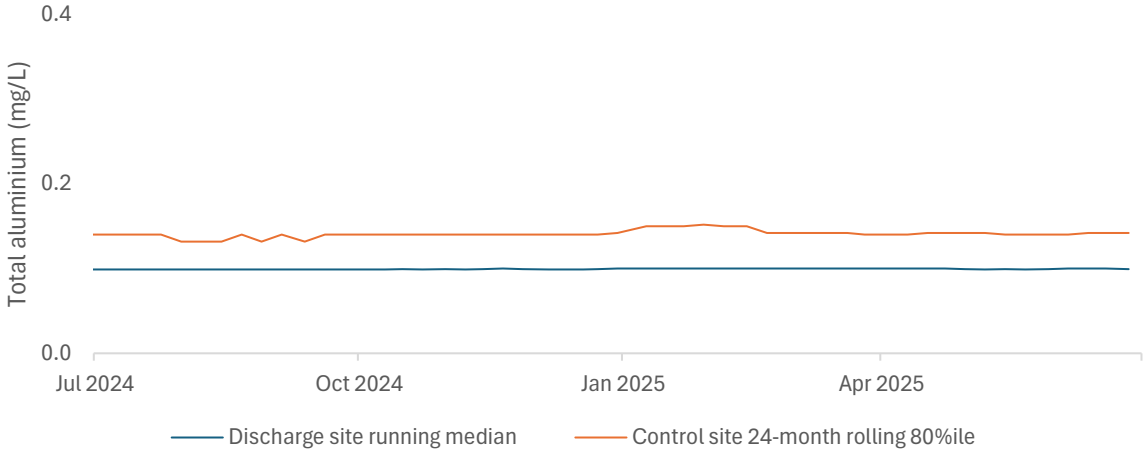

Figure 6: Total aluminium running median for the discharge site compared to the 24-month rolling 80th percentile for the control site.

3 SLUDGE TO LANDFILL

3.1 Consent requirements

Resource Consent 42796 authorises Watercare to discharge its Ardmore WTP process sludge to land. Condition 6 of this consent requires:

''The daily discharge, average of any seven consecutive days, shall not exceed 30 cubic metres except for the period from 1 February 2014 until May 2014 where the daily discharge, average over seven consecutive days, shall not exceed 500 cubic metres''.

3.2 Sludge disposal

Figure 7 presents sludge volumes for 2024-2025. There were no instances where the sludge volumes exceeded the consent limit between 1 July 2024 and 30 June 2025.

The total volume of sludge produced was 2,896 m^3, lower than volumes recorded for 2023-2024 (5,804.9 m^3), however, consistent with earlier monitoring periods (i.e. 2021-2022). This is primarily due to the significant reduction in water treated at the Ardmore WTP this year, with an approximate 32% reduction in flows in 2024-2025 compared to 2023-2024.

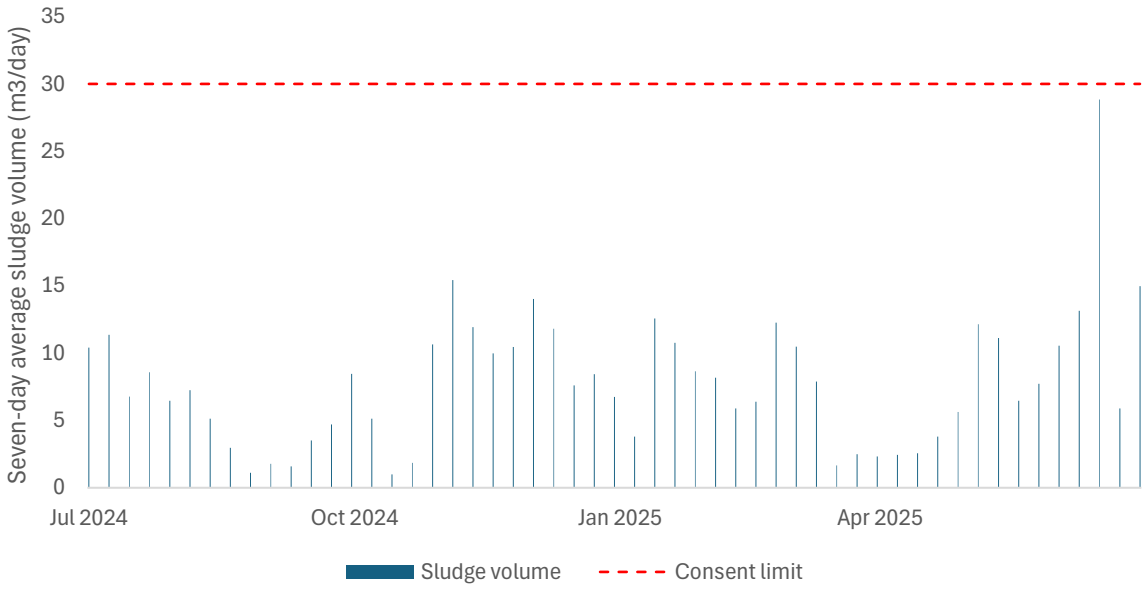

Figure 7: Sludge volumes for 2024-2025.

4 OUTFALL STRUCTURES

4.1 Introduction

The Ardmore WTP has two outfalls for discharging water. These outfalls are concrete structures designed to dissipate flow velocities and therefore minimise erosion. Consent 39614 requires outfall inspections per condition 8:

"Any outfalls shall be terminated with a structure of such location, design and performance as to minimise erosion, risk of obstruction to waterways, and hazards to safety. The said outfall structures shall be inspected annually, status recorded, and any necessary works undertaken by the Consent Holder to the preceding standards ..."

4.2 Outfall locations

Figure 8 shows the outfall locations. The first outfall (outfall structure 1) discharges to the eastern tributary of Taitaia Stream (the tributary to the east of Creightons Road). Discharges to the eastern tributary occur via a series of attenuation ponds (designated as Lagoons 1, 2, and 3) at the north of the plant. The discharge outlet from Lagoon 3 to the eastern tributary is through the existing concrete outfall structure in the stream channel.

The second outfall (outfall structure 2) discharges to the western tributary of Taitaia Stream (the tributary to the west of Creightons Road). Discharges to the western tributary are conveyed directly to the stream via pipework, discharging at a culvert outlet to the stream channel. Only minor flows from the plant can discharge via this path.

Both streams run through several private properties and have predominantly rural catchments.

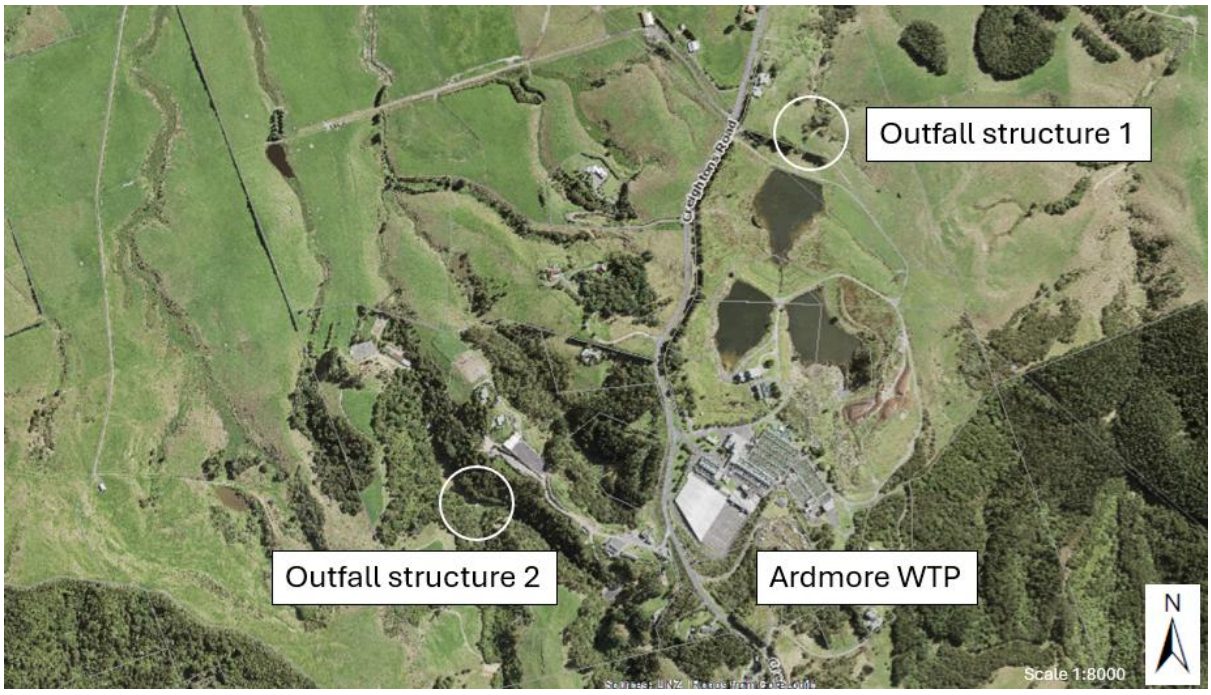

Figure 8: Outfall locations.

4.2.1 Outfall structure 1

Figure 9 shows the exit from the lagoon to the spillway (Figure 9a), the concrete spillway (Figure 9b), the concrete weir at the base of the spillway (Figure 9c) and the culvert at the terminal of the outfall (Figure 9d).

The inspections undertaken in 2024-2025 found that the outfall was in good condition. The terminal outfall, located on private land, has been observed as providing good flow during wet weather events. There was no evidence of debris or other flow limiting factors in the receiving tributary immediately downstream of the outfall. Some capacity constraints have been noted on the culverts further downstream on the neighbouring private property. These constraints have not resulted in any observed adverse effects.

There were 11 discharges during the reporting period to the Taitaia Stream, described in Table 1.

Table 1: Discharges to the Taitaia Stream in 2024-2025

Date	Approximate volume (m^3)	Discharge source	Reason
2 – 3 July 2024	146	UV overflow	Unplanned due to an error with the A-B treated water cross-over valve
2 September 2024	620	B block mixing tank, UV overflow	Planned discharge for inspections and maintenance
30 November 2024	14,426	B block mixing tank, UV overflow	Unplanned due to low chlorine residual
22 December 2024	2,298	B block mixing tank	Unplanned due to chlorine residual discrepancy on filtered water instruments
28 February 2025	687	B block mixing tank	Unplanned due to high fluoride levels
29 March 2025	168	B block mixing tank	Unplanned due to low chlorine residual
18 April 2025	195	A block mixing tank	Unplanned due to power outage causing issues with chlorine and fluoride dosing
12 May 2025	700	Upwash tank 2	Planned discharge for inspections and maintenance
13 May 2025	1,300	B block mixing tank	Planned discharge for inspections and maintenance
19 May 2025	583	B block mixing tank	Unplanned due to maintenance requirements (related to 12-13 May discharges)
6 June 2025	1,000	A block mixing tank	Unplanned due to high turbidity from the filters

Auckland Council was notified of these discharges at the time, and the Taitaia Stream was inspected following each of these events to identify, amongst other things, scouring, biological disturbance, evidence of sedimentation, debris accumulation, and any potential channel or culvert blockages. No adverse effects caused by the discharge events were observed, and none of the events required emergency management or regulatory action beyond standard notification.

a) Lagoon exit

b) Concrete spillway

c) Weir structure

d) Terminal outfall

Figure 9: Outfall structure 1 photos.

4.2.2 Outfall structure 2

Figure 10 shows the outfall structure 2 (Figure 10a) and the tributary downstream of the structure (Figure 10b-d). The inspections of outfall structure 2 indicated this structure was in good condition.

There is some grass and fern encroachment in the vicinity of the outfall around the velocity reducing structures; however, no flow-limiting factors were observed. A smaller weir, approximately 50 m downstream of the outfall, was removed by the private landowners in the past year. Additionally, there is another weir approximately 70 m downstream of the outfall, which would still provide some attenuation and velocity reduction, should a discharge from the treatment plant occur to the western tributary.

a) Outfall structure (left)

b) 15 m downstream of outfall

c) 30 m downstream of outfall

d) 50 m downstream

Figure 10: Outfall structure 2 photos.

5 CONCLUSIONS

This report presents annual monitoring data for consents 42796, 39614 and supplementary data for consent 36125 from 1 July 2024 to 30 June 2025. The Ardmore WTP was fully compliant with sludge discharge volumes and process or off spec discharge quality limits. There were 11 discharges from the plant throughout the reporting period, and all post-discharge requirements were met. Overall, the plant was fully compliant with the resource consents for 2024-2025.

Appendix A. Discharge Water Quality Data

	Lagoon 3 Discharge Site					Control Site				
Sample date	pH	Soluble Aluminium (mg/L)	Total Aluminium (mg/L)	Fluoride (mg/L)	Suspended Solids (mg/L)	pH	Soluble Aluminium (mg/L)	Total Aluminium (mg/L)	Fluoride (mg/L)	Suspended Solids (mg/L)
	6 - 9	<1 mg/L	<1 mg/L	<1 mg/L	<30 mg/L					
3/07/2024	7.40	0.01	0.07	0.20	0.70	6.90	0.17	0.50	0.03	8.00
11/07/2024	7.70	0.01	0.11	0.21	3.00	7.10	0.07	0.27	0.00	4.00
17/07/2024	7.40	0.02	0.09	0.21	0.80	6.80	0.09	0.26	0.04	0.80
24/07/2024	7.40	0.04	0.12	0.23	1.80	7.00	0.14	0.25	0.03	2.40
31/07/2024	7.40	0.10	0.11	0.20	1.40	7.00	0.02	0.86	0.02	5.00
7/08/2024	7.60	0.02	0.10	0.23	1.40	7.10	0.06	0.26	0.04	1.90
14/08/2024	7.40	0.02	0.07	0.25	2.60	7.00	0.07	0.19	0.03	4.40
21/08/2024	7.50	0.04	0.23	0.24	5.00	7.10	0.18	0.45	0.04	6.00
28/08/2024	7.70	0.03	0.12	0.21	2.00	7.10	0.10	0.49	0.02	3.80
4/09/2024	7.50	0.08	0.41	0.20	8.70	7.10	0.15	0.63	0.00	15.00
12/09/2024	8.50	0.03	0.10	0.29	1.20	7.00	0.10	0.31	0.03	4.00
19/09/2024	7.50	0.02	0.15	0.25	8.00	7.20	0.17	0.30	0.02	3.80
28/09/2024	7.40	0.02	0.15	0.28	3.00	7.00	0.09	0.24	0.05	2.80
3/10/2024	7.40	0.01	0.12	0.28	4.20	7.00	0.08	0.23	0.08	4.20
10/10/2024	7.30	0.02	0.14	0.21	1.60	7.10	0.16	0.55	0.00	4.60
16/10/2024	7.30	0.02	0.12	0.21	3.00	7.00	0.09	0.26	0.00	3.10
23/10/2024	7.40	0.01	0.09	0.25	3.00	6.90	0.08	0.23	0.03	1.70
31/10/2024	7.30	0.01	0.13	0.27	3.00	7.00	0.08	0.27	0.05	3.80
7/11/2024	7.30	0.01	0.09	0.24	2.20	7.00	0.04	0.46	0.04	73.00
13/11/2024	7.30	0.03	0.11	0.25	5.60	7.10	0.04	0.42	0.04	96.00
20/11/2024	7.30	0.04	0.13	0.26	0.60	6.90	0.07	0.24	0.04	0.50
27/11/2024	7.30	0.02	0.09	0.21	1.80	6.90	0.06	0.36	0.03	24.00
6/12/2024	7.20	0.02	0.09	0.20	2.00	6.80	0.03	0.32	0.05	71.00
11/12/2024	7.10	0.02	0.06	0.19	0.00	-	-	-	-	-
18/12/2024	7.10	0.03	0.18	0.07	1.80	6.80	0.08	0.27	0.05	4.40
23/12/2024	7.00	0.02	0.19	0.20	3.60	6.80	0.07	0.55	0.00	14.00
30/12/2024	7.00	0.04	0.32	0.26	6.00	6.80	0.04	2.20	0.08	360.00
9/01/2025	7.40	0.03	0.17	0.26	2.40	6.80	0.03	8.20	0.03	2200.00
15/01/2025	7.60	0.03	0.12	0.24	1.80	6.90	0.01	4.00	0.04	3500.00
22/01/2025	7.80	0.03	0.14	0.28	3.80	-	-	-	-	-
29/01/2025	7.50	0.04	0.27	0.25	5.60	-	-	-	-	-
5/02/2025	7.50	0.02	0.11	0.30	1.80	-	-	-	-	-
13/02/2025	7.80	0.03	0.12	0.32	1.80	-	-	-	-	-
20/02/2025	7.70	0.05	0.13	0.31	3.00	-	-	-	-	-
26/02/2025	7.80	0.04	0.06	0.33	0.86	-	-	-	-	-
5/03/2025	7.60	0.02	0.06	0.30	1.40	-	-	-	-	-
13/03/2025	7.60	0.03	0.06	0.33	0.00	-	-	-	-	-
20/03/2025	7.00	0.03	0.06	0.38	0.80	-	-	-	-	-
26/03/2025	7.90	0.04	0.09	0.34	1.20	-	-	-	-	-
2/04/2025	7.50	0.04	0.09	0.30	1.00	-	-	-	-	-
10/04/2025	7.40	0.02	0.06	0.24	0.00	5.90	0.08	0.16	0.00	2.80
17/04/2025	8.50	0.04	0.16	0.25	2.40	6.00	0.03	0.09	0.02	3.60
23/04/2025	7.40	0.03	0.09	0.28	1.00	-	-	-	-	-
30/04/2025	7.60	0.03	0.08	0.26	1.00	6.70	0.26	0.72	0.03	4.00
7/05/2025	7.70	0.02	0.08	0.19	2.60	6.40	0.11	0.25	0.00	1.40
14/05/2025	7.30	0.02	0.11	0.20	1.00	6.50	0.14	0.31	0.02	5.20

21/05/2025	7.50	0.03	0.09	0.22	1.80	6.30	0.12	0.23	0.00	1.60
29/05/2025	6.80	0.05	0.30	0.12	2.80	6.70	0.34	0.80	0.02	5.20
5/06/2025	7.30	0.03	0.14	0.14	2.20	6.70	0.25	0.37	0.03	3.00
12/06/2025	7.20	0.07	0.34	0.12	4.00	6.80	0.61	0.96	0.03	6.00
18/06/2025	7.30	0.03	0.08	0.19	1.80	6.60	0.20	0.37	0.03	1.30
26/06/2025	7.30	0.02	0.05	0.16	1.00	6.60	0.15	0.30	0.02	2.20

Note: Control samples are not able to be taken when there is insufficient flow

Appendix B. Data source locations

Category	Parameter	Source platform	Tag/ID
Sludge volume	Centrifuge 2 production	Seeq	N/A
Sludge volume	Press 1 production	Seeq	N/A
Sludge volume	Press 3 production	Seeq	N/A
Water quality	pH	Power BI	N/A
Water quality	Fluoride	Power BI	N/A
Water quality	Total suspended solids	Power BI	N/A
Water quality	Soluble aluminium	Power BI	N/A
Water quality	Total aluminium	Power BI	N/A