Wellsford Water Treatment Plant
Annual Report 2024-2025

Final - July 2025

Watercare

QUALITY INFORMATION

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Reference	DIS60396929
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Name and position of originator	Krysia Buckley, Environmental Scientist
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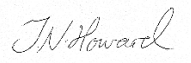
Revision History

Rev	Revision Date	Name	Position	Signature
1	28/07/2025	Michiel Jonker	Environmental Care Manager	
2	29/07/2025	Martyn Lee	Operations Controller	
3	29/07/2025	Isaac Howard	Water Production Manager North	

Approved

Date	Name	Position	Signature
28/07/2025	Michiel Jonker	Environmental Care Manager	

CONSENT CHANGE AND MONITORING HISTORY

Change type	Description	Effective date	Reference / condition	Reporting / monitoring implications
Consent Issued	To discharge filter to wate, filter backwash and flocculent bleed water from Wellsford Waer Treatment Plant into the Hōteo River.	12/10/2011	Consent 38424	Report all monitoring undertaken in an annual report.
Interim Consenting: Hydrology Technical Assessment	Assessment of effects associated with application for new consents, included seeking to increase daily discharge limits of contaminants to the Hōteo River.	2/2/2022	BUN60396927	
Consent Reissue	To meet customer demand by augmenting supply through groundwater production, and to increase discharge volumes to Hōteo River to augment river flow.	20/04/2023	BUN60396927, including Discharge Consent DIS60396929	Report all monitoring undertaken in annual report.
Annual Reporting	Report to include maintenance service, flow records, plant system issues, rainfall events within 48 hrs of sampling.	31/07/2023		Annual report submitted 31 July each year.

EXECUTIVE SUMMARY

The 2024-2025 Annual Report for the Wellsford Water Treatment Plant (WTP) provides an overview of the plant's operations, maintenance activities, discharge monitoring, and compliance with the consent conditions. This report covers the period from 1 July 2024 to 30 June 2025, and aims to fulfil the requirements of consent DIS60396929.

The key findings were:

- **Maintenance and upgrades:** Routine maintenance of the Intake Structure was conducted, however there was a delay with the intake tower and weir inspection due to replacement of the access bridge during this period. Both raw water pumps were replaced in February 2025.
- **Discharge flow monitoring:** Daily discharge volumes were monitored and calculated. There were no instances of non-compliance with daily volumes below the 470 m^3/day consent limit.
- **Discharge water quality monitoring:** consent monitoring of soluble aluminium and pH returned compliant results. However, there were exceedances recorded for turbidity and total chlorine. For both turbidity exceedances, the downstream sample returned results lower than that of the upstream control site, indicating no detrimental effects on the river. Total chlorine levels at both the control and downstream sites were higher than the consent limit for the discharge waters.
- **Environmental effects:** Despite isolated exceedances in turbidity and chlorine, monitoring indicates that the discharges did not cause discernible adverse effects on the Hōteo River, with downstream results typically lower or similar to control site values.

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1 INTRODUCTION

1.1 Background

The Hōteo River catchment is the largest in the Auckland region at 405 km^2 and drains nearly 8% of the total Auckland region. The catchment is situated at the northern boundary of the Auckland region. The river runs through a predominantly rural catchment where runoff from agricultural and forestry activities along the river are sources of contamination. The river flows to the southwest from its source at Waiteitei and drains into the Kaipara Harbour.

The Wellsford Water Treatment Plant (WTP) is located at 362 Wayby Valley Road, approximately 3 km east of Wellsford on the south-eastern side of Wayby Valley Road (Figure 1) and is owned by Watercare. The surrounding land use is predominantly rural residential and comprises rural farmland, including dairying and dry stock. Watercare holds resource consents which permits water abstraction from the Hōteo River for municipal supply, and the discharge of filter waste, filter backwash and clarified sludge water back into the river from the water treatment process. Watercare also holds a resource consent to take and use groundwater, however this is not currently in use.

The abstraction point from the Hōteo River is immediately adjacent to the WTP. The intake of water is through a concrete tower with pumps conveying water to the WTP, which provides coagulation, sedimentation, filtration, UV disinfection and chlorination treatment processes. Final discharge from the WTP enter the Hōteo River via an open pipe perpendicular to the river channel, approximately 50 m downstream of the intake.

Figure 1-1 Aerial image of Wellsford water treatment plant alongside the Hōteo River showing the intake sample point (orange diamond), discharge sample point (circle) and downstream sample point (green diamond).

1.2 Consent requirements

Consent DIS60396929 (the consent) allows for the:

Discharge, for a duration of 10-years, into the Hōteo River,

1) flocculant backwash from the existing Wellsford Water Treatment Plant and,

2) carbonated groundwater from the production bore, with a total combined discharge volume of up to 470m3 / day.

This report satisfies condition 49 of the consent which requires an annual report to be submitted by 30th July 2025, detailing:

a. Maintenance service;
b. Discharge flow monitoring records;
c. Details of any water treatment plant system malfunction(s) or replacements;
d. Results of the groundwater and off spec water discharge quality monitoring as required by conditions 33 to 46 (in the year undertaken),
e. Details of any rainfall events which occurred within 48 hours of sampling.

2 MAINTENANCE SERVICES, REPLACEMENTS AND SYSTEM MALFUNCTIONS

2.1 Maintenance services

Routine maintenance of the intake structure was conducted and includes:

- Six monthly sump pump mechanical check;
- Twelve monthly sump pump electrical check;
- Six monthly low lift pump motor check;
- Weir and intake tower dive inspection;
- Intake screen dive inspection.

Additionally, the bridge which provides access to the intake structure was replaced this year, and as such there has been an internal delay to conduct the intake tower and weir inspections. These will be conducted later in the year.

2.2 Replacements

Both raw water pumps were replaced in February 2025, following our 5 yearly replacement/ refurbishment schedule due to wear and tear, mainly caused by the presence of sand in the river water.

2.3 System malfunctions

There are no system malfunctions that affected the discharge of off-spec waters from the WTP to report for the 2024-25 reporting period. The main incident that occurred was a blockage to the intake structure on 4 April 2025 that required divers to repair the following day, but this had no effect on the plant's discharge of waste.

3 DISCHARGE FLOW MONITORING RECORDS

Condition 31 of the consent requires the maximum volume of off-spec water discharged to the Hōteo River must not exceed 470 m^3/day, with a maximum discharge rate of 3,350 L/min. The WTP has never had a flowmeter in place to capture the volumes and rate of discharge to the river. Measuring this would require considerable civil work to reconstruct the discharge system, and with the plan for a new plant from 3 years' time, interim works would be uneconomical. Improved monitoring will be included in the plans for the new plant. Currently, components of the final discharge are measured or calculated, then combined to provide the daily discharge volume. The final discharge components comprise of:

- Base Discharge – approximately 45 m^3/day of clarified sludge water and conservatively estimated up to 135 m^3/day from instrumentation;
- Backwash process – approximately 110 m^3/day generally three days a week;
- Filter to waste – varies daily based on quality of river water, flow meter measures this flow.

The base discharge and backwash volumes and rates were calculated as part of the GHD's Hydrology Technical Assessment for the Interim Consenting procedure, and as such are used to calculate the discharge volumes and rates in conjunction with the instantaneous flow data available for the filter to waste component. All discharge volume data can be found in Appendix B.

3.1 Daily discharge volumes

The total daily discharge volumes for the period July 2024 to June 2025 are presented in Figure 3-1. During the reporting period, there were no instances where the daily discharge exceeded the limit of 470 m^3/day. The highest daily volume occurred on 20 December 2024, recording 450.05 m^3/day.

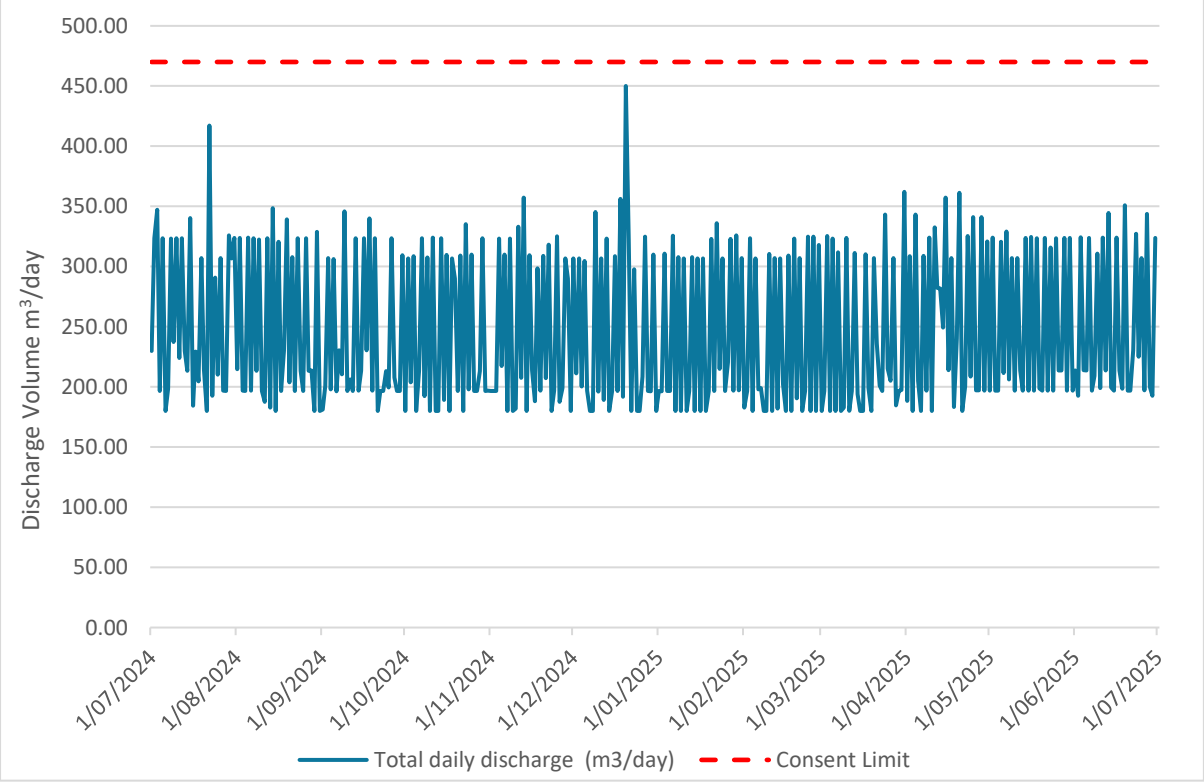

Figure 3-1 Daily discharge volumes into Hōteo River.

3.2 Maximum rates of discharge

Not all components of the WTP's discharge occur continuously, with certain components only discharging during production, and others only when the plant is offline. The highest instantaneous flow rate occurs during the backwash procedure, specifically during the first sequence: filter drain down. The WTP is not in production during this time, so the discharge consists of filter drain down plus analyser waste from the only two instruments that continue to discharge when offline. These are the treated water turbidity and treated water free available chlorine (FAC), which combined, discharge at the approximate rate of 1 L/min. The maximum volume of the drain down is 43m^3, and therefore the only way of breaching the 3,350 L/min is for the drain down time to be under 13 mins. However, the consent stipulates discharge rate averaged over a 15 min period, meaning maximum discharge rate would be within consented limits, due to a small portion of that time only having a discharge rate of 1 L/min. This suggests that this plant cannot breach this discharge rate during normal operating procedures, and as there were no incidents affecting the discharge of waste during the reporting period July 2024 to June 2025, the maximum discharge limit could not have been exceeded.

4 DISCHARGE QUALITY MONITORING

4.1 Frequency and parameters

Sampling frequency and parameters for discharge quality monitoring are outlined in Table 4-1 as per the conditions of the discharge consent. The sampling location of the 100 m downstream of discharge has changed due to health and safety and access issues along Hoteo River. For the past few years, the downstream sampling point has been accessed from Wilson Road Bridge which is 500 m downstream of the discharge outlet.

Table 4-1 Discharge sampling requirements

Monitoring points	Frequency	Parameters
Discharge outlet	Monthly	Turbidity (limit = <10 NTU)*, Total chlorine (limit = <0.02g/m^3)* Dissolved aluminium (limit = <0.15g/m^3)* pH (limit = between 6.5-8.0 inclusive)
Filter drain down Filter backwash Filter to waste Hōteo river intake structure/ control 100 m downstream of discharge	Monthly	Dissolved aluminium Total aluminium pH Sulphate Total chlorine Free available chlorine (FAC) Total suspended solids Turbidity
Instrumentation water Clarifier sludge bleed	Monthly between January and April (inclusive)	Dissolved aluminium Total aluminium pH Sulphate Total chlorine Free available chlorine (FAC) Total suspended solids Turbidity

**** OR no greater than the upstream value measured as specified in Condition 14(a)***

4.2 Discharge outlet monitoring

A comparison of the discharge outlet water quality results against the consent limits and control sample results taken at the inlet structure are presented through Figure 4-1 to Figure 4-4 **.** Additionally, the water quality at the downstream sampling point are included to help establish if there are any detrimental or noticeable effects on the stream as a result of the plant's discharge activities. The locations of these sample points are specified in Figure 1-1.

All water quality monitoring results obtained throughout the 2024-2025 reporting period are presented in Appendix C.

4.3 Turbidity

The majority of the discharge outlet results for turbidity are lower than the consent limit and the control site results. There were two instances where the discharge outlet turbidity results exceeded the consented limit:

1. 16/10/2024 – 240 NTU result was observed on this day, which aligns with the discharge of backwash water, and would therefore have a much higher sediment load. The downstream sample on the same day did not show an increased level of turbidity or suspended solids, indicating that the temporary high turbidity did not have a notable effect on the receiving waters. In addition, the suspended solids result was much higher at the control site than the downstream site, decreasing from 10 g/m^3 to 2.6 g/m^3, again supporting the theory that the discharge is not having a detrimental effect.
2. 22/11/24 – 23 NTU, higher than the 18 NTU observed at the control site as well as the consent limit. The downstream result was lower than the control, suggesting that the higher turbidity observed in the discharge outlet sample did not have any noticeable effect on the receiving waters.

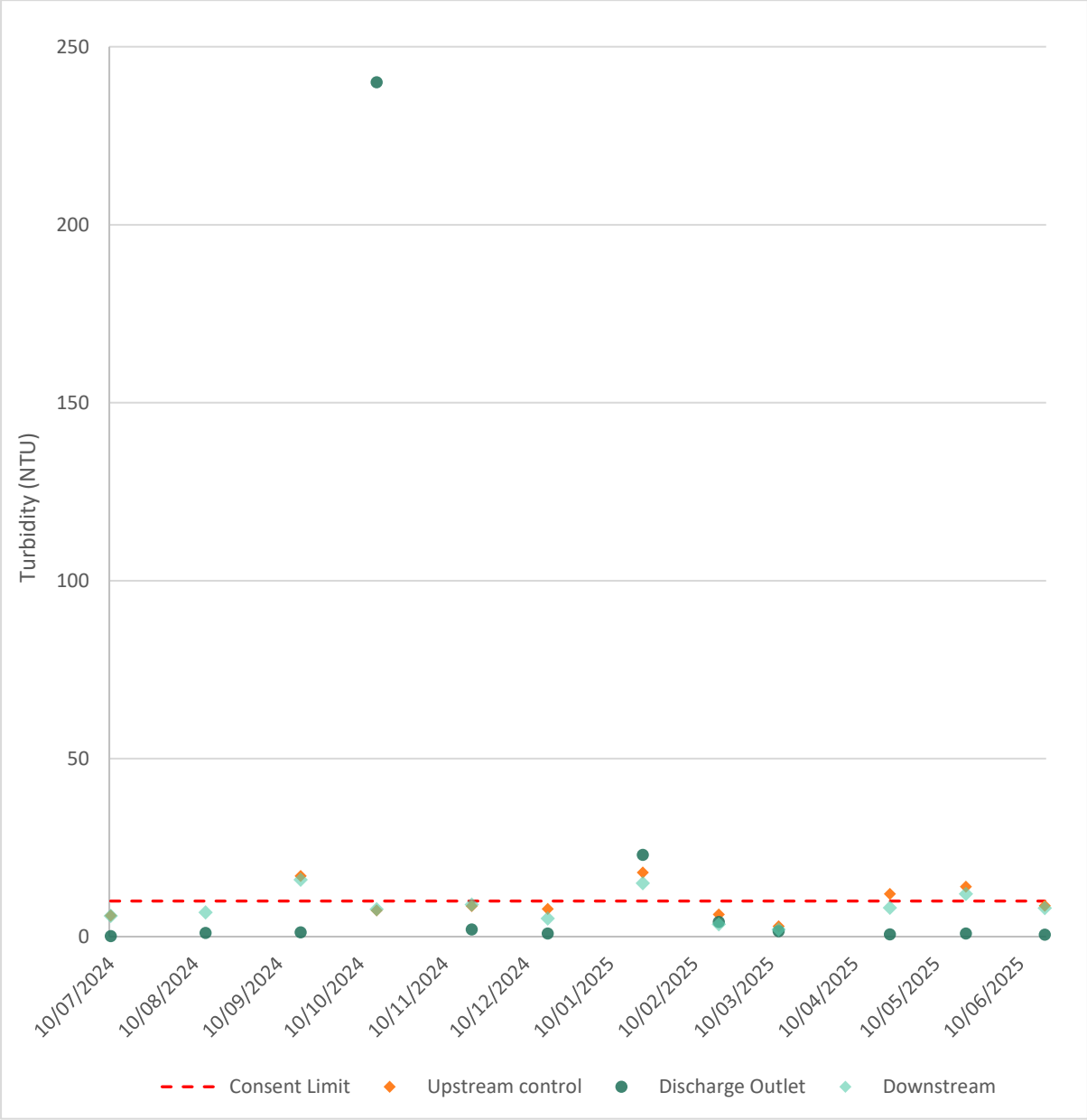

Figure 4-1 Turbidity results for the discharge outlet, compared to the Hōteo River intake control and downstream sites for the 2024- 2025 reporting period

4.4 Total chlorine

All total chlorine results for the 2024-25 reporting period are above the consent limit of 0.02 g/m^3, including the upstream control site. There were four occasions where the chlorine results at the discharge outlet exceeded the control site results:

1. 18/9/2024 – 0.230 g/m^3
2. 16/10/2024 – 0.08 g/m^3
3. 18/12/2024 – 0.12 g/m^3
4. 13/03/2024 – 0.08 g/m^3

Chlorine sampling in untreated water can result in sampling errors, and therefore the stream site results may not be completely accurate, affecting the reliability of the reported exceedances. Dechlorination has been discussed as part of the design plans for the new treatment plant, which would consistently reduce levels in the discharge.

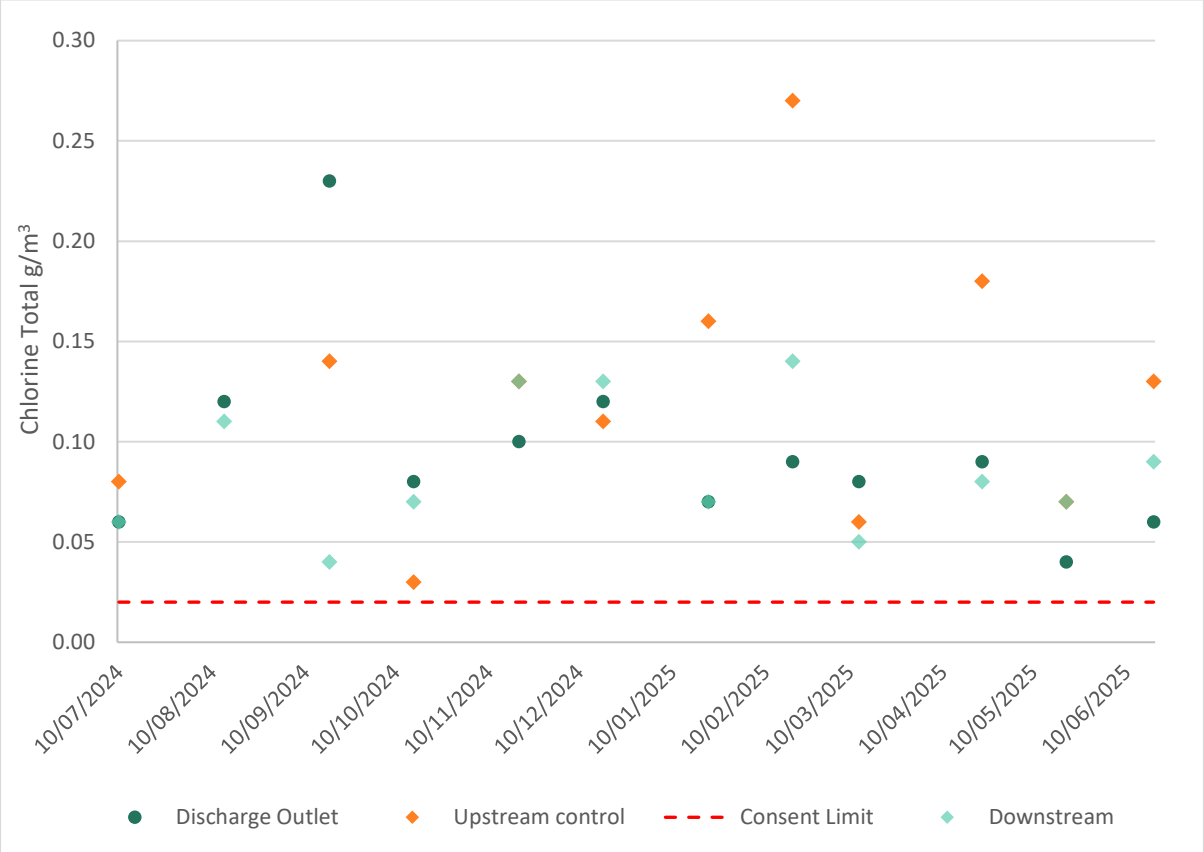

Figure 4-2 Total chlorine results for the discharge outlet, compared to the control and downstream sites for the 2024- 2025 reporting period.

4.5 Dissolved aluminium

There were no exceedances for dissolved aluminium during the 2024-2025 reporting period, with all discharge outlet samples below that of the control site samples as well as the consent limit.

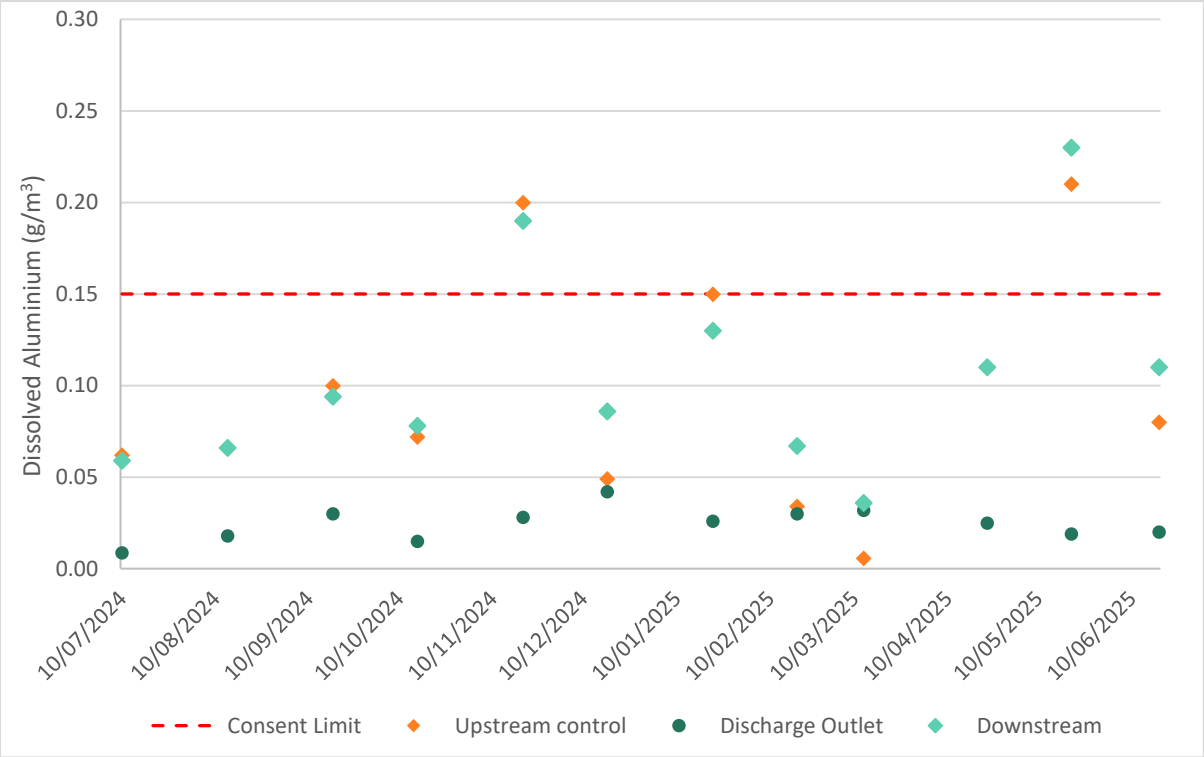

Figure 4-3 Dissolved aluminium results for the discharge outlet, compared to the control and downstream sites for the 2024- 2025 reporting period.

4.6 pH

There were no exceedances for pH during the 2024-2025 reporting period, with all discharge outlet samples within the consent limits.

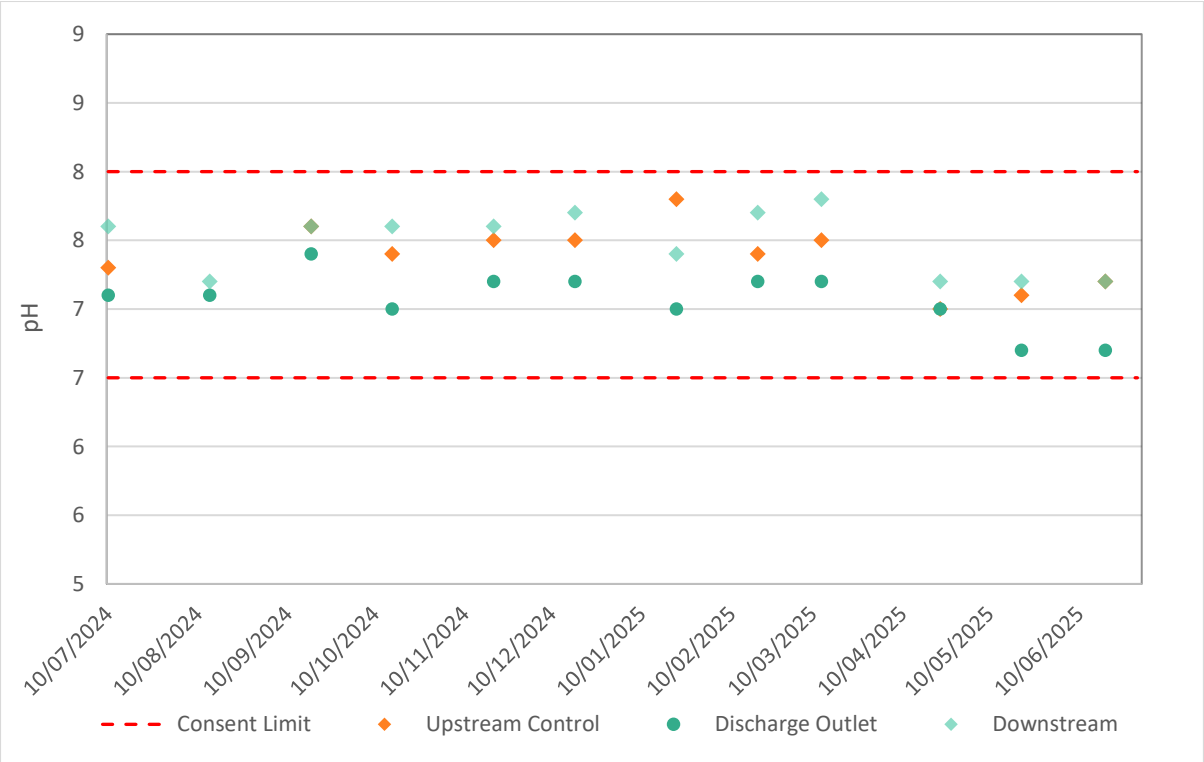

Figure 4-4 pH results for the discharge outlet, compared to the control and downstream sites for the 2024- 2025 reporting period.

5 CONCLUSION

The WTP discharge system operated as intended throughout the 2024–25 monitoring period. While daily discharge volumes remained within expected operational parameters, water quality monitoring identified a small number of exceedances against consented trigger levels—most notably for turbidity, total chlorine and dissolved aluminium.

These exceedances were infrequent and generally minor, with contextual review suggesting they likely reflect limitations in on site measurements, natural variation or short-lived operational changes rather than operational issues.

Appendix A. Rainfall events within 48 hours of sampling

Table 5-1 Presenting total daily rainfall on the day of sampling and either side (Sample days are in coloured text).

Date	Total daily rainfall (mm)
9/07/2024	0
10/07/2024	0
11/07/2024	0
13/08/2024	0
14/08/2024	0
15/08/2024	0
17/09/2024	5
18/09/2024	3.5
19/09/2024	0
15/10/2024	0
16/10/2024	0.5
17/10/2024	0
19/11/2024	1.5
20/11/2024	3.5
21/11/2024	2.5
17/12/2024	0
18/12/2024	0
19/12/2024	0
21/01/2025	6.5
22/01/2025	0
23/01/2025	0
18/02/2025	0
19/02/2025	0
20/02/2025	0
12/03/2025	2
13/03/2025	0
14/03/2025	0
22/04/2025	0.5
23/04/2025	0.5
24/04/2025	0
20/05/2025	0
21/05/2025	0.5
22/05/2025	0
18/06/2025	0
19/06/2025	11
20/06/2025	1

Appendix B. Daily discharge volumes

Table 5-2 Daily discharge component volumes and totals

Date	Backwash max vol (m3/day)	Base Discharge max vol (m3/day)	FTW balance daily vol (m3/day)	Total daily discharge (m3/day)
1/07/2024		180	49.929	229.93
2/07/2024	110	180	33.406	323.41
3/07/2024	110	180	57.265	347.26
4/07/2024		180	16.707	196.71
5/07/2024	110	180	33.374	323.37
6/07/2024		180	0.000	180.00
7/07/2024		180	18.564	198.56
8/07/2024	110	180	33.213	323.21
9/07/2024		180	57.320	237.32
10/07/2024	110	180	33.473	323.47
11/07/2024		180	43.933	223.93
12/07/2024	110	180	33.428	323.43
13/07/2024		180	49.949	229.95
14/07/2024		180	33.298	213.30
15/07/2024	110	180	50.226	340.23
16/07/2024		180	4.421	184.42
17/07/2024		180	49.309	229.31
18/07/2024		180	24.539	204.54
19/07/2024	110	180	16.904	306.90
20/07/2024		180	34.148	214.15
21/07/2024		180	0.000	180.00
22/07/2024	110	180	127.017	417.02
23/07/2024		180	12.587	192.59
24/07/2024	110	180	0.665	290.67
25/07/2024		180	30.159	210.16
26/07/2024	110	180	16.884	306.88
27/07/2024		180	16.771	196.77
28/07/2024		180	16.708	196.71
29/07/2024	110	180	36.022	326.02

Date	Backwash max vol (m3/day)	Base Discharge max vol (m3/day)	FTW balance daily vol (m3/day)	Total daily discharge (m3/day)
30/07/2024	110	180	16.713	306.71
31/07/2024	110	180	33.699	323.70
1/08/2024		180	34.703	214.70
2/08/2024	110	180	33.752	323.75
3/08/2024		180	16.773	196.77
4/08/2024		180	16.694	196.69
5/08/2024	110	180	33.985	323.99
6/08/2024		180	16.755	196.75
7/08/2024	110	180	33.422	323.42
8/08/2024		180	33.413	213.41
9/08/2024	110	180	32.346	322.35
10/08/2024		180	16.723	196.72
11/08/2024		180	7.671	187.67
12/08/2024	110	180	33.425	323.43
13/08/2024		180	2.717	182.72
14/08/2024	110	180	58.493	348.49
15/08/2024		180	0.000	180.00
16/08/2024	110	180	30.583	320.58
17/08/2024		180	16.705	196.70
18/08/2024		180	50.089	230.09
19/08/2024	110	180	49.330	339.33
20/08/2024		180	23.674	203.67
21/08/2024	110	180	17.861	307.86
22/08/2024		180	16.694	196.69
23/08/2024	110	180	33.503	323.50
24/08/2024		180	33.359	213.36
25/08/2024		180	16.659	196.66
26/08/2024	110	180	33.437	323.44
27/08/2024		180	33.418	213.42

Date	Backwash max vol (m3/day)	Base Discharge max vol (m3/day)	FTW balance daily vol (m3/day)	Total daily discharge (m3/day)
28/08/2024		180	33.557	213.56
29/08/2024		180	0.000	180.00
30/08/2024	110	180	38.752	328.75
31/08/2024		180	0.000	180.00
1/09/2024		180	1.097	181.10
2/09/2024		180	20.729	200.73
3/09/2024	110	180	16.954	306.95
4/09/2024		180	18.062	198.06
5/09/2024	110	180	16.085	306.09
6/09/2024		180	16.433	196.43
7/09/2024		180	50.518	230.52
8/09/2024		180	30.409	210.41
9/09/2024	110	180	55.824	345.82
10/09/2024		180	16.667	196.67
11/09/2024		180	26.288	206.29
12/09/2024		180	16.528	196.53
13/09/2024	110	180	33.426	323.43
14/09/2024		180	16.766	196.77
15/09/2024		180	33.250	213.25
16/09/2024	110	180	33.432	323.43
17/09/2024		180	50.298	230.30
18/09/2024	110	180	50.078	340.08
19/09/2024		180	16.774	196.77
20/09/2024	110	180	33.419	323.42
21/09/2024		180	0.000	180.00
22/09/2024		180	16.679	196.68
23/09/2024		180	16.485	196.49
24/09/2024		180	32.974	212.97
25/09/2024		180	19.400	199.40

Date	Backwash max vol (m3/day)	Base Discharge max vol (m3/day)	FTW balance daily vol (m3/day)	Total daily discharge (m3/day)
26/09/2024	110	180	33.632	323.63
27/09/2024		180	27.745	207.74
28/09/2024		180	16.661	196.66
29/09/2024		180	16.493	196.49
30/09/2024	110	180	19.497	309.50
1/10/2024		180	0.000	180.00
2/10/2024	110	180	16.796	306.80
3/10/2024		180	23.849	203.85
4/10/2024	110	180	18.525	308.53
5/10/2024		180	0.000	180.00
6/10/2024		180	33.394	213.39
7/10/2024	110	180	33.390	323.39
8/10/2024		180	12.260	192.26
9/10/2024	110	180	17.470	307.47
10/10/2024		180	0.000	180.00
11/10/2024	110	180	33.932	323.93
12/10/2024		180	0.000	180.00
13/10/2024		180	0.000	180.00
14/10/2024	110	180	33.460	323.46
15/10/2024		180	9.129	189.13
16/10/2024	110	180	19.790	309.79
17/10/2024		180	0.000	180.00
18/10/2024	110	180	16.849	306.85
19/10/2024	110	180	0.000	290.00
20/10/2024		180	16.690	196.69
21/10/2024	110	180	19.179	309.18
22/10/2024		180	0.000	180.00
23/10/2024	110	180	45.100	335.10
24/10/2024		180	17.992	197.99

Date	Backwash max vol (m3/day)	Base Discharge max vol (m3/day)	FTW balance daily vol (m3/day)	Total daily discharge (m3/day)
25/10/2024	110	180	20.011	310.01
26/10/2024		180	16.715	196.71
27/10/2024		180	16.634	196.63
28/10/2024		180	33.038	213.04
29/10/2024	110	180	33.421	323.42
30/10/2024		180	16.672	196.67
31/10/2024		180	16.856	196.86
1/11/2024		180	16.675	196.67
2/11/2024		180	16.579	196.58
3/11/2024		180	16.480	196.48
4/11/2024	110	180	33.154	323.15
5/11/2024		180	37.364	217.36
6/11/2024	110	180	20.007	310.01
7/11/2024		180	0.000	180.00
8/11/2024	110	180	33.366	323.37
9/11/2024		180	0.000	180.00
10/11/2024		180	1.869	181.87
11/11/2024	110	180	43.149	333.15
12/11/2024		180	27.472	207.47
13/11/2024	110	180	67.321	357.32
14/11/2024		180	0.000	180.00
15/11/2024	110	180	19.351	309.35
16/11/2024		180	33.926	213.93
17/11/2024		180	8.177	188.18
18/11/2024	110	180	8.446	298.45
19/11/2024		180	16.906	196.91
20/11/2024	110	180	18.907	308.91
21/11/2024		180	27.332	207.33
22/11/2024	110	180	28.254	318.25

Date	Backwash max vol (m3/day)	Base Discharge max vol (m3/day)	FTW balance daily vol (m3/day)	Total daily discharge (m3/day)
23/11/2024		180	0.000	180.00
24/11/2024		180	16.783	196.78
25/11/2024	110	180	35.074	325.07
26/11/2024		180	7.571	187.57
27/11/2024		180	18.986	198.99
28/11/2024	110	180	16.819	306.82
29/11/2024	110	180	0.000	290.00
30/11/2024		180	0.000	180.00
1/12/2024	110	180	16.612	306.61
2/12/2024		180	31.251	211.25
3/12/2024	110	180	16.775	306.77
4/12/2024		180	20.360	200.36
5/12/2024	110	180	14.654	304.65
6/12/2024		180	16.822	196.82
7/12/2024		180	0.000	180.00
8/12/2024		180	0.000	180.00
9/12/2024	110	180	55.365	345.36
10/12/2024		180	15.951	195.95
11/12/2024	110	180	16.873	306.87
12/12/2024		180	9.140	189.14
13/12/2024	110	180	33.249	323.25
14/12/2024		180	0.000	180.00
15/12/2024		180	16.277	196.28
16/12/2024	110	180	18.515	308.52
17/12/2024		180	16.635	196.64
18/12/2024	110	180	66.213	356.21
19/12/2024		180	11.867	191.87
20/12/2024	110	180	160.046	450.05
21/12/2024		180	142.888	322.89

Date	Backwash max vol (m3/day)	Base Discharge max vol (m3/day)	FTW balance daily vol (m3/day)	Total daily discharge (m3/day)
22/12/2024		180	0.000	180.00
23/12/2024	110	180	7.770	297.77
24/12/2024		180	0.000	180.00
25/12/2024		180	0.000	180.00
26/12/2024		180	28.582	208.58
27/12/2024	110	180	34.949	324.95
28/12/2024		180	16.588	196.59
29/12/2024		180	16.239	196.24
30/12/2024	110	180	20.040	310.04
31/12/2024		180	0.000	180.00
1/01/2025		180	16.587	196.59
2/01/2025		180	16.370	196.37
3/01/2025	110	180	20.656	310.66
4/01/2025		180	16.698	196.70
5/01/2025		180	16.536	196.54
6/01/2025	110	180	35.723	325.72
7/01/2025		180	0.000	180.00
8/01/2025	110	180	17.934	307.93
9/01/2025		180	0.000	180.00
10/01/2025	110	180	16.861	306.86
11/01/2025		180	0.000	180.00
12/01/2025		180	16.495	196.50
13/01/2025	110	180	17.920	307.92
14/01/2025		180	0.000	180.00
15/01/2025	110	180	16.656	306.66
16/01/2025		180	0.000	180.00
17/01/2025	110	180	16.791	306.79
18/01/2025		180	0.000	180.00
19/01/2025		180	16.401	196.40

Date	Backwash max vol (m3/day)	Base Discharge max vol (m3/day)	FTW balance daily vol (m3/day)	Total daily discharge (m3/day)
20/01/2025	110	180	32.959	322.96
21/01/2025		180	16.558	196.56
22/01/2025	110	180	46.044	336.04
23/01/2025		180	34.881	214.88
24/01/2025	110	180	16.692	306.69
25/01/2025		180	16.608	196.61
26/01/2025		180	40.323	220.32
27/01/2025	110	180	33.013	323.01
28/01/2025		180	16.821	196.82
29/01/2025	110	180	35.963	325.96
30/01/2025		180	17.043	197.04
31/01/2025	110	180	16.910	306.91
1/02/2025		180	2.900	182.90
2/02/2025		180	16.533	196.53
3/02/2025	110	180	33.370	323.37
4/02/2025		180	0.000	180.00
5/02/2025	110	180	16.832	306.83
6/02/2025		180	17.938	197.94
7/02/2025		180	18.975	198.98
8/02/2025		180	0.000	180.00
9/02/2025		180	0.000	180.00
10/02/2025	110	180	20.407	310.41
11/02/2025		180	0.000	180.00
12/02/2025	110	180	16.925	306.92
13/02/2025		180	1.844	181.84
14/02/2025	110	180	16.760	306.76
15/02/2025		180	22.102	202.10
16/02/2025		180	0.000	180.00
17/02/2025	110	180	19.020	309.02

Date	Backwash max vol (m3/day)	Base Discharge max vol (m3/day)	FTW balance daily vol (m3/day)	Total daily discharge (m3/day)
18/02/2025		180	0.000	180.00
19/02/2025	110	180	33.219	323.22
20/02/2025		180	10.413	190.41
21/02/2025	110	180	16.877	306.88
22/02/2025		180	0.000	180.00
23/02/2025		180	16.625	196.62
24/02/2025	110	180	34.838	324.84
25/02/2025		180	0.000	180.00
26/02/2025	110	180	34.780	324.78
27/02/2025		180	0.000	180.00
28/02/2025	110	180	27.829	317.83
1/03/2025		180	0.000	180.00
2/03/2025		180	16.592	196.59
3/03/2025	110	180	35.482	325.48
4/03/2025		180	0.000	180.00
5/03/2025	110	180	33.312	323.31
6/03/2025		180	0.000	180.00
7/03/2025	110	180	21.741	311.74
8/03/2025		180	0.000	180.00
9/03/2025		180	2.675	182.68
10/03/2025	110	180	33.833	323.83
11/03/2025		180	0.149	180.15
12/03/2025		180	16.672	196.67
13/03/2025	110	180	21.392	311.39
14/03/2025		180	13.884	193.88
15/03/2025		180	0.000	180.00
16/03/2025		180	0.000	180.00
17/03/2025	110	180	20.154	310.15
18/03/2025		180	18.885	198.88

Date	Backwash max vol (m3/day)	Base Discharge max vol (m3/day)	FTW balance daily vol (m3/day)	Total daily discharge (m3/day)
19/03/2025		180	0.000	180.00
20/03/2025	110	180	17.121	307.12
21/03/2025		180	55.903	235.90
22/03/2025		180	21.089	201.09
23/03/2025		180	16.479	196.48
24/03/2025	110	180	53.075	343.07
25/03/2025		180	35.153	215.15
26/03/2025		180	25.207	205.21
27/03/2025	110	180	17.124	307.12
28/03/2025		180	4.709	184.71
29/03/2025		180	16.685	196.68
30/03/2025		180	17.315	197.32
31/03/2025	110	180	72.013	362.01
1/04/2025		180	8.309	188.31
2/04/2025	110	180	18.570	308.57
3/04/2025		180	0.000	180.00
4/04/2025	110	180	53.304	343.30
5/04/2025		180	25.091	205.09
6/04/2025		180	0.000	180.00
7/04/2025	110	180	18.833	308.83
8/04/2025		180	16.951	196.95
9/04/2025	110	180	33.956	323.96
10/04/2025		180	0.000	180.00
11/04/2025	110	180	42.517	332.52
12/04/2025		180	102.208	282.21
13/04/2025		180	101.665	281.67
14/04/2025		180	69.176	249.18
15/04/2025	110	180	67.285	357.28
16/04/2025		180	33.887	213.89

Date	Backwash max vol (m3/day)	Base Discharge max vol (m3/day)	FTW balance daily vol (m3/day)	Total daily discharge (m3/day)
17/04/2025	110	180	17.111	307.11
18/04/2025		180	3.372	183.37
19/04/2025		180	60.262	240.26
20/04/2025	110	180	71.270	361.27
21/04/2025		180	0.000	180.00
22/04/2025		180	20.247	200.25
23/04/2025	110	180	35.276	325.28
24/04/2025		180	28.489	208.49
25/04/2025	110	180	50.984	340.98
26/04/2025		180	17.087	197.09
27/04/2025		180	17.042	197.04
28/04/2025	110	180	51.010	341.01
29/04/2025		180	16.983	196.98
30/04/2025	110	180	30.934	320.93
1/05/2025		180	17.000	197.00
2/05/2025	110	180	34.076	324.08
3/05/2025		180	16.965	196.96
4/05/2025		180	16.904	196.90
5/05/2025	110	180	30.659	320.66
6/05/2025		180	31.521	211.52
7/05/2025	110	180	39.093	329.09
8/05/2025		180	26.251	206.25
9/05/2025	110	180	16.968	306.97
10/05/2025		180	16.942	196.94
11/05/2025	110	180	16.917	306.92
12/05/2025		180	33.681	213.68
13/05/2025		180	16.845	196.84
14/05/2025	110	180	33.764	323.76
15/05/2025		180	16.911	196.91

Date	Backwash max vol (m3/day)	Base Discharge max vol (m3/day)	FTW balance daily vol (m3/day)	Total daily discharge (m3/day)
16/05/2025	110	180	34.530	324.53
17/05/2025		180	16.912	196.91
18/05/2025	110	180	33.484	323.48
19/05/2025		180	18.664	198.66
20/05/2025		180	16.859	196.86
21/05/2025	110	180	33.836	323.84
22/05/2025		180	16.855	196.86
23/05/2025	110	180	25.759	315.76
24/05/2025		180	16.892	196.89
25/05/2025	110	180	33.625	323.62
26/05/2025		180	33.710	213.71
27/05/2025		180	33.702	213.70
28/05/2025	110	180	33.842	323.84
29/05/2025		180	16.905	196.90
30/05/2025	110	180	33.828	323.83
31/05/2025		180	16.992	196.99
1/06/2025		180	33.757	213.76
2/06/2025		180	12.505	192.50
3/06/2025	110	180	34.219	324.22
4/06/2025		180	33.840	213.84
5/06/2025		180	33.682	213.68
6/06/2025	110	180	33.851	323.85
7/06/2025		180	16.958	196.96
8/06/2025		180	29.169	209.17
9/06/2025	110	180	20.815	310.82
10/06/2025		180	19.006	199.01
11/06/2025	110	180	33.922	323.92
12/06/2025		180	33.726	213.73
13/06/2025	110	180	54.571	344.57

Date	Backwash max vol (m3/day)	Base Discharge max vol (m3/day)	FTW balance daily vol (m3/day)	Total daily discharge (m3/day)
14/06/2025		180	19.410	199.41
15/06/2025		180	16.862	196.86
16/06/2025	110	180	33.951	323.95
17/06/2025		180	33.699	213.70
18/06/2025		180	18.470	198.47
19/06/2025	110	180	60.894	350.89
20/06/2025		180	16.831	196.83
21/06/2025		180	16.889	196.89
22/06/2025		180	50.328	230.33
23/06/2025	110	180	37.136	327.14
24/06/2025		180	45.180	225.18
25/06/2025	110	180	16.954	306.95
26/06/2025		180	17.145	197.15
27/06/2025	110	180	53.638	343.64
28/06/2025		180	20.180	200.18
29/06/2025		180	12.728	192.73
30/06/2025	110	180	33.867	323.87

Appendix C. Raw water quality results

Table 5-3 All water quality monitoring data collected during the 2024-2025 reporting period at all sampling sites. As per condition 42, samples of instrumentation water and clarifier sludge bleed are taken during January to April

Date	Aluminium Soluble (g/m3)	Aluminium Total (g/m3)	Chlorine Total (g/m3)	FACe (g/m3)	Sulphate (g/m3)	Suspended Solids (g/m3)	Turbidity (NTU)	pH
Discharge Outlet								
10/07/24	0.009		0.06				0.15	7.10
14/08/24	0.018		0.12				1.00	7.10
18/09/24	0.030		0.23				1.20	7.40
16/10/24	0.015		0.08				240.00	7.00
20/11/24	0.028		0.10				2.00	7.20
18/12/24	0.042		0.12				0.90	7.20
22/01/25	0.026		0.07				23.00	7.00
19/02/25	0.030		0.09				4.10	7.20
13/03/25	0.032		0.08				1.50	7.20
23/04/25	0.025		0.09				0.65	7.00
21/05/25	0.019		0.04				0.90	6.70
19/06/25	0.020		0.06				0.55	6.70
Hoteo River Intake Structure								
10/07/24	0.062	0.280	0.08	0.02	12.60	2.80	5.90	7.30
14/08/24	*9.000*	*14.000*	*0.18*	*0.06*	*103.00*	*93.00*	*23.00*	*4.80*
18/09/24	0.100	0.730	0.14	0.03	9.58	10.00	17.00	7.60
16/10/24	0.072	0.380	0.03	0.00	12.30	10.00	7.40	7.40
20/11/24	0.200	0.570	0.13	0.03	17.10	2.40	8.60	7.50
18/12/24	0.049	0.400	0.11	0.07	8.90	33.00	7.80	7.50
22/01/25	0.150	0.870	0.16	0.07	13.50	15.00	18.00	7.80
19/02/25	0.034	0.300	0.27	0.18	8.47	8.00	6.20	7.40
13/03/25	0.006	0.100	0.06	0.02	8.49	5.00	2.90	7.50
23/04/25	0.110	0.680	0.18	0.02	20.20	8.30	12.00	7.00
21/05/25	0.210	1.000	0.07	0.03	13.70	15.00	14.00	7.10
19/06/25	0.080	0.450	0.13	0.03	12.50	3.60	8.70	7.20

Date	Aluminium Soluble (g/m3)	Aluminium Total (g/m3)	Chlorine Total (g/m3)	FACe (g/m3)	Sulphate (g/m3)	Suspended Solids (g/m3)	Turbidity (NTU)	pH
Downstream Site								
10/07/24	0.059	0.290	0.06	0.00	12.80	3.20	5.80	7.60
14/08/24	0.066	0.320	0.11	0.03	10.70	4.20	6.80	7.20
18/09/24	0.094	0.790	0.04	0.02	10.70	8.80	16.00	7.60
16/10/24	0.078	0.450	0.07	0.04	12.30	2.60	7.70	7.60
20/11/24	0.190	0.560	0.13	0.03	17.60	2.80	9.00	7.60
18/12/24	0.086	0.340	0.13	0.05	10.10	2.70	5.10	7.70
22/01/25	0.130	0.840	0.07	0.00	13.70	9.80	15.00	7.40
19/02/25	0.067	0.170	0.14	0.02	9.00	8.00	3.50	7.70
13/03/25	0.036	0.072	0.05	0.02	8.42	0.80	2.00	7.80
23/04/25	0.110	0.430	0.08	0.03	21.10	6.00	8.10	7.20
21/05/25	0.230	0.790	0.07	0.03	13.70	7.00	12.00	7.20
19/06/25	0.110	0.480	0.09	0.03	12.20	4.80	8.00	7.20
Filter backwash								
10/07/24	0.019	1.600	0.06	0.02	32.80	32.00	18.00	7.00
14/08/24	0.028	2.700	0.23	0.08	27.70	59.00	55.00	7.00
18/09/24	0.028	1.700	0.09	0.02	37.10	13.00	6.70	7.40
16/10/24	0.021	8.500	0.04	0.02	35.00	50.00	13.00	7.30
20/11/24	0.025	1.600	0.13	0.03	43.30	18.00	3.90	7.40
18/12/24	0.013	1.700	0.00	0.00	46.80	20.00	4.90	6.80
22/01/25	0.028	4.000	0.10	0.02	33.50	39.00	5.40	7.20
19/02/25	0.047	13.000	0.15	0.06	46.50	71.00	25.00	7.20
13/03/25	0.029	5.100	0.04	0.00	38.00	27.00	10.00	8.40
23/04/25	0.025	3.800	0.05	0.02	49.30	59.00	39.00	6.90
21/05/25	0.012	2.600	0.07	0.04	36.80	12.00	18.00	6.60
19/06/25	0.010	6.400	0.06	0.03	36.60	100.00	60.00	6.40

Date	Aluminium Soluble (g/m3)	Aluminium Total (g/m3)	Chlorine Total (g/m3)	FACe (g/m3)	Sulphate (g/m3)	Suspended Solids (g/m3)	Turbidity (NTU)	pH
Filter drain down								
10/07/24	0.011	0.170	0.05	0.00	29.80	1.90	1.30	6.70
14/08/24	0.009	0.190	0.05	0.03	27.10	5.00	1.10	6.90
18/09/24	0.011	0.140	0.14	0.02	29.70	2.10	0.85	6.80
16/10/24	0.007	1.000	0.12	0.07	28.60	32.00	20.00	6.70
20/11/24	0.012	0.130	0.12	0.00	38.60	1.60	1.10	6.80
18/12/24	0.012	0.270	0.00	0.00	38.90	3.60	1.20	6.70
22/01/25	0.036	0.320	0.06	0.02	30.90	2.20	0.60	6.90
19/02/25	0.017	0.150	0.16	0.15	35.60	1.60	0.75	6.80
13/03/25	0.013	0.130	0.10	0.02	33.90	1.20	0.35	6.90
23/04/25	0.013	0.073	0.09	0.03	47.10	1.20	0.40	6.60
21/05/25	0.031	0.780	0.06	0.03	35.60	22.00	1.60	6.20
19/06/25	0.030	0.220	0.00	0.00	35.40	1.80	1.10	6.20
Filter to waste								
10/07/24	0.009	0.017	0.20	0.03	30.50	0.00	0.40	6.90
14/08/24	0.009	0.012	0.12	0.04	26.50	1.00	0.10	7.10
18/09/24	0.009	0.016	0.23	0.10	32.80	0.00	0.15	7.40
16/10/24	0.009	0.014	0.18	0.05	31.20	0.00	0.10	7.20
20/11/24	0.013	0.015	0.48	0.28	39.10	0.00	0.10	7.30
18/12/24	0.012	0.016	0.51	0.49	39.90	0.00	0.40	7.90
22/01/25	0.015	0.020	0.13	0.00	33.30	0.40	0.00	7.30
19/02/25	0.015	0.020	0.16	0.04	33.50	0.00	0.00	6.90
13/03/25	0.013	0.014	0.73	0.57	34.20	0.00	0.10	7.40
23/04/25	0.011	0.015	0.18	0.05	48.70	0.00	0.10	7.00
21/05/25	0.009	0.014	0.11	0.04	32.70	0.00	0.00	6.50
19/06/25	0.010	0.030	0.11	0.02	35.30	0.50	0.15	7.00

Date	Aluminium Soluble (g/m3)	Aluminium Total (g/m3)	Chlorine Total (g/m3)	FACe (g/m3)	Sulphate (g/m3)	Suspended Solids (g/m3)	Turbidity (NTU)	pH
Clarifier sludge bleed								
22/01/25	0.011	190.000	0.19	0.13	33.20	550.00	300.00	6.60
19/02/25	0.014	0.160	0.21	0.11	35.20	2.40	0.40	6.70
13/03/25	0.013	14.000	0.11	0.03	32.10	99.00	30.00	7.00
23/04/25	0.010	510.000	Samples collected could not be tested		47.50	1700.00	4100.00	6.40
Instrumentation water								
22/01/25	0.009	0.011	1.37	1.15	31.00	0.00	0.15	7.40
19/02/25	0.008	0.010	1.28	1.21	34.80	0.80	0.10	7.60
13/03/25	0.008	0.011	1.49	1.19	34.00	0.00	0.15	7.30
23/04/25	0.008	0.009	0.93	0.70	47.20	0.00	0.20	7.20

Appendix D. Data Sources

Table 5-4 Download location of flow and water quality data used in this report

Category	Parameters	Source platform	ID/ Lab Sample Location
Filter to waste	Water flow m^3/h	Seeq	STWEL_55_FIT_X01_PV
Backwash and base overflow	Estimated daily overflow volumes	Wellsford WTP Interim Consenting Hydrology Technical Assessment	\\WSLAEDFS7.water.internal\BSDev$\RESOURCE CONSENT APPS\Water Headworks & Treatment\Rodney\Wellsford\2022 - 2032 Take and Discharge Surface and GW\6 Lodgement
Backwash	Tank level	Seeq	STWEL_54_LT_011D_PV
Discharge Outlet	Soluble aluminium, total chlorine, turbidity, pH.	Labware/ Infrastructure Data	WSL_T_WELLSFRD_DIS_O
Hōteo River intake structure	Soluble and total aluminium, total chlorine, turbidity, pH, FACe, sulphate, suspended solids.	Labware/ Infrastructure Data	WSL_T_WELLSFRD_INTAK
Downstream of discharge			WSL_T_WELLSFRD_DS
Filter backwash			WSL_T_WELLSFRD_FIL_B
Filter drain down			WSL_T_WELLSFRD_FIL_D
Filter to waste			WSL_T_WELLSFRD_FIL_W
Clarifier sludge bleed			WSL_T_WELLSFRD_CSB
Instrumentation water			WSL_T_WELLSFRD_IW