Kāpiti Coast
DISTRICT COUNCIL
Me Huri Whakamuri, Ka Titiro Whakamua

Ōtaki Wastewater Treatment Plant

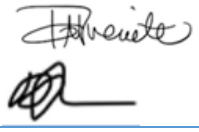
Resource Consent Annual Compliance Report 2024-25

FINAL

Revision History

Revision Nº	Prepared By	Description	Date
0	Tess Drewitt, Compliance Consultant Ben Thompson, Water Conservation & Trade Officer	Draft for internal review	11.08.2025
0.1	Tess Drewitt, Compliance Consultant Ben Thompson, Water Conservation & Trade Officer	Draft for NHoO review	27.08.2025
1	Tess Drewitt, Compliance Consultant Ben Thompson, Water Conservation & Trade Officer	Final for submission	25.09.2025

Document Acceptance

Action	Name	Signed	Date
Prepared by	Tess Drewitt, Compliance Consultant Ben Thompson, Water Conservation & Trade Waste Officer		25.09.2025
Reviewed by	Ramesh Pillai, Manager Water and Wastewater Infrastructure		29.09.2025
Approved by	Ramesh Pillai, Manager Water and Wastewater Infrastructure		29.09.2025

Contents

Executive Summary

This report has been compiled in accordance with the reporting requirements in Condition 43 of resource consent WGN160002 that authorises discharges to land and air from the Ōtaki Wastewater Treatment Plant (WWTP) at Riverbank Road in Ōtaki. The Council must provide an Annual Report to Greater Wellington Regional Council (GWRC) for the previous financial year by 30 September each year.

The following table summarises compliance with consent conditions for 2024/25.

Resource consent condition	No.	Compliance
General conditions	1 & 2	🟢
Land Discharge & Treatment Area (LDTA) optimisation study and report	3, 4 & 5	🟢
Operations and maintenance manual	6, 7 & 8	🟢
Maximum discharge rate	9 & 10	🟠
Wet weather storage capacity	11	🟢
Wastewater volume measurement	12 & 13	🟢
Monitoring wastewater flows	14	🟢
Monitoring pond effluent quality	15 & 16	🟢
Treated effluent standards:		
• ScBOD5	17(a)	🟢
• TSS	17(b)	🟢
• E. coli	17(c)	🟢
• NH_4-N	17(d)	🟠
• DRP	17(e)	🟢
Monitoring groundwater and spring water	18, 19 & 20	🟢
Attenuation equilibrium	21	🟢
Inspection records and operational logs	22	🟢
Monitoring requirements	23	🟢
Performance and maintenance of the distribution system:		
• Maintenance of infiltration discharge area	24	🟠
• Perimeter bunding and setback distances	25 & 26	🟢
Reserve area for effluent discharge	27	🟢
Inflow and infiltration investigations, works and report	28	🟢
Odour management	29, 30, 31 & 32	🟢
Planting within the LDTA	33, 34 & 35	🟢
Perimeter planting	36	🟢
Fencing and signage	37	🟢
Iwi consultation	38 & 39	🟢
Community Liaison Group (CLG)	40	🟢

Resource consent condition	No.	Compliance
Complaints	41	●
Incident notification	42	●
Annual Report	43	●

The Council is largely compliant with the consent conditions, except for:

- **Condition 9** relating to the maximum discharge rate of 2,820 m^3/day – The discharge to the LDTA may have exceeded 2,820 m^3/day on several occasions in 2024/25 due to an issue with the meter reporting system, which resulted in an underreporting in wastewater discharge volumes. GW was notified of the issue in an incident report dated 24 September 2025 (**Appendix A**). The issue has since been rectified. We have not identified any indication that the potential exceedances have resulted in adverse effects on ground or surface water quality.

- **Condition 17(d)** Limit 2 for Ammoniacal Nitrogen (NH_4-N) – When assessed over a consecutive 12-month period, Limit 2 was exceeded 4/12 times between August 2023 and July 2024, constituting non-compliance with Condition 17(d). The likely cause was inlet screen works from Feb-April 2024, during which wastewater bypassed the aeration lagoon, compounded by cooler temperatures in early winter. Further non-compliances are anticipated due to works on the aeration lagoon from April-May 2025, again compounded by cooler winter temperatures. NH_4-N levels are expected to improve in 2025/26 and subsequent years following completion of the aeration lagoon lining. This non-compliance has been marked as “orange” given it’s likely related to ongoing maintenance works and all instances of aeration lagoon isolations were notified to GWRC.

- **Condition 24** relating to the performance of the distribution system – The Council estimates approximately 30% of the LDTA is receiving effluent, which is less than 75% required by the consent conditions. The resource consent was granted based on the existing distribution system, which was reviewed and upgraded following the Optimisation Report in 2018. The Council is working towards further improvements to distribution on the LDTA, including through the proposed sprinkler upgrade, which will improve distribution to near 100%.

1. Introduction

1.1 Background

The Kāpiti Coast District Council (the Council) holds a resource consent from Greater Wellington Regional Council (GWRC) to discharge treated effluent to land and contaminants to air from the operation of the Ōtaki Wastewater Treatment Plant (WWTP) (WGN160002). As part of this consent, the Council must provide a compliance report on the performance of the plant against the parameters presented in the permit.

1.2 Annual Report requirements

Condition 43 of the consent requires the Council to provide the compliance report for the previous financial year, and present it to the Manager, Environmental Regulation, GWRC by 30 September. The Annual Report must include the following information at a minimum:

(a) A summary of all monitoring undertaken in accordance with the conditions of this consent, and an analysis of the information in terms of compliance.

(b) A discussion of the results of pond effluent quality and groundwater and spring water quality monitoring throughout the year, including a trend analysis of the data to identify any ongoing changes over time. Included shall be a discussion of any identified trends, and actions taken to maintain compliance (if required).

(c) Any reasons for non-compliance or difficulties in achieving compliance with the conditions of this consent.

(d) Any measures that have been taken or are proposed to be undertaken in the upcoming 12 months, to improve the environmental performance of the wastewater treatment and discharge system.

(e) Any recommendations on alterations/additions to the monitoring programmes.

(f) A schedule of any complaints recorded during the year, and any follow up actions undertaken.

(g) A discussion of wastewater inflow volumes and whether these are consistent with predicted inflow volumes (as detailed in the resource consent application), including the extent as to which the storage volume was used within the year.

(h) A summary of the review of the Operations and Maintenance Manual and recommended changes including a copy of the updated manual (**required for 2024/25**).

(i) Details of infiltration and inflow investigations and work (**required for 2024/25**).

1.3 Purpose

This report provides an assessment of the Council's compliance with resource consent WGN160002 in 2024/25. The period covered in this report is 1 July 2024 to 30 June 2025.

2. Monitoring & Analysis

This section covers Conditions 9-21 of the resource consent related to flow and treated effluent / bore quality monitoring and compliance.

2.1 Maximum discharge rate

Condition 9 and 10 authorise the discharge of treated wastewater from the Ōtaki wastewater treatment plant into the Land Discharge and Treatment Area (LDTA), at a maximum rate of 2,820m³/day and the hydraulic application rate shall not exceed a maximum effluent depth of 155mm/day.

The Council submitted an incident report to GWRC on 24 September 2025 (**Appendix A**). The incident report explains a water meter reporting issue that came to the attention of Council staff after the draft Annual Report was prepared. The incident report highlights potential exceedances on the consent limit in 2024/25 and therefore breaches of Condition 9. The following information is based on data reported before the incident notification and can be updated upon request by GWRC.

Figure 1 shows influent and effluent rates throughout 2024/25. As described in the incident report, the effluent rates are understood to be underreported for 2024/25.

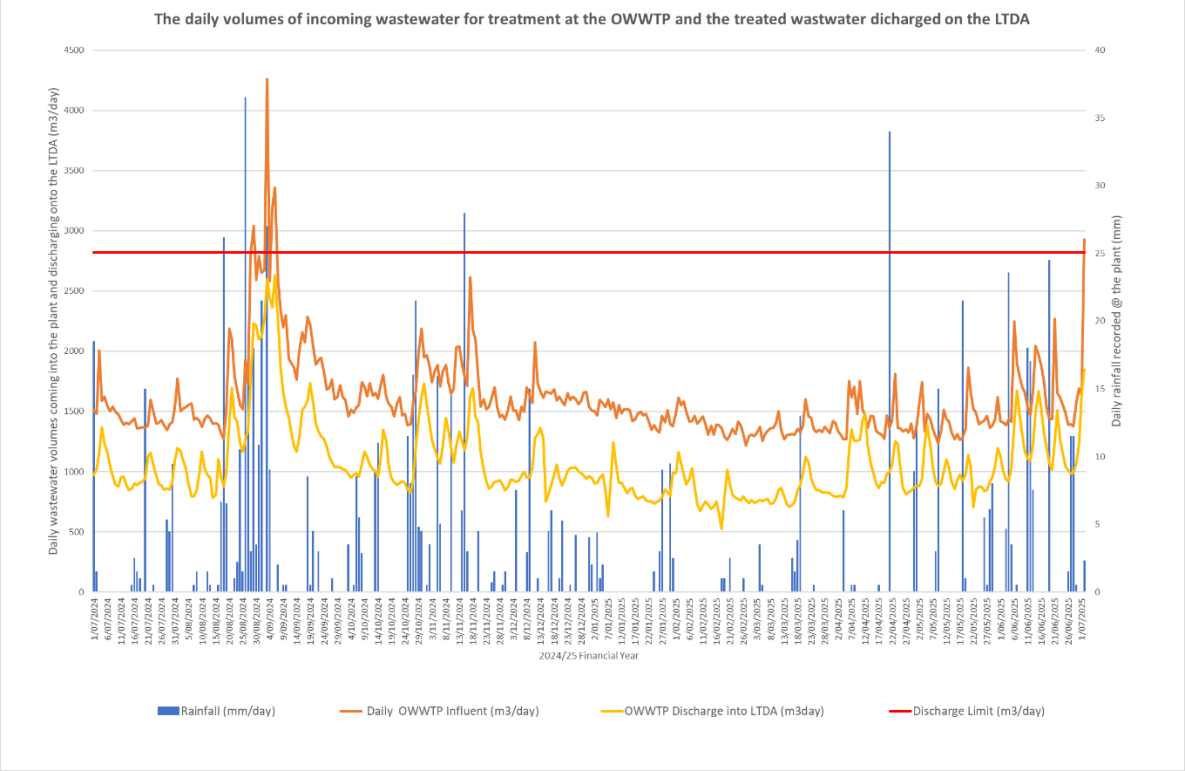


Figure 1: OWWTP discharges to LDTA over 2024/25

Table 1 and 2 show the maximum and average influent and effluent discharged to the LDTA in 2024/25, compared to previous years. The maximum daily influent has increased slightly from last year, which could be due to increased rainfall events. The maximum daily discharge is relatively constant as the Council can use the storm storage pond as required to ensure discharge is always within the maximum consented limit. The average daily influent and discharge to the LDTA has also remained relatively constant. When compared to the predicted volumes in the 2019 resource consent application, the maximum and average influent and discharge to the LDTA is tracking lower than predicted volumes, which is likely due to the Council's ongoing leak detection programme.

Table 1: Maximum influent and effluent flows for the Otaki WWTP

Year	Max Daily Influent (m^3/day)	Max Daily discharge to LTDA (m^3/day)	Max Annual Rainfall (mm)
2019/2020	3,332.8	3,316.2	45.0
2020/2021	4,906.5	3,490.4	52.5
2021/2022	6,447.3	3,698.4	63.5
2022/2023	5,492.1	3,535.2	51.0
2023/2024	2,290.0	2,600.6	40.5
2024/2025	4,321.0	2,632.0	37.0

Table 2: Average influent and effluent flows for the Otaki WWTP

Year	Ave Daily Influent (m^3/day)	Ave Discharge to LTDA (m^3/day)	Ave Daily Rainfall (mm)
2019/2020	1,621.5	1,590.1	2.2
2020/2021	1,767.7	1,728.9	2.5
2021/2022	1,873.4	1,812.1	3.2
2022/2023	2,138.8	2,019.1	3.1
2023/2024	1,529.1	1,417.3	1.6
2024/2025	1,595.0	1,064.0	2.3

2.2 Wet weather storage

Condition 11 requires 5,000m^3 of wet weather storage capacity at the WWTP, and an assessment of predicted inflow volumes and population.

Prior to 2023/24, the Council had historically maintained the storage with a minimum of 10% of the pond volume occupied with “residual material” (i.e. a mixture of treated wastewater and rainwater). This was to prevent the liner being displaced by groundwater or uplifted during high wind. The resulting capacity in the pond had therefore typically been around 4,700m^3. However, the 2022/23 Annual Report raised the issue of whether the Council was complying with Condition 11 of the consent. The Council therefore revised its operating procedure for managing storm flow capacity in 2023/24. The Council upgraded the level setting in the SCADA control system in September 2023 to ensure that the maximum volume in the storm flow buffer during normal weather conditions is 200m^3, leaving at least 5,000m^3 storage remaining.

Figure 2 shows rainfall and storm storage pond capacity of 2024/25. Wet weather capacity remained about 5,000m^3 throughout the year, except for a couple of instances where capacity was reduced due to rainfall. The maximum daily influent predicted in the resource consent application for 2025 was approximately 6,535m^3/day. The Council is tracking significantly less than this with a maximum of 4,321m^3/day in 2024/25. The Council therefore continues to have sufficient storage capacity at the WWTP. The Council is in the process of verifying and updating the wastewater stimulation model, and

once this is available, with review storage capacity requirements for the remainder of the resource consent term.

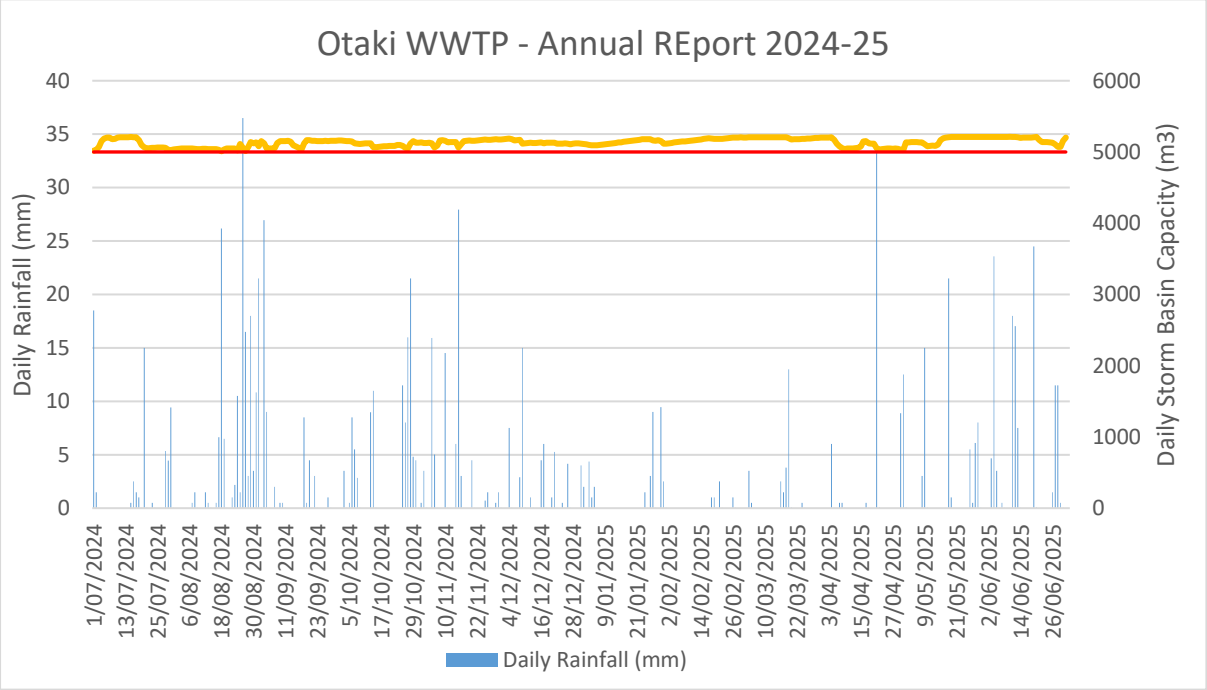


Figure 2: Wet weather storage capacity - 2024/25

2.3 Wastewater volume measurement

Condition 12 and 13 require the Council to maintain flow meters on the inlet to the WWTP and the outlet to the LDTA. The Council is required to verify the accuracy of these devices on a 5-yearly basis. These meters were last verified in June 2023. The verification reports are included in **Appendix C**.

2.4 Wastewater flows

Condition 14 requires the Council to maintain daily records of influent wastewater flow, the treated effluent volume discharged to the LDTA, and which zones were irrigated, and provide these as part of the Annual Report. The Council monitors and records wastewater flows through Water Outlook, and these reports are available to GWRC through Water Outlook. The Water Outlook reports for 2024-25 are provided in **Appendix B**. Note that effluent flows were underreported in 2024-25 due to the reasons discussed in the September 2025 Incident Report to GW.

2.5 Pond effluent monitoring

Condition 15 requires the Council to maintain weekly records of dissolved oxygen, weather conditions (temperature), pond appearance, and odour. The Council records this information through the Water Outlook report, as provided in **Appendix B**. Condition 16 requires the Council to monitor the pond effluent quality for the following parameters monthly:

- BOD5 (mg/L)
- Non-filterable residue (suspended solids) (mg/L)
- E. coli (MPN/100mL)
- Faecal coliforms (MPN/100mL)

- Ammonia (mg/L)
- Nitrate (mg/L)
- Nitrite (mg/L)
- Total Nitrogen (mg/L)
- Total Phosphorus (mg/L)
- Dissolved Reactive Phosphorus (DRP) (mg/L)
- pH

The Council monitors and records this information through Water Outlook. Refer to the Water Outlook Report for 2024-25 in **Appendix B**.

2.6 Pond effluent standards

2.6.1 Standards

Condition 17 of the resource consent requires that the treated effluent meet the standards set out in Table 3 prior to discharge to the LDTA.

Table 3: Pond effluent standards

Parameter	Acronym	Units	33rd Percentile Limit (Limit 1)*	83rd Percentile Limit (Limit 2)**
Soluble Carbonaceous Biochemical Oxygen Demand	scBOD	mg/L	33	45
Total Suspended Solids	TSS	mg/L	100	150
Faecal Coliforms	-	cfu/100mL	50,000	120,000
Ammoniacal Nitrogen	NH_4-N	mg/L	23	30
Dissolved Reactive Phosphorus	DRP	Mg/L	5	11

* 8 out of 12 (33.3%) consecutive samples must not exceed the 33rd Percentile.

** 2 out of 12 (83.3%) consecutive samples must not exceed the 83rd Percentile.

The following sections graphically demonstrate the compliance of the treated effluent standards for scBOD, TSS, faecal coliforms, ammoniacal nitrogen and DRP, prior to discharge to the Land Discharge and Treatment Area, as specified in Condition 17.

2.6.2 Soluble Carbonaceous Biochemical Oxygen Demand (scBOD)

Condition 17(a) requires the concentration of scBOD in pond effluent not to exceed 35 g/m^3 in more than 8 out of 12 consecutive samples (Limit 1), or 45 g/m^3 in more than 2 out of 12 consecutive samples (Limit 2). **Figure 3** demonstrates full compliance in terms of scBOD against consent limits for the combined effluent from Ponds A and B.

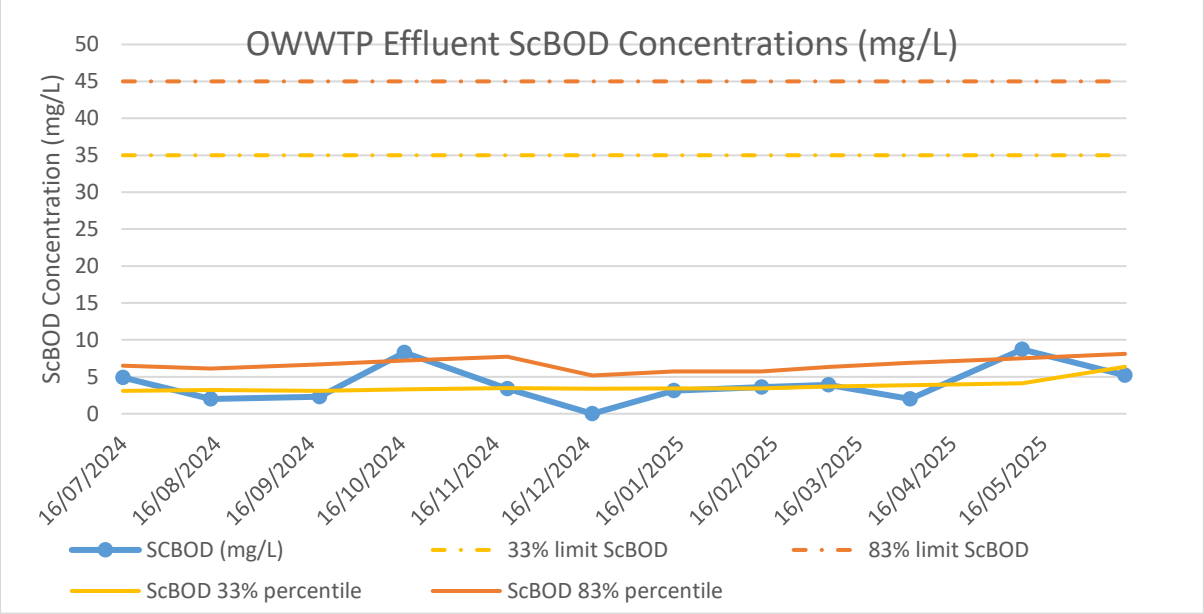


Figure 3: Treated effluent scBOD concentration in combined pond effluent (mg/L) – 2024/25

2.6.3 Total Suspended Solids (TSS)

Condition 17(b) requires the concentration of TSS in pond effluent not to exceed 100 g/m^3 for more than 8 out of 12 consecutive samples (Limit 1), or 150 g/m^3 in more than 2 out of 12 samples (Limit 2). **Figure 4** demonstrates full compliance in terms of TSS against consent limits for the combined effluent from Ponds A and B.

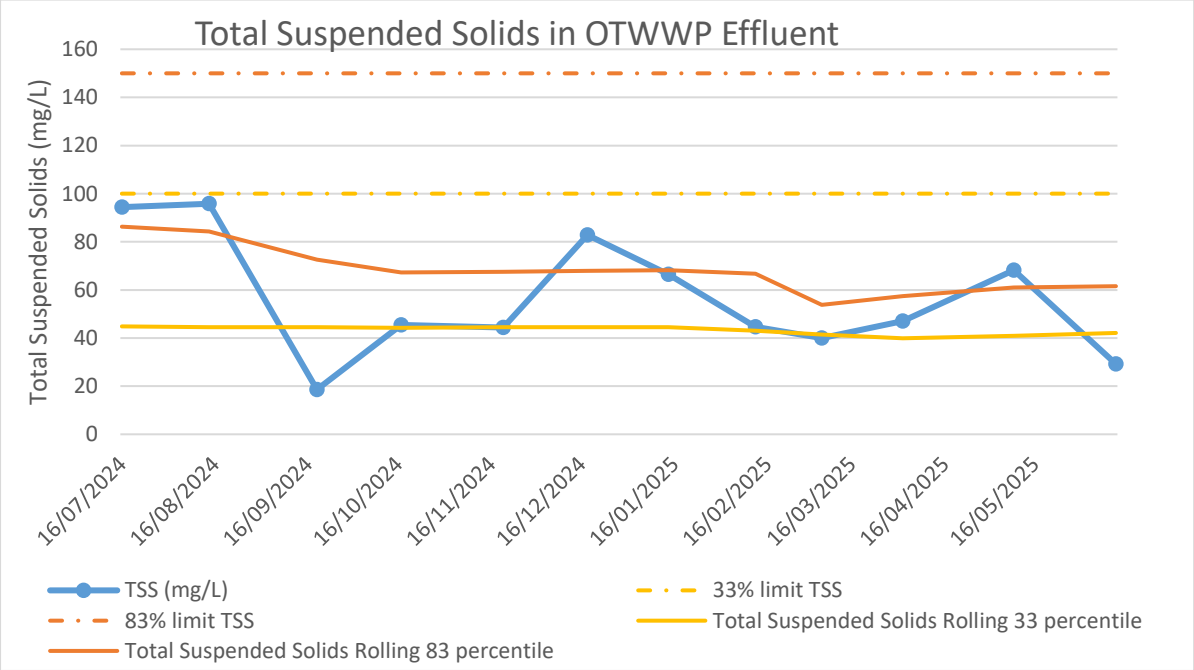


Figure 4: Treated effluent TSS concentration in combined pond effluent (mg/L) - 2024/25

2.6.4 Faecal Coliforms

Condition 17(c) requires the concentration of faecal coliforms in pond effluent not to exceed 50,000 cfy/100 mL for more than 8 out of 12 consecutive samples (Limit 1), or 120,000 cfu/100 mL in more than 2 out of 12 consecutive samples. **Figure 5** and **Figure 6** demonstrate overall compliance in

terms of faecal coliform against consent limits for the combined effluent from Ponds A and B. Faecal coliform Limit 1 was exceeded twice in the past 12 months; Limit 2 was exceeded once. The exceedances were likely due to organic matter within the sample taken at the time and are unlikely to represent overall discharge quality.

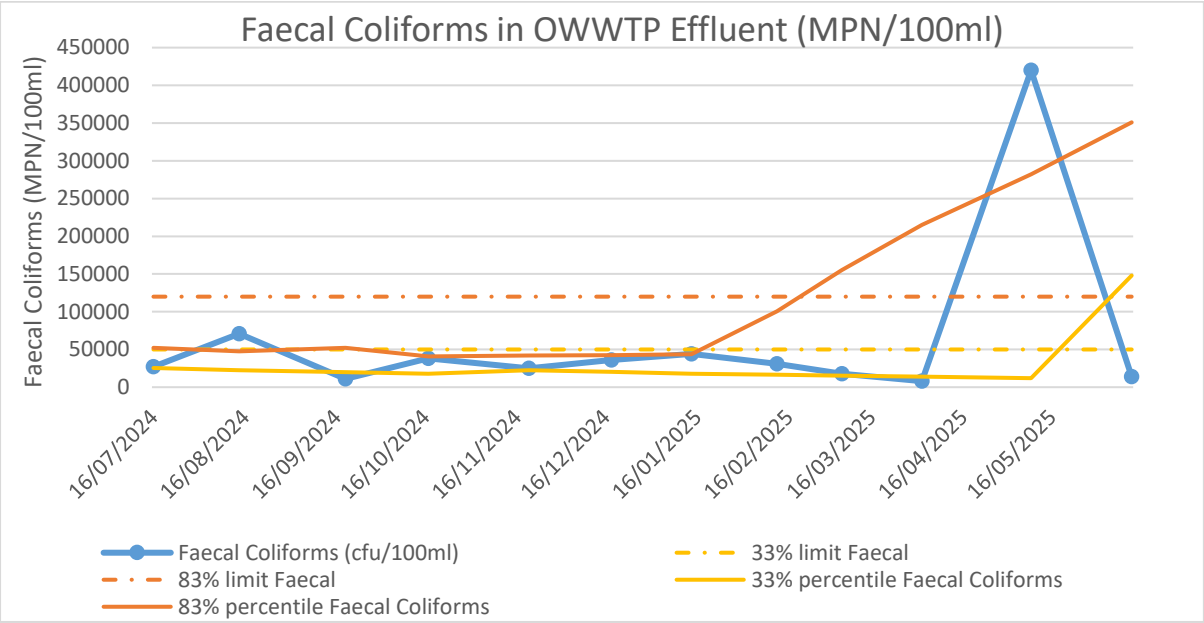


Figure 5: Treated effluent faecal coliforms in combined pond effluent (cfu/100mL) – 2024/25

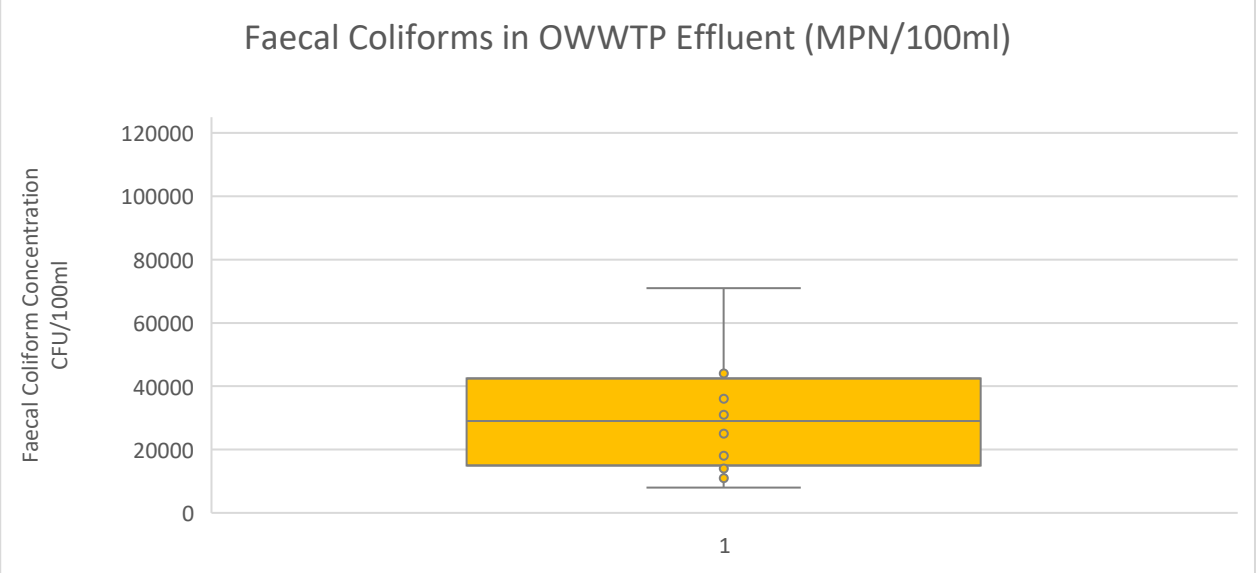


Figure 6: Box plot of treated effluent faecal coliforms in combined pond effluent (cfu/100mL)

2.6.5 Ammoniacal Nitrogen

Condition 17(d) requires the concentration of NH_4-N in pond effluent not to exceed 23 g/m^3 for more than 8 out of 12 consecutive samples (Limit 1) or 30 g/m^3 in more than 2 out of 12 consecutive samples (Limit 2). **Figure 7** and **Figure 8** show NH_4-N monitoring results over 2024/25. As shown in **Figure 7**, Limit 1 was exceeded 8 times in 2024/25, which is the maximum allowed by the resource consent. Limit 2 was exceeded twice, which is also the maximum allowed by the resource consent. As such, when looking at 2024/25 as a 12-month period, the discharge was within the consented limit.

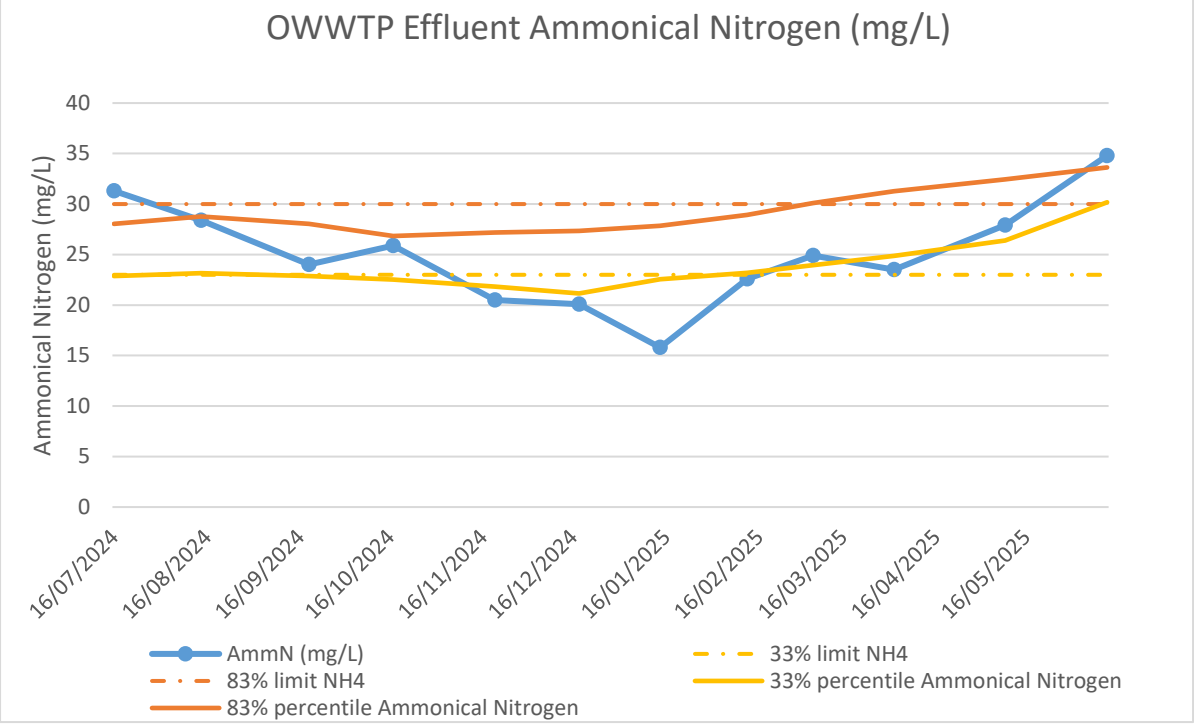


Figure 7: Treated effluent NH4-N in combined pond effluent (mg/L) – 2024/25

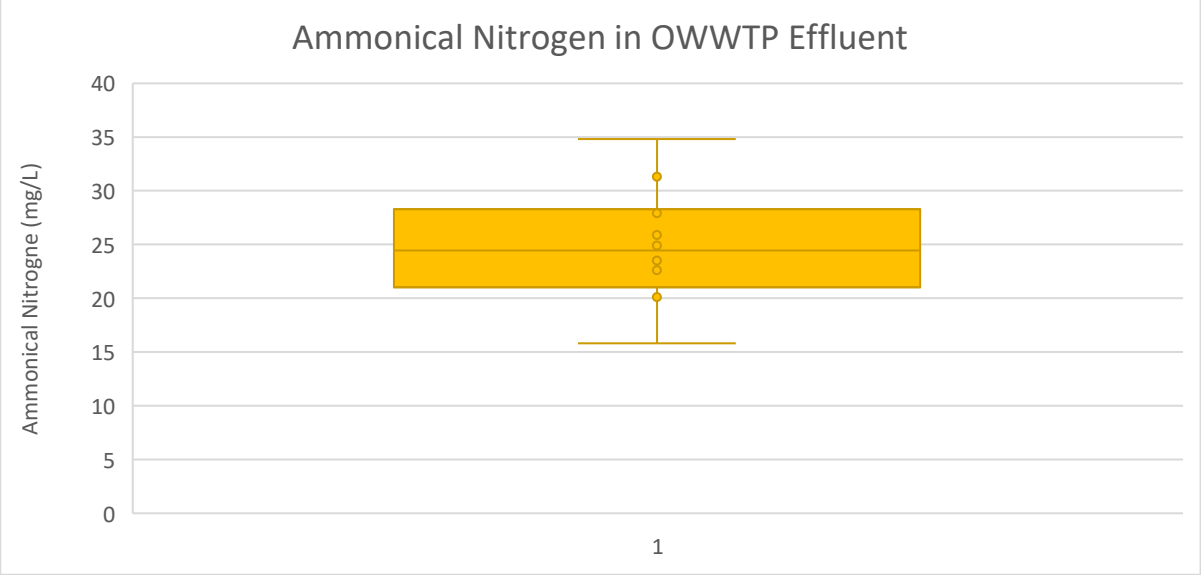


Figure 8: Box plot for treated effluent NH4-N in combined pond effluent (mg/L) – 2024/25

As the limit relates to consecutive samples over 12-months, samples from 2023/24 must also be analysed. The monitoring shows 4/12 Level 2 exceedances in the 12-month period from August 2023-July 2024, being a non-compliance with Condition 17(d). The Council completed significant works in 2023/24 and 2024/25 (including installing a new inlet screen and lining the aeration lagoon), which required wastewater to bypass the aeration lagoon and resulted in a reduced level of wastewater treatment. These works have had a lag effect on wastewater effluent quality, with elevated NH_4-N in the subsequent months compounded by decreasing temperatures (which naturally elevates NH_4-N). Further non-exceedances are therefore anticipated in 2025/26 related to the aeration lagoon works.

Figure 9 shows NH_4-N levels over the two years, the 12-month period where Limit 1 was exceeded, and the previous works periods. The Council notified GWRC of all works.

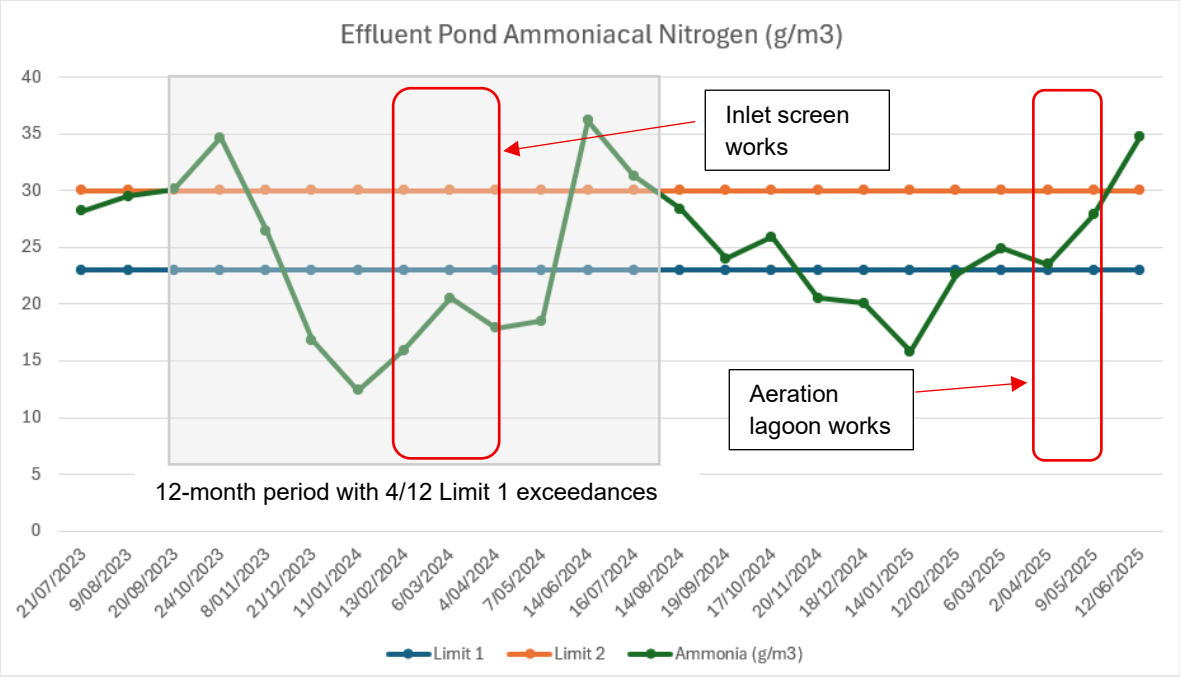


Figure 9: Ammoniacal Nitrogen levels over 2023/4 and 2024/25 and capital works

The Council is preparing to upgrade the aerators in 2025/26, which may require further isolation of the aeration lagoon. However, NH_4-N levels are expected to improve once all works on the aeration lagoon are complete and affected effluent has passed through the system.

2.6.6 Dissolved Reactive Phosphorus

Condition 17(e) requires the concentration of DRP in pond effluent not to exceed 5g/m^3 for more than 8 out of 12 consecutive samples, or 11g/m^3 in more than 2 out of 12 consecutive samples. **Figure 10** demonstrates full compliance in terms of DRP against consent limits for the combined effluent from Ponds A and B. Limit 1 was exceeded three times in 2024/25 as reported in the quarterly reports. However, this is consistent with the consented limits and is therefore compliant with Condition 17(e). Limit 2 was not exceeded in 2024/25.

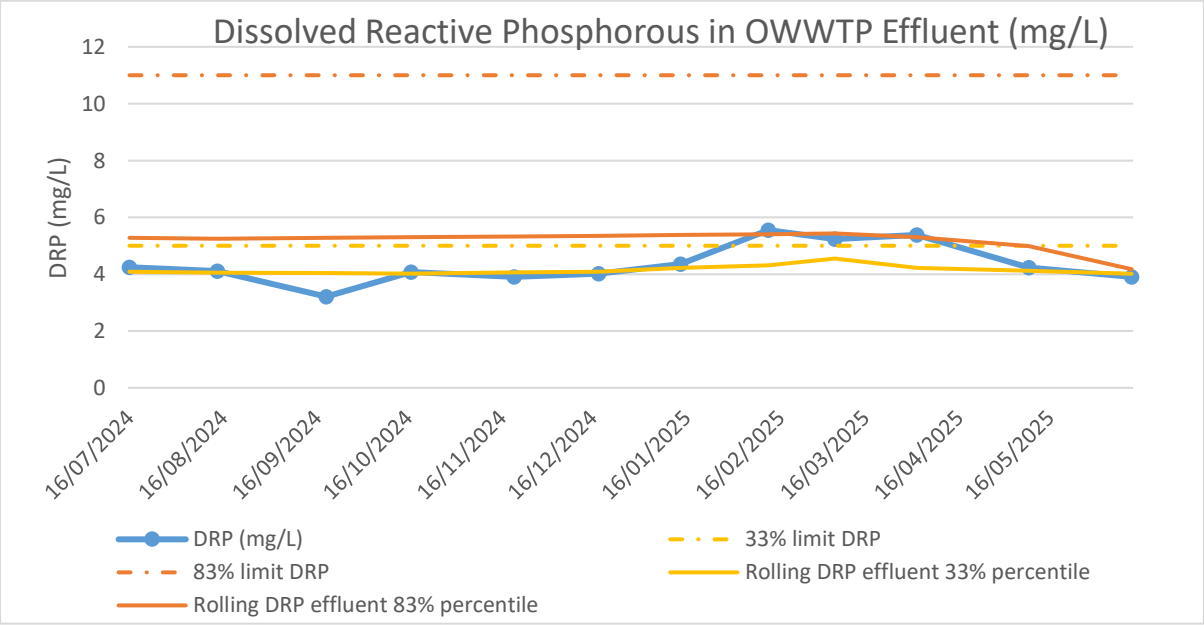


Figure 10: Treated effluent DRP in combined pond effluent (mg/L) – 2024/25

2.7 Groundwater and Spring Water Quality

Condition 18 specifies monitoring of groundwater levels and water quality at bores 1, 2, 3, 4, 5, 6, 7 and water quality in the spring, for the following parameters:

- BOD5 (mg/L)
- Chloride (mg/L)
- E. coli (cfu/100mL)
- Ammonia (mg/L)
- Nitrate (mg/L)
- Dissolved Reactive Phosphorus (mg/L)
- Total Phosphorus (mg/L)
- Temperature (°C)
- pH
- Conductivity (µs/cm at 25°C)

Full bore monitoring records are provided in the Water Outlook Report in **Appendix B**. This section provides discussion on the monitoring results and assesses compliance against Conditions 18, 19 and 20.

2.8 E. coli and Soluble Inorganic Nitrogen Content

Condition 19 specifies the following limits for water quality monitoring in bores 4 and 5 (from Condition 18):

- E. coli (100 MPN/100ml (100cfu/100mL))
- Soluble Inorganic Nitrogen (11.3mg/L as N)

Condition 20 requires the Council to notify GWRC of a breach of Condition 19, within 24 hours, and provide an investigation report within 10 working days.

Table 4 demonstrates that sampling of bores 4 and 5 were in full compliance with the limits stated by Condition 19. The Council's laboratory monitors E. coli levels using the Standard Method 9222D membrane filtration for faecal coliforms. If faecal coliforms are present, the filter is then transferred onto a media to determine if the faecal colonies are E. coli (Standard Methods 9222I). Where there is a dash (-) in the data, there were not faecal coliforms present, thus there was not transfer to the media to determine E. coli as no colonies were present. The Council did not need to notify GWRC of any breaches in 2024/25.

Table 4: Groundwater E. coli and Soluble Inorganic Nitrogen monitoring results

Date	Bore OT4		Bore OT5	
	E. Coli (cfu/100ml)	Soluble Inorganic Nitrogen (mg/L)	E. Coli (cfu/100ml)	Soluble Inorganic Nitrogen (mg/L)
9/07/2024	1	2.58	<1	2.64
1/08/2024	<1	2.92	<1	3.59
5/09/2024	1	5.10	15	2.96
7/10/2024	63	2.13	3	6.09
6/11/2024	3	2.93	1	4.57
5/12/2024	3	1.79	9	4.88
9/01/2025	<1	1.35	<1	4.23
10/02/2025	<1	1.18	<1	3.07
11/02/2025	4	1.11	18	3.05
10/03/2025	<1	1.09	1	2.03
14/04/2025	1	1.56	<1	1.95
13/05/2025	<1	1.85	1	3.45
5/06/2025	1	1.79	1	3.09
Limit	**100**	**11.3**	**100**	**11.3**

2.9 Groundwater attenuation equilibrium

2.9.1 Standard

Condition 21 requires the Council to monitor, and report on water quality data from bores 4, 5 and surface water spring, against contaminant trigger levels. The Council must undertake an investigation into whether the attenuation equilibrium of the soil has been breached if three consecutive monitoring rounds reach the following limits:

- Total Nitrogen (11.3 mg/L)
- Dissolved Reactive Phosphorus (0.1 mg/L)
- E. coli (100 cfu/100mL)

2.9.2 Monitoring results

Table 5 shows the monitoring results for groundwater bores 4 and 5 and spring water quality in 2023/24. The following sub-sections discuss the compliance with the attenuation equilibrium in Bores 4 and 5, and the Spring for Total Nitrogen (TN), Dissolved Reactive Phosphorus (DRP), and E. Coli, as specified in Condition 21. The following sections provide discussion on the monitoring results.

Table 5: Groundwater and spring water quality monitoring results – 2024/25

Date	Bore OT4			Bore 5			Spring		
	TotalN (mg/L)	DRP (mg/L)	E. Coli (cfu/ 100ml)	Total N (mg/L)	DRP (mg/L)	E. Coli (cfu/ 100ml)	Total N (mg/L)	DRP (mg/L)	E. Coli (cfu/ 100ml)
9/07/2024	2.6	0.22	1	2.5	0.13	<1	0.9	0.013	**0**
1/08/2024	2.8	0.21	<1	3.7	0.13	<1	1.7	0.005	<1
5/09/2024	5.3	0.17	1	4.7	0.10	16	1.5	0.005	2
7/10/2024	2.3	0.15	67	6.7	0.10	3	1.6	0.006	8
6/11/2024	3.3	0.18	3	4.7	0.11	1	1.2	0.005	2
5/12/2024	3	0.16	4	5.1	0.11	11	0	0	1000
9/01/2025	1.9	0.13	<1	5.1	0.07	<1	2.1	0.094	140
10/02/2025	1.9	0.21	<1	4.1	0.16	<1	0	0	0
11/02/2025	1.5	0.16	6	3.5	0.10	39	0	0	**0**
10/03/2025	1.2	0.16	<1	2.5	0.13	1	0	0	0
14/04/2025	1.6	0.16	1	2.1	0.13	<1	0	0	0
13/05/2025	2.2	0.18	<1	3.9	0.14	1	2.2	0.005	0
5/06/2025	2.3	0.21	1	4	0.13	1	0	0	2
Limit	**11.3**	**0.1**	**100**	**11.3**	**0.1**	**100**	**11.3**	**0.1**	**100**

2.9.3 Total nitrogen

The monitoring results complied with the TN attenuation equilibrium limit for bore 4, bore 5, and the spring water quality for the July 2024 to June 2025 period. As such, no further actions were required, and the Council is compliant with Condition 21 for TN.

2.9.4 E. coli

The monitoring results complied with the E. coli attenuation equilibrium limit for bore 4, bore 5, and the spring water quality for the July 2024 to June 2025 period. The December and January monitoring rounds showed elevated E.coli in the spring for two consecutive rounds. This was reported to GWRC in the Q3 quarterly report. Monitoring in the spring during the summer months has been problematic. The spring is typically dry meaning samples tend to have more organic matter and are therefore more likely to show elevated E.coli levels (e.g. due to duck faecal matter in the sample or unsettled sediment). The E.coli returned to normal after these readings, so the Council was not required to investigate.

2.9.5 Dissolved Reactive Phosphorous

As with previous years, the DRP results in bores 4 and 5 continue to exceed the trigger limits in Condition 21. We have continued to track DRP over 2024/25 in the monitoring bores and spring. As shown in **Figure 11**, while DRP is decreasing during the warmer months, in some cases to within the limit, it elevates again when the temperature drops. We can also see DRP elevated towards the end of 2024/25, and this corresponds with work on the aeration lagoon, which temporarily reduced the level of treatment on wastewater during this time. However, the works to line the aeration lagoon are anticipated to have a positive effect on DRP in the long-term, and we expect to see DRP reduce over the coming months.

The Council has investigated the trigger exceedances and reported the results of the investigation in the 2023/24 Annual Report. As such, the Council is compliance with Condition 21 for DRP.

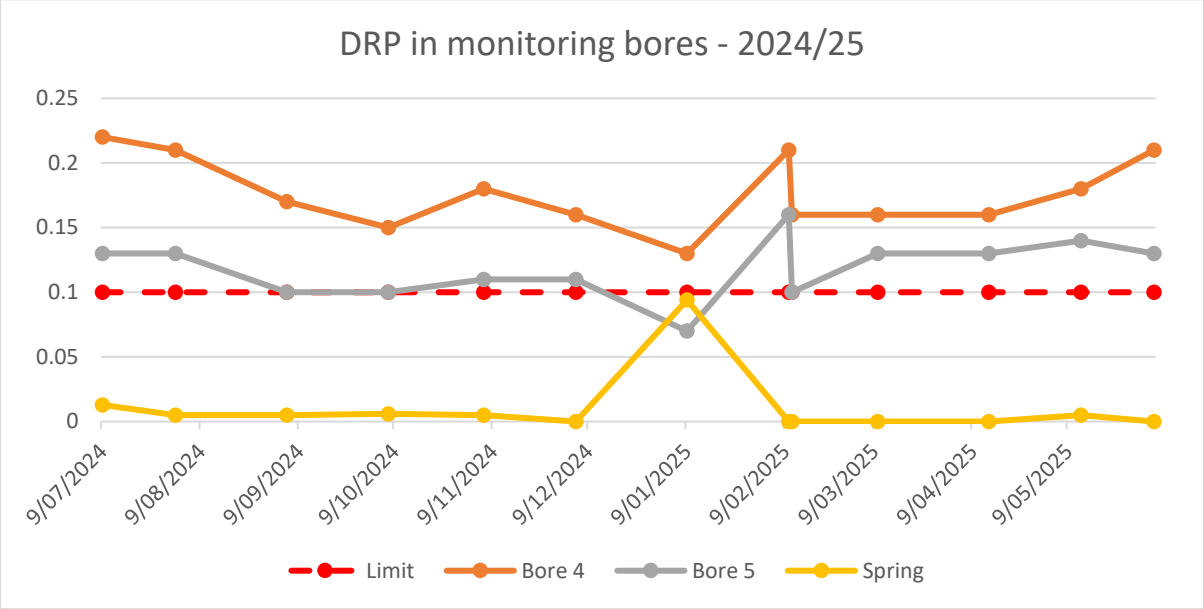


Figure 11: DRP in monitoring bores - 2024/25

The Council is still working through an upgrade work programme for the LDTA, as advised in the 2023/24 Annual Report. The Council has completed works to line the aeration lagoon. Proposed upgrades include:

- upgrading the discharge laterals to a sprinkler system to improve spread, and
- improving the soil condition on the LDTA.

The Council is working with technical advisors on both projects to ensure that the adverse effects from these activities are appropriately managed, and that the upgrades will improve DRP or, at the least, ensure DRP does not get worse. For the lateral upgrades, the Council is undertaking further testing to confirm the risk of spray drift from the discharge and the appropriate mitigation measures. The Council has also installed a new weather monitoring station to collect data on wind speed and directions on site, which will be used to inform the spray drift assessment and appropriate mitigations, including shutting off exterior cells during periods of higher wind. For the earthworks, the Council is seeking further advise on opportunities to enhance soil on the LDTA to improve adsorption, including adding biochar or pumice to the soil. The Council is also seeking advice on how to optimise planting on the LDTA to improve adsorption.

3. Other compliance matters

3.1 LDTA Optimisation Study and Report

Condition 3 and 4 required the Council to prepare an Optimisation Study and Report for the LDTA in collaboration with Nga Hapu o Ōtaki. The Optimisation Study was completed in February 2018, in collaboration with Nga Hapu o Ōtaki. The Optimisation Study and Report was approved by GWRC in 2019. Condition 5 required the Council to implement any changes set out in the approved Optimisation Report. The LDTA changes have been implemented and are operational. The Council has therefore complied with conditions 3-5.

3.2 Operations and Maintenance Manual

Conditions 6-8 refer to the Operations and Maintenance Manual (OMM) for the Ōtaki WWTP. The OMM needs to be updated once the LDTA Optimisation Report has been approved, or at least 3-yearly from 2019 onwards. The consent required the Council to review the OMM in 2024/25. The review version of the OMM is provided in **Appendix D**. The updates include:

- Details and the manual for the new inlet screen, which was replaced in 2023.
- A description of the newly lined aeration lagoon.
- An update on perimeter planting undertaking in 2021 and 2024.
- Details on the newly installed weather monitoring station and operator interfaces.
- Procedure for maintaining storm flow buffer capacity in the storm storage pond.

A further update will be required following the LDTA upgrade works, anticipated for 2025/26.

3.3 Performance and Maintenance of the Distribution System

Condition 24 refers to the operation and maintenance of the distribution system. The Council is required to operate and maintain the distribution system to ensure that infiltration of the discharge area is maintained by:

- Ensuring there is distribution uniformity across the discharge area by having no more than a 25% variance in application depth along the distribution pipes.
- Ensuring that effluent is applied to no less than 75% of the nominated discharge area, with variability between areas over a rolling 12-month period not exceeding 25%.
- Ensuring there is no ponding in a distribution zone prior to the next application.
- Ensuring that any ponding lasts for less than 24 hours under dry weather conditions.
- Ensuring there is no surface flow redistribution within the discharge area of more than 10 m under dry weather flow conditions.

In 2018, the Council submitted the Optimisation study for the LDTA. The study identified several improvements to increase coverage on the LDTA and the Council implemented these recommendations. The investigation following the DRP exceedances (as per Condition 21) identified several further improvements, including the expansion of effluent discharge spread using a sprinkler system. The Council's proposed upgrades to the system will increase spread to 85-90%. The current distribution system is also contributing towards some ponding on the LDTA. The proposed upgrades to the distribution system will ensure ongoing compliance with Condition 24.

Condition 25 of the consent requires the Council to maintain bunding around the LDTA and ensure that there is no surface runoff leaving the discharge area. The LDTA is divided into 6 cells. Each cell is separated by bunding, with additional bunding running down the middle of each cell. There is also a western bund, which prevents any discharge entering the LDTA reserve area. The bunds are operating effectively and will be improved through the proposed bulk earthworks. The Council is therefore complying with Condition 25.

Condition 26 requires the Council to ensure that the discharge does not occur within 20m from any neighbouring boundary, surface water body or farm drain. The closest feature adjoining the LDTA is Riverbank Road, which is 25m from the LDTA. However, discharge is unlikely to reach the LDTA boundary. As such, the Council continues to comply with Condition 26.

3.4 Reserve Area for Effluent Discharge

Condition 27 requires the Council to maintain a 50% (5.45 hectares) reserve LDTA close to the LDTA for future disposal capacity. The Council continues to own the field adjacent to the LDTA with a total area of 7.8 hectares, which exceeds the consent requirement. The reserve area is currently not in use and is bunded between the current LDTA boundary and currently leased. The council therefore continues to comply with condition 27.

3.5 Inflow and Infiltration Investigations, Works and Reporting

Condition 28 requires the Council to continue to investigate and implement ways and means of minimising stormwater inflow and infiltration (I/I) into the sewerage system. Condition 43 (annual report) requires that every 3 years the Council provides the following:

- Details of and the status of I/I work for the previous 3 years.
- An assessment of the effectiveness of the infiltration and inflow works completed to date including whether I/I have reduced; and
- I/I work scheduled for the next 3 years in Otaki including specifying the sub-catchments where CCTV inspections and pressure testing (if applicable) and pipe renewal/rehabilitation that shall be carried out.

I/I work completed from 2022-2025 includes:

- OSP0013 Pump Station: I/I analysis and CCTV investigation identified a cracked inlet pipe drawing in groundwater. Council repaired in November 2022, which significantly reduced inflows to the WWTP. Telemetry data (**Figure 12**) showed a significant reduction in inflows after the repairs were completed.

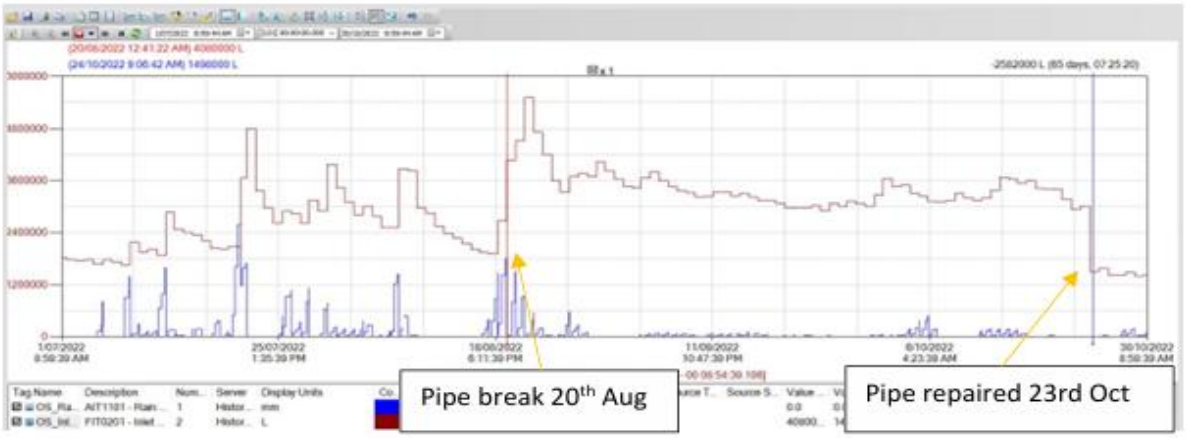


Figure 12: Works to repair OSP0013 Pump Station, 2022

- Wastewater Model Verification: The Council updated and verified the Otaki wastewater model. The final report is due in early October 2025 and will identify priority areas for CCTV inspection. As part of this work, a desktop analysis compared potable water supply to wastewater flows to identify areas with potential I/I. CCTV investigations are planned for catchments with significant discrepancies.
- Private Drainage Compliance: A wastewater and trade waste bylaw and administrative manual are being drafted to support enforcement requiring properties to redirect downpipes from the wastewater to the stormwater network.
- CCTV investigations:
    - 4.5km of mains inspected as part of asset renewal programme.
    - 3.2km of reactive investigations
- Network Maintenance
    - 5km of sewer mains flushed and cleared of blockages
    - Removing roots, debris and fats from 500m of mains
    - 60m of mains repaired
- Network upgrades:
    - 2.7 km of wastewater mains laid from Aotaki to Mill Road (90% complete as of 2024).
    - Additional 1.7 km of main planned for County Rd–Rahui–Te Roto Rd in 2025–26.
    - These upgrades will increase capacity, reduce overflows, and allow for consolidation of pump stations along the Maungapouri Awa, an awa important to the members of Nga Hapu o Otaki.

Planned I/I work for 2025-2028 includes:

- Further CCTV Inspections: Targeting catchments identified through the wastewater model and pumpstation flow analysis.
- Bylaw Implementation: Enforcement of new bylaw to mandate downpipe redirection to stormwater.
- Flow Monitoring: Additional flow meters to be installed at Tier 1 and 2 pump stations to improve network monitoring.
- Budget Allocation:
    - $1.64M over 10 years (from 2025/26) for asset condition improvements across the network, pump stations, and treatment plant.
    - $0.98M allocated for ongoing maintenance of the wastewater reticulation and pump stations.

These actions demonstrate a proactive approach to managing I/I and align with the Water Services delivery programme under Local Water Done Well (LWDW).

3.6 Odour management

Conditions 29-32 refer to odour management at the site. There have been no odour complaints related to the Ōtaki WWTP during the compliance period. While some capital works were undertaken in 2024/25, these did not present any odour issues or result in any odour complaints from adjoining properties. Odour from sludge handling is treated as required by the consent. Screenings are managed as required by the consent. No odour issues were recorded at the annual Community Liaison Group meeting in November 2024. The Council therefore continues to comply with conditions 29-32.

3.7 Planting within the LDTA

Conditions 33-35 require:

- The vegetation within the LDTA shall cover a minimum of 80% of the area.
- Invasive weed species within the LDTA are minimised.
- Dead vegetation within the LDTA shall be replanted within 12 months.

The Council continues to maintain the LDTA grass area healthy and free of weeds. As part of the proposed bulk earthworks on the LDTA, the Council will replant the cells with grasses and perimeter bunds with manuka/kanuka. The Council is liaising with Ngā Hapu o Ōtaki regarding the proposed planting plan for the LDTA.

3.8 Perimeter Planting

Condition 36 requires suitable perimeter planting. The planting shall:

- Discourage public access to the site.
- Comprise of suitable native vegetation.
- Consider any shading or windrow effects on the treatment processes.
- Not impact on the infiltration capacity of the land discharge and treatment area.

The Council has maintained perimeter planting around the LDTA throughout 2024/25. The Council undertook extensive perimeter planting in 2021 with additional planting in mid-2024. Some plants along the roadside are now reaching 2m high and providing a significant buffer between the LDTA and public areas, including the road and adjacent skate park, as shown in Photos 1 and 2.

Photo 1: Established plants between LDTA and Riverbank Road

Photo 2: Established and new plants between LDTA and site boundary across road from skate park

As part of the proposed bulk earthworks on the LDTA, the Council will replant the cells with grasses and perimeter bunds with manuka/kanuka. The Council is liaising with Ngā Hapu o Ōtaki regarding the proposed planting plan for the LDTA.

3.9 Fencing and signage

Condition 37 requires perimeter fencing and signage. The site is fully fenced complete with signage installed on the visible perimeter fencing. The Council therefore continues to comply with condition 37.

3.10 Iwi Consultation

Condition 38 and 39 require the Council invite Ngā Hapu o Ōtaki to a yearly briefing, inform them of any anticipated changes to the consent, and invite them to participate in the development of changes and recommendations.

The Council meets with a representative from Ngā Hapu o Ōtaki quarterly. During 2024/25, the Council met with Ngā Hapu o Ōtaki less regularly than previous years due to personnel changes. However, we have recommenced quarterly meetings and the last meeting was in September 2025 to discuss this Annual Report and amendments to the OMM. Iwi's main concern with the Annual Report was the underreporting of effluent as reported in the incident report. The iwi representative expressed concern over the discrepancy between influent and effluent and the potential for wastewater to have been accidentally discharged. However, the incident report clarifies that the discrepancy is due to a reporting error.

The Council is therefore complying with conditions 38 and 39.

3.11 Community Liaison Group

Condition 40 requires the Council to establish a Community Liaison Group (CLG) for the WWTP. The Council established the CLG in 2022. The Council has held CLG meetings in November 2023 and November 2024. The meeting for 2024/25 will be scheduled for November 2025. The Council invited

all adjoining landowners to join the CLG; however, to date, only three landowners have accepted the invitation. The Ōtaki Community Board, Regional Public Health and GWRC are also members of the CLG. Ngā Hapu o Ōtaki declined the invitation to join the CLG in favour of one-on-one meetings. The invitation remains open should they chose to join. The Council is therefore complying with condition 40.

3.12 Complaints

Condition 41 requires the Council to keep a permanent record of any complaints received regarding the operation of the WWTP. The Council did not receive any complaints in 2023/24.

3.13 Incident notification

Condition 42 requires the Council to keep a permanent record of any incidents related to the consents that results, or could result, in an adverse effect on the environment beyond the site boundary. The Council is also required to notify GWRC of any such incidents within 24 hours and forward an incident report to GWRC within 7 days. There were no incidents to report in 2024/25. The Council notified GWRC of all capital works at the WWTP that may have affected effluent quality, including isolating the lagoon for inspection in December 2024 and commencing the aeration lagoon lining works in April 2025. All monitoring data is submitted to GWRC via SCADA and presented every three months in the quarterly reports.

4. Capital works and upgrades

4.1 Overview

This section provides a description of capital works and upgrades undertaken at the WWTP over 2024/25 and works proposed for 2025/26.

4.2 Works undertaken in 2024/25

The Council undertook several works at the WWTP in 2024/25, including:

- Concrete Lining of the Aeration Lagoon completed. These works will prevent soakage into groundwater and contamination from the lagoon, including DRP.
- Installed a new weather monitoring station. The purpose of the weather monitoring station is to collect data on wind direction and speed to help prevent inadvertent operation of the outer cells to avoid any exposure of spray drift due in high wind conditions.
- Completing additional perimeter planting of the LDTA.
- Procuring services for the aerator upgrades in the aeration lagoon.
- Preparing for additional testing of the new sprinkler discharge system to further assess potential spray drift effects from the discharge.
- Investigating options for improving the soil on the LDTA, including additives and planting.

4.3 Works proposed for 2025/26

During 2025/26, the Council proposes to undertake the following works:

- Upgrading the aerators in the aeration lagoon.
- Final testing of the proposed sprinkler system to confirm potential spray drift effects and mitigation strategies to support the resource consent application. If granted, the Council will upgrade the discharge laterals in 2025/26 as per the resource consent and confident of achieving the discharge spread to near 100% of the LDTA cell area.
- Complete investigations on LDTA improvements in liaison with NHoO and undertake capital works to improve the LDTA, subject to resource consent with GWRC.

Appendix A: Incident Notification to GWRC

M E M O

TO:	Joshua Knowles, Senior Resource Advisor, Environmental Regulation, Greater Wellington Regional Council (GWRC)
FROM:	Tess Drewitt, Compliance Consultant for Water & Wastewater Infrastructure, Kapiti Coast District Council (Council)
DATE	24 September 2025
SUBJECT:	WGN160002: Incident Report – Water Meter Reporting Issue

1. Purpose

This memo provides an incident report of a water meter reporting issue that has come to the Kapiti Coast District Council's (Council) attention relating to the recording and reporting of effluent discharged to the Land Discharge and Treatment Area (LDTA) at the Ōtaki Wastewater Treatment Plant (WWTP) in accordance with resource consent WGN160002.

2. Background

The Council holds resource consent WGN160002 from Greater Wellington Regional Council (GWRC) to discharge treated effluent to the LDTA at the Ōtaki WWTP. Key elements of the resource consent relevant to this report are:

- The consent authorises a maximum discharge rate of 2,820 m^3/day (Condition 9).
- The Council is required to maintain flow meters at the inlet to the WWTP and outlet to the LDTA. The meters must be accurate to within +/- 5% (Condition 12).
- The meters must be verified at least every 5 years (Condition 13).

3. Discharge Meter Recording & Reporting

(a) <u>How the Meter records flows</u>

The Council uses an electromagnetic flow meter to measure how much treated effluent from the WWTP is discharged to the LDTA. This meter gives two types of information:

- Instantaneous Flow Rate – This shows how fast water is flowing at any moment, measured in litres per second (L/s). This data updates constantly.
- Totalised Volume – This shows the total amount of water discharged over time, measured in cubic meters (m^3). It increases step-by-step as the meter sends pulses to the SCADA system. The total starts at zero when the meter is first installed and grows with each pulse. The 24-hours total is reported to 3PM every day.

The SCADA system receives three key signals from the meter. Although recorded every second within the meter, these values are sent from the Meter Programmable Logic Controller (PLC) every minute to the SCADA Server:

- OS_Effluent_Flow.PV – the current flow rate (L/s).
- OS_Effluent_Flow.Total_Yesterday – the total volume discharged in the previous 24 hours (3PM to 3PM).
- OS_Effluent_Flow.Total_Today – the running total for today's discharge.

(b) How Volumes Are Calculated for this Analysis

To compare the flow rate with the total volume:

- Council staff download SCADA data on to a spreadsheet that converts the instantaneous flow into volume by multiplying the flow rate by 60 seconds (1 minute), then by 10 minutes, and dividing by 1000. This gives the volume in cubic meters (m^3) for each 10-minute period.
- To calculate a corresponding 10-minute volume based on the running total, the totalised volume of the previous 10-minute total is subtracted from the current one. This shows how much water was discharged during that time.

To carry out an analysis daily, the daily totaliser (**OS_Effluent_Flow.Total_Yesterday**) can be compared by summing up the 10-minute instantaneous derived data volumes from the previous day.

(c) Why the Numbers Can Be Different

The meter and SCADA system process data in different ways:

- The meter totaliser gives a direct and accurate record of how much water was discharged.
- The Meter PLC records the raw analogue value (4-20 milliamp signal) and converts this signal to a readable instantaneous value. This signal is then sent to the SCADA Server where it is recorded and displayed on a graphic interface. This data is extracted from the SCADA Server via Water Outlook. A spreadsheet exports 10-minute data that provides an average flow rate during that 10-minute period rather than the instantaneous flow at each 10-minute time period.

Because of short-term changes, like pump cycles, SCADA might show a higher average flow than what the meter recorded at the same time. Over a full day, the instantaneous and totaliser values may not match exactly but typically will be a good match.

(d) Which Data Is Used for Compliance

The WWTP relies on the totalised meter output (**OS_Effluent_Flow.Total_Yesterday**) to ensure discharge stays within consented limits. These readings are considered the most accurate as they count every single cubic meter of water passing through the meter and can be checked on the meter display by recording the difference between cumulative totaliser figures on consecutive days.

4. Non-Compliance With Discharge Limits

As part of preparing the 2024-25 Annual Report, Council staff identified a discrepancy between the totaliser daily flows (**OS_Effluent_Flow.Total_Yesterday**) and the SCADA spreadsheet data. WWTP staff investigated this discrepancy and found that the signal coming from the WWTP discharge meter was too fast. The totaliser pulse width (or signal) was set to 200 milliseconds but the Meter PLC checking for signals was looking every 300 milliseconds. This meant that the Meter PLC was missing signals and under-reporting the meter totaliser volumes sent back to the SCADA (i.e. the signal would come and go before the Meter PLC even noticed it).

Figure 1 shows the historic daily effluent flows since January 2020 as recorded by SCADA – the green line shows the meter totaliser and the yellow line shows the derived daily flow (using effluent instantaneous flows), as reported in SCADA. **Figure 1** shows that, prior to June/July 2023, the yellow and green lines follow each other closely, which we would expect if the Meter PLC was reading the meter accurately accounting for all pulses. However, from around June/July 2023, we can see a discrepancy between the yellow and green lines, indicating that Meter PLC started under-reporting totalised volumes from this time.

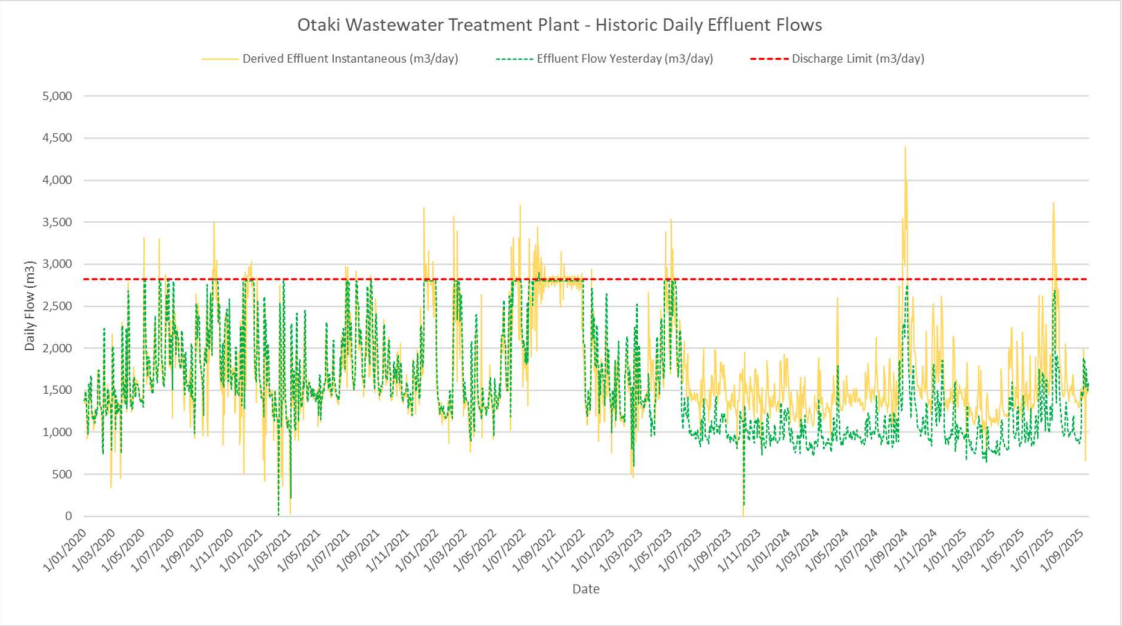


Figure 1: Otaki WWTP - Historic effluent flows

When we compare influent flows with effluent flows over this same period, **Figure 2**, we can see that the derived effluent instantaneous flow closely aligns with influent flow. The derived effluent instantaneous rates appear to be a more accurate representation of actual flow rates than the Meter PLC totaliser recordings for this period (i.e. post mid-2023).

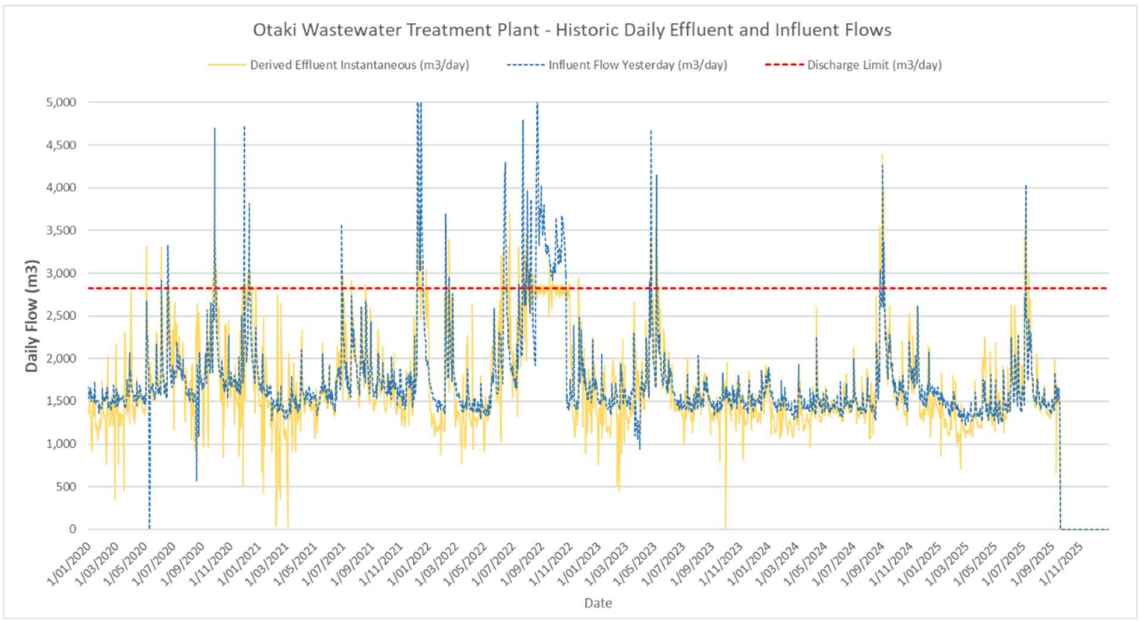


Figure 2: Otaki WWTP - Influent and Effluent flows

5. Cause of Exceedances

We believe the signal error started in mid-2023 after the WWTP discharge meter was moved and recalibrated. While the meter was verified as accurate on 26 June 2023, as required by the resource consent, the verification did not involve ensuring that the Meter PLC was accurately configured with pulse width rates to meet the max flow of 250 L/s. As such, the signal recording issue was not identified as part of the verification process.

6. Extent of Exceedances

We have analysed the derived effluent instantaneous flow data and can see from **Figure 1** that instantaneous flow exceeded the consented limit on several occasions since mid-2023. We therefore assume that the discharge limit of 2,830m^3/day was exceeded at these times. This is because the "shut-off" is based on Meter PLC totaliser recordings and not the derived instantaneous rate, and as Meter PLC recordings were underreporting, the system would not have known that the discharge limit had been reached and to shut-off.

Table 1 shows that the 2820 m^3/day discharge limit was potentially breached up to 10 times in 2024/25, totaling 6,640m^3 treated effluent discharged above the daily consented limit. This represents 1.1% of the annual volume discharged to the LDTA in 2024/25 of 582,570 m^3. **Table 1** shows no breaches in 2023/24. Prior to June/July 2023 (i.e. including 2022/23), for reasons discussed above, we believe that the totaliser record was a more accurate record of effluent flows. The 2022/23 Annual Report includes discussion around limit exceedances in that year as recorded by the Meter PLC.

Year	Annual Effluent Flow Yesterday (m3)	Derived Annual Effluent Instantaneous (m3)	Annual Influent Flow Yesterday (m3)	Derived Annual Influent Instantaneous (m3)	Days Totaliser >2820	Days Instantaneous >2820	Volume Instantaneous >2820
2022/2023	741,689	736,975	773,157	780,646	2	56	7,073
2023/2024	364,330	518,747	551,367	559,661	0	0	0
2024/2025	410,226	582,570	582,405	591,881	0	10	6,640

Table 1: Level of exceedance each year (days and volume)

7. Potential Adverse Effects From Exceedances

The LDTA has a limited capacity for land treatment of effluent, and the maximum daily discharge rate was calculated to ensure this capacity is not exceeded. As such, any exceedances of this rate could potentially affect the LDTA's ability to treat effluent, which could have flow-on effects on ground and surface water quality, as evidenced through data from monitoring bores and the spring.

We have analysed the monitoring data from the groundwater bores and spring before and after the underreporting issue to determine if there has been any decrease in water quality that could be attributable to the issue. The analysis compared water quality data before the meter failure (May 2021–June 2023) and after (July 2023–September 2025), including averages, maximums, 95th percentiles, and annual medians. In summary:

- Dissolved Reactive Phosphorous (DRP) is considered the best indicator for the LDTA performance, and the results from 2021 – July 2025 indicate that DRP has stabilised or improved over this time. The charts provided in **Appendix A** show these trends; **Appendix B** shows the location of the monitoring bores.
- Overall, nitrate concentrations were lower post-failure across most bores and the spring, except Bore 4 which showed a small increase (still well within the 11.4 g/m^3 limit in Condition 19), which could also be attributable to surrounding land uses.
- E.Coli levels have increased post-failure, particularly in Bore 3, which had already shown higher results pre-failure. Further investigation as to the cause of this increase could be warranted, however, we note that the consent does not specify a limit for E.Coli in Bore 3.

Based on this initial analysis, the exceedance does not appear to have resulted in any adverse effects on groundwater or spring water quality. We continue to monitor the discharge quality and groundwater in accordance with consent requirements and report results to GWRC quarterly and in the Annual Report.

8. How the Issue Has Been Resolved

We expect that the meter records discharge rates accurately as it was verified in June 2023. However, the issue relates to how Meter PLC is reading these recordings. Council staff have since rectified this to ensure that the Meter PLC is reading pulses more regularly and accurately. **Figures 2 and 3** show the cumulative totaliser (i.e. meter readings) and cumulative instantaneous before and after the issue was rectified. **Figure 3** shows that the totaliser and instantaneous are now recording the same values.

The WWTP staff will also regularly check actual meter readings against the SCADA readings to ensure these are consistent. Council will also investigate alert options when the manual meter readings differ to those stored in SCADA. The alert will act as a trigger to investigate the discrepancies. Options to capture the meter reading through the telephonic network is being discussed with ABB. If achieved, this arrangement enables the auditing of the meter reading with the calculations through PLC.

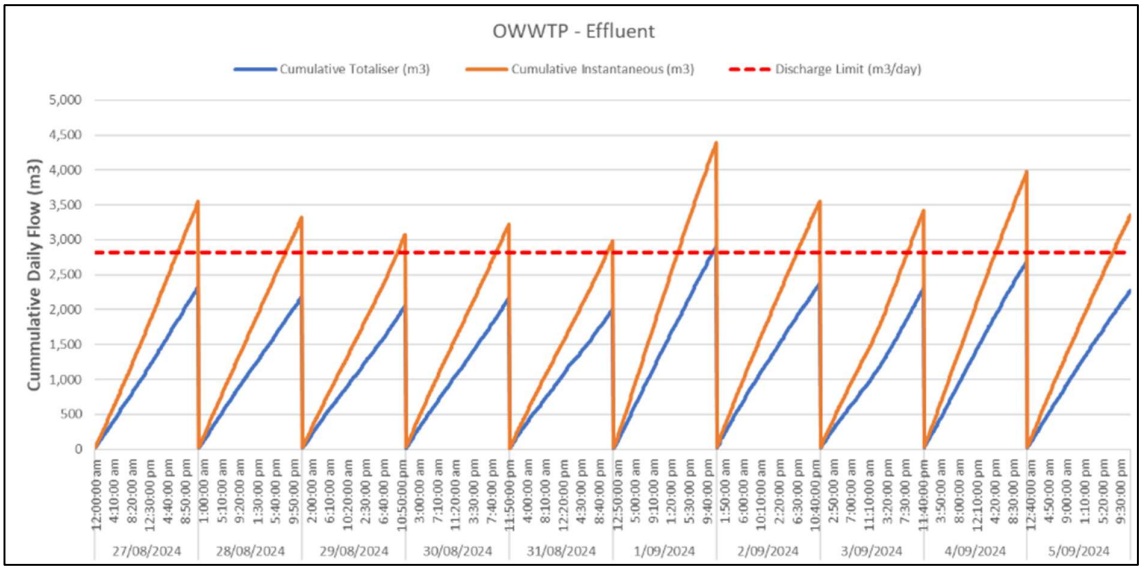


Figure 3: WWTP meter recordings – August 2024

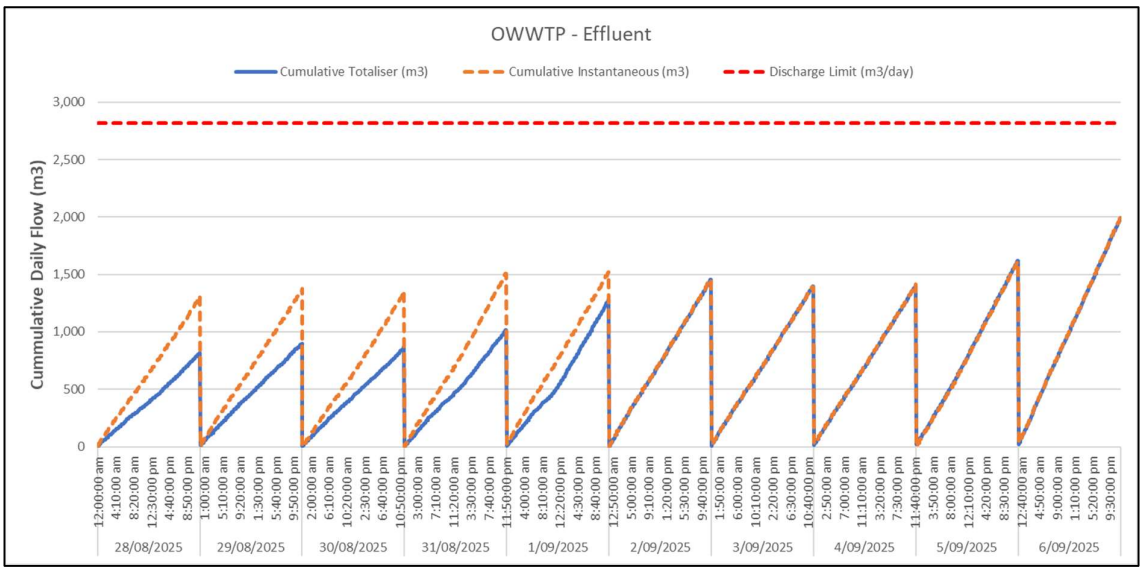


Figure 4: WWTP meter recordings - Aug/Sept 2025

Going forward, all meter verifications will include checking that the Meter PLC is submitting a complete and accurate dataset to the SCADA system.

9. Next steps

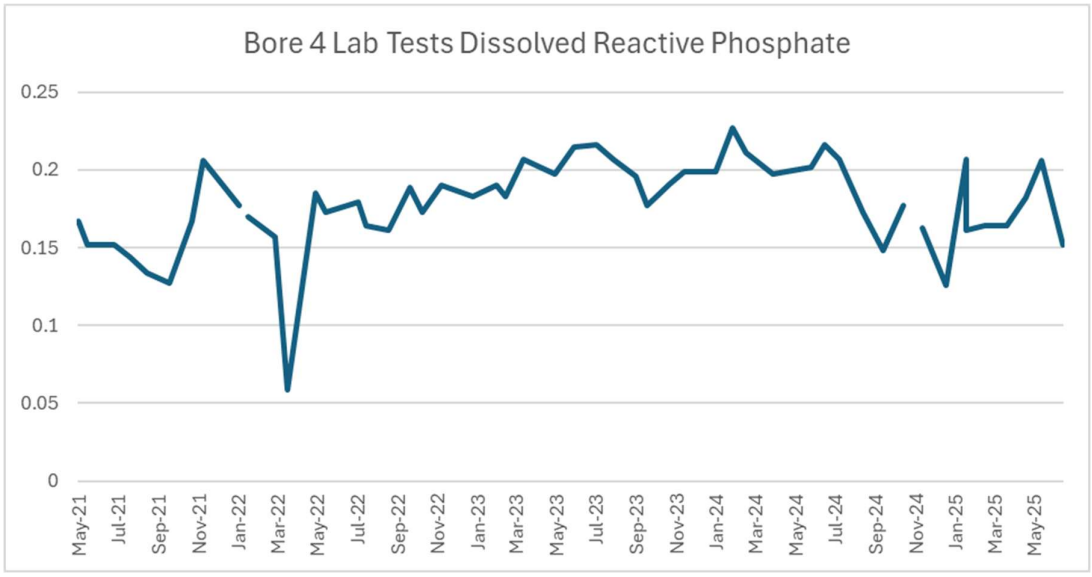
We have prepared the Council's Annual Report for 2024-25, which is due on 30 September 2025. We will include SCADA data within this report, noting that this incident report will be attached as an addendum. We have discussed this non-compliance with Caleb Royal from Ngā Hapū o Ōtaki and will include him in all communications to GWRC. We will also highlight the non-compliance with the Community Liaison Group (CLG) as part of the Annual Meeting, which will be scheduled for November 2025.

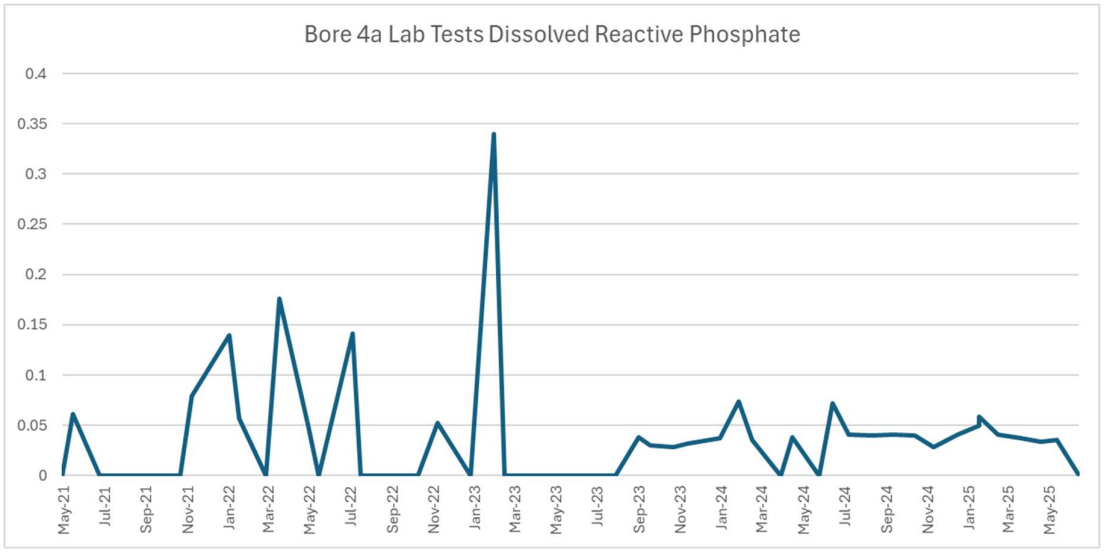
We are happy to meet and discuss this incident report further with you.

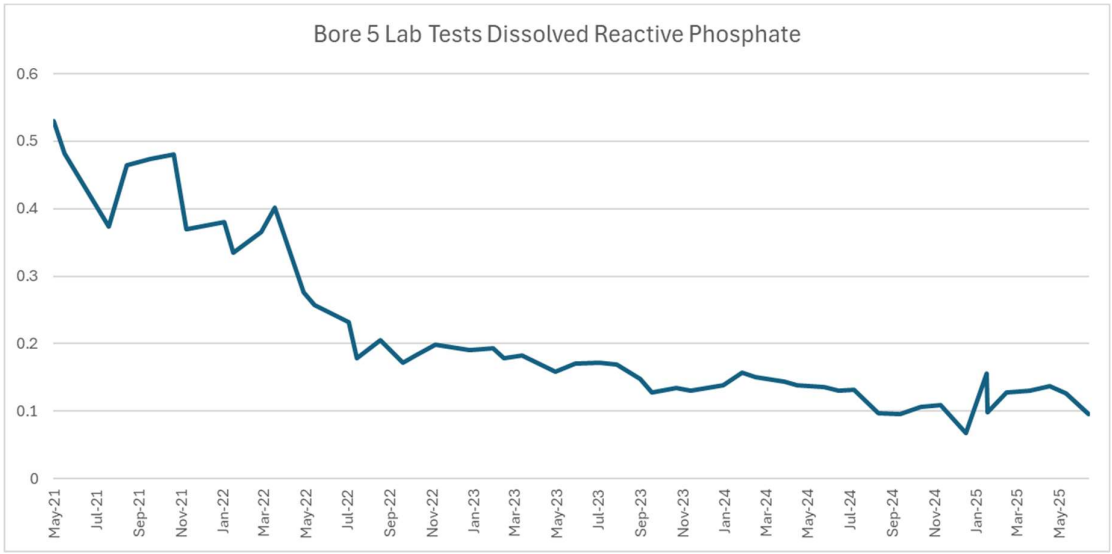
Nga mihi nui,

Tess Drewitt
Compliance Consultant to
Kapiti Coast District Council

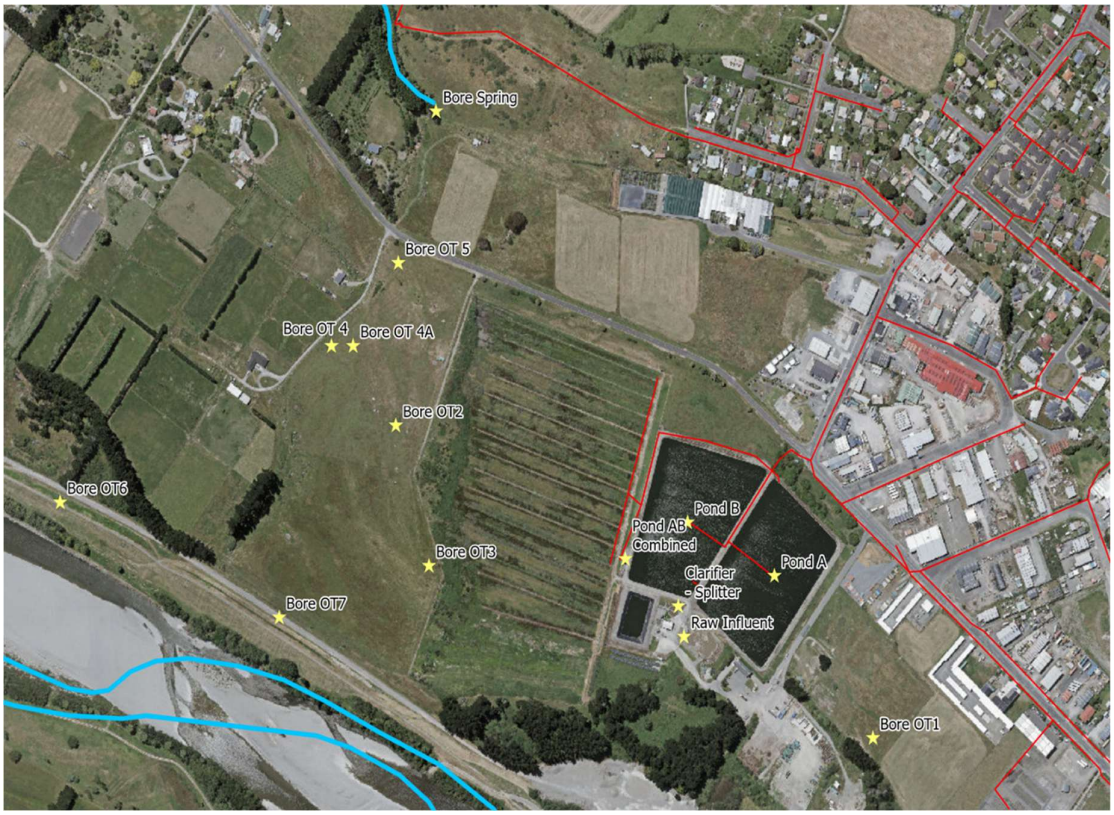
Appendix A: DRP Data Trends in Groundwater







Appendix B: Monitoring Locations



Appendix B: Daily and Monthly Data – 2024/25

Appendix B.1 Daily influent and effluent flows entering and leaving the OWWTP.

Date	Rainfall (mm/day)	Daily OWWTP Influent (m3/day)	OWWTP Discharge into LTDA (m3day)[1]
1/07/2024	18.51	1513	972
2/07/2024	1.49	1480	1018
3/07/2024	0.00	2004	1166
4/07/2024	0.00	1587	1370
5/07/2024	0.00	1621	1236
6/07/2024	0.00	1540	1152
7/07/2024	0.00	1501	1046
8/07/2024	0.00	1539	963
9/07/2024	0.00	1499	896
10/07/2024	0.00	1475	879
11/07/2024	0.00	1428	954
12/07/2024	0.00	1388	959
13/07/2024	0.00	1405	896
14/07/2024	0.00	1392	845
15/07/2024	0.49	1419	860
16/07/2024	2.49	1443	902
17/07/2024	1.49	1358	889
18/07/2024	1.00	1362	906
19/07/2024	0.00	1367	920
20/07/2024	14.99	1363	948
21/07/2024	0.00	1384	1129
22/07/2024	0.00	1598	1157
23/07/2024	0.49	1508	1063
24/07/2024	0.00	1400	966
25/07/2024	0.00	1405	895
26/07/2024	0.00	1427	886
27/07/2024	0.00	1386	852
28/07/2024	5.34	1348	860
29/07/2024	4.44	1393	850
30/07/2024	9.44	1412	920
31/07/2024	0.00	1540	1097
1/08/2024	0.00	1774	1196
2/08/2024	0.00	1500	1170
3/08/2024	0.00	1524	1094

[1] Effluent numbers are understood to be underreported for 2024-25, as described in the incident report in Appendix A.

Date	Rainfall (mm/day)	Daily OWWTP Influent (m3/day)	OWWTP Discharge into LTDA (m3day)[1]
4/08/2024	0.00	1537	1028
5/08/2024	0.00	1555	903
6/08/2024	0.00	1567	797
7/08/2024	0.49	1433	797
8/08/2024	1.49	1444	845
9/08/2024	0.00	1423	974
10/08/2024	0.00	1374	1165
11/08/2024	0.00	1441	1018
12/08/2024	1.49	1467	970
13/08/2024	0.49	1442	951
14/08/2024	0.00	1397	784
15/08/2024	0.00	1404	810
16/08/2024	0.49	1391	1099
17/08/2024	6.64	1319	959
18/08/2024	26.17	1274	875
19/08/2024	6.50	1500	985
20/08/2024	0.00	2188	1413
21/08/2024	0.00	2098	1694
22/08/2024	1.00	1800	1451
23/08/2024	2.19	1679	1420
24/08/2024	10.50	1555	1234
25/08/2024	1.49	1520	1164
26/08/2024	36.51	1931	1265
27/08/2024	16.51	1728	1342
28/08/2024	3.00	2797	1739
29/08/2024	18.00	3040	2232
30/08/2024	3.49	2590	2211
31/08/2024	10.84	2790	2100
1/09/2024	21.49	2653	2117
2/09/2024	0.00	2674	2272
3/09/2024	26.95	4260	2602
4/09/2024	9.01	2585	2441
5/09/2024	0.00	3189	2364
6/09/2024	0.00	3361	2632
7/09/2024	2.00	2591	2254
8/09/2024	0.00	2340	1868
9/09/2024	0.49	2200	1662
10/09/2024	0.49	2299	1541
11/09/2024	0.00	1938	1447
12/09/2024	0.00	1898	1315
13/09/2024	0.00	1862	1208
14/09/2024	0.00	1766	1164
15/09/2024	0.00	2005	1285

Date	Rainfall (mm/day)	Daily OWWTP Influent (m3/day)	OWWTP Discharge into LTDA (m3day)[1]
16/09/2024	0.00	2158	1516
17/09/2024	0.00	2073	1542
18/09/2024	8.50	2288	1592
19/09/2024	0.49	2223	1735
20/09/2024	4.49	2038	1567
21/09/2024	0.00	1889	1398
22/09/2024	3.00	1926	1333
23/09/2024	0.00	1944	1297
24/09/2024	0.00	1819	1271
25/09/2024	0.00	1684	1207
26/09/2024	0.00	1696	1121
27/09/2024	1.00	1766	1078
28/09/2024	0.00	1601	1041
29/09/2024	0.00	1621	1035
30/09/2024	0.00	1719	1036
1/10/2024	0.00	1619	1021
2/10/2024	0.00	1597	1017
3/10/2024	3.49	1459	982
4/10/2024	0.00	1514	949
5/10/2024	0.49	1488	970
6/10/2024	8.50	1530	985
7/10/2024	5.49	1553	957
8/10/2024	2.84	1742	1067
9/10/2024	0.00	1705	1165
10/10/2024	0.00	1627	1121
11/10/2024	0.00	1734	1059
12/10/2024	0.00	1632	1020
13/10/2024	8.96	1653	1005
14/10/2024	10.99	1605	960
15/10/2024	0.00	1716	1102
16/10/2024	0.00	1804	1346
17/10/2024	0.00	1617	1253
18/10/2024	0.00	1561	1037
19/10/2024	0.00	1535	947
20/10/2024	0.00	1457	911
21/10/2024	0.00	1569	889
22/10/2024	0.00	1618	907
23/10/2024	0.00	1466	918
24/10/2024	0.00	1479	907
25/10/2024	11.50	1386	853
26/10/2024	8.01	1396	825
27/10/2024	16.00	1574	941
28/10/2024	21.49	1670	1207

Date	Rainfall (mm/day)	Daily OWWTP Influent (m3/day)	OWWTP Discharge into LTDA (m3day)[1]
29/10/2024	4.80	1978	1424
30/10/2024	4.49	2188	1627
31/10/2024	0.00	1950	1729
1/11/2024	0.49	1969	1560
2/11/2024	3.49	1885	1416
3/11/2024	0.00	1745	1265
4/11/2024	0.00	1841	1179
5/11/2024	15.93	1884	1113
6/11/2024	5.01	1709	1066
7/11/2024	0.00	1834	1213
8/11/2024	0.00	1887	1446
9/11/2024	0.00	1737	1341
10/11/2024	14.51	1647	1197
11/11/2024	0.00	1687	1075
12/11/2024	0.00	2034	1213
13/11/2024	0.00	2039	1332
14/11/2024	6.01	1900	1255
15/11/2024	27.95	1792	1180
16/11/2024	3.00	1711	1279
17/11/2024	0.00	2614	1625
18/11/2024	0.00	2178	1692
19/11/2024	0.00	2096	1456
20/11/2024	4.49	1802	1410
21/11/2024	0.00	1539	1166
22/11/2024	0.00	1601	1016
23/11/2024	0.00	1519	920
24/11/2024	0.00	1537	858
25/11/2024	0.69	1610	876
26/11/2024	1.49	1700	914
27/11/2024	0.00	1536	919
28/11/2024	0.00	1454	928
29/11/2024	0.49	1472	893
30/11/2024	1.49	1433	847
1/12/2024	0.00	1515	872
2/12/2024	0.00	1621	934
3/12/2024	0.00	1507	928
4/12/2024	7.50	1510	915
5/12/2024	0.00	1427	924
6/12/2024	0.00	1542	969
7/12/2024	0.00	1498	997
8/12/2024	2.90	1698	952
9/12/2024	14.99	1628	952
10/12/2024	0.00	1570	1038

Date	Rainfall (mm/day)	Daily OWWTP Influent (m3/day)	OWWTP Discharge into LTDA (m3day)[1]
11/12/2024	0.00	2075	1281
12/12/2024	1.00	1737	1310
13/12/2024	0.00	1671	1365
14/12/2024	0.00	1612	1276
15/12/2024	0.00	1667	752
16/12/2024	4.49	1658	812
17/12/2024	6.01	1647	885
18/12/2024	0.00	1684	974
19/12/2024	0.00	1592	1059
20/12/2024	1.00	1624	945
21/12/2024	5.26	1582	887
22/12/2024	0.00	1555	934
23/12/2024	0.00	1652	1005
24/12/2024	0.49	1596	1032
25/12/2024	0.00	1624	1034
26/12/2024	4.16	1604	1036
27/12/2024	0.00	1563	1002
28/12/2024	0.00	1588	988
29/12/2024	0.00	1657	968
30/12/2024	0.00	1663	940
31/12/2024	4.00	1542	962
1/01/2025	2.00	1508	944
2/01/2025	0.00	1503	905
3/01/2025	4.37	1468	906
4/01/2025	1.00	1595	952
5/01/2025	2.00	1568	977
6/01/2025	0.00	1538	844
7/01/2025	0.00	1601	631
8/01/2025	0.00	1519	910
9/01/2025	0.00	1575	1242
10/01/2025	0.00	1445	1041
11/01/2025	0.00	1553	906
12/01/2025	0.00	1483	908
13/01/2025	0.00	1519	870
14/01/2025	0.00	1517	821
15/01/2025	0.00	1511	855
16/01/2025	0.00	1419	862
17/01/2025	0.00	1433	803
18/01/2025	0.00	1482	774
19/01/2025	0.00	1499	788
20/01/2025	0.00	1467	796
21/01/2025	0.00	1479	763
22/01/2025	0.00	1426	752

Date	Rainfall (mm/day)	Daily OWWTP Influent (m3/day)	OWWTP Discharge into LTDA (m3day)[1]
23/01/2025	0.00	1348	751
24/01/2025	1.49	1385	736
25/01/2025	0.00	1347	747
26/01/2025	3.00	1323	759
27/01/2025	9.01	1461	786
28/01/2025	0.00	1412	853
29/01/2025	0.00	1510	829
30/01/2025	9.45	1396	801
31/01/2025	2.49	1375	988
1/02/2025	0.00	1490	991
2/02/2025	0.00	1616	1160
3/02/2025	0.00	1553	1068
4/02/2025	0.00	1583	974
5/02/2025	0.00	1499	894
6/02/2025	0.00	1415	941
7/02/2025	0.00	1421	1028
8/02/2025	0.00	1461	878
9/02/2025	0.00	1399	732
10/02/2025	0.00	1429	676
11/02/2025	0.00	1458	717
12/02/2025	0.00	1396	754
13/02/2025	0.00	1307	725
14/02/2025	0.00	1381	693
15/02/2025	0.00	1309	710
16/02/2025	0.00	1391	754
17/02/2025	0.00	1386	656
18/02/2025	1.00	1362	523
19/02/2025	1.00	1287	798
20/02/2025	0.00	1266	1017
21/02/2025	2.49	1305	897
22/02/2025	0.00	1357	807
23/02/2025	0.00	1312	784
24/02/2025	0.00	1415	775
25/02/2025	0.00	1385	761
26/02/2025	1.00	1311	794
27/02/2025	0.00	1218	764
28/02/2025	0.00	1294	739
1/03/2025	0.00	1308	766
2/03/2025	0.00	1297	742
3/03/2025	0.00	1322	749
4/03/2025	3.49	1374	767
5/03/2025	0.49	1255	755
6/03/2025	0.00	1314	763

Date	Rainfall (mm/day)	Daily OWWTP Influent (m3/day)	OWWTP Discharge into LTDA (m3day)[1]
7/03/2025	0.00	1340	775
8/03/2025	0.00	1361	734
9/03/2025	0.00	1364	740
10/03/2025	0.00	1402	777
11/03/2025	0.00	1503	848
12/03/2025	0.00	1346	865
13/03/2025	0.00	1269	792
14/03/2025	0.00	1303	731
15/03/2025	0.00	1310	710
16/03/2025	2.49	1311	721
17/03/2025	1.49	1309	749
18/03/2025	3.78	1355	846
19/03/2025	12.99	1325	889
20/03/2025	0.00	1384	980
21/03/2025	0.00	1603	1123
22/03/2025	0.00	1460	1076
23/03/2025	0.00	1446	944
24/03/2025	0.49	1352	886
25/03/2025	0.00	1329	847
26/03/2025	0.00	1347	848
27/03/2025	0.00	1329	828
28/03/2025	0.00	1373	826
29/03/2025	0.00	1348	824
30/03/2025	0.00	1321	822
31/03/2025	0.00	1421	801
1/04/2025	0.00	1403	789
2/04/2025	0.00	1334	793
3/04/2025	0.00	1310	798
4/04/2025	6.01	1268	785
5/04/2025	0.00	1267	865
6/04/2025	0.00	1752	1164
7/04/2025	0.49	1619	1350
8/04/2025	0.49	1704	1257
9/04/2025	0.00	1480	1257
10/04/2025	0.00	1750	1266
11/04/2025	0.00	1521	1426
12/04/2025	0.00	1466	1482
13/04/2025	0.00	1363	1219
14/04/2025	0.00	1465	1067
15/04/2025	0.00	1460	987
16/04/2025	0.00	1343	907
17/04/2025	0.49	1322	865
18/04/2025	0.00	1307	911

Date	Rainfall (mm/day)	Daily OWWTP Influent (m3/day)	OWWTP Discharge into LTDA (m3day)[1]
19/04/2025	0.00	1274	908
20/04/2025	0.00	1469	982
21/04/2025	33.99	1365	996
22/04/2025	0.00	1423	1053
23/04/2025	0.00	1812	1251
24/04/2025	0.00	1365	1232
25/04/2025	0.00	1359	1031
26/04/2025	0.00	1333	862
27/04/2025	0.00	1351	813
28/04/2025	0.00	1327	828
29/04/2025	0.00	1399	842
30/04/2025	8.87	1277	868
1/05/2025	12.50	1394	881
2/05/2025	0.00	1582	883
3/05/2025	0.00	1743	948
4/05/2025	0.00	1332	1234
5/05/2025	0.00	1482	1384
6/05/2025	0.00	1435	1213
7/05/2025	0.00	1352	1031
8/05/2025	3.00	1293	914
9/05/2025	14.99	1234	880
10/05/2025	0.00	1347	905
11/05/2025	0.00	1515	1008
12/05/2025	0.00	1439	1100
13/05/2025	0.00	1414	1030
14/05/2025	0.00	1327	917
15/05/2025	0.00	1271	855
16/05/2025	0.00	1313	927
17/05/2025	0.00	1264	975
18/05/2025	21.49	1283	924
19/05/2025	1.00	1354	975
20/05/2025	0.00	1862	1139
21/05/2025	0.00	1652	1041
22/05/2025	0.00	1524	703
23/05/2025	0.00	1489	850
24/05/2025	0.00	1396	875
25/05/2025	0.00	1410	873
26/05/2025	5.49	1425	838
27/05/2025	0.49	1464	846
28/05/2025	6.09	1362	917
29/05/2025	8.01	1387	959
30/05/2025	0.00	1439	1044
31/05/2025	0.00	1617	1194

Date	Rainfall (mm/day)	Daily OWWTP Influent (m3/day)	OWWTP Discharge into LTDA (m3day)[1]
1/06/2025	0.00	1421	1131
2/06/2025	0.00	1408	999
3/06/2025	4.65	1387	938
4/06/2025	23.56	1432	922
5/06/2025	3.49	1415	1023
6/06/2025	0.00	2248	1398
7/06/2025	0.49	1904	1674
8/06/2025	0.00	1795	1481
9/06/2025	0.00	1704	1317
10/06/2025	0.00	1660	1173
11/06/2025	18.00	1533	1104
12/06/2025	17.03	1473	1094
13/06/2025	7.50	1666	1220
14/06/2025	0.00	2044	1495
15/06/2025	0.00	1967	1671
16/06/2025	0.00	1875	1525
17/06/2025	0.00	1754	1326
18/06/2025	0.00	1545	1208
19/06/2025	24.49	1443	1081
20/06/2025	0.00	1436	1017
21/06/2025	0.00	2269	1247
22/06/2025	0.00	1652	1511
23/06/2025	0.00	1619	1274
24/06/2025	0.00	1549	1143
25/06/2025	0.00	1483	1042
26/06/2025	1.49	1388	1011
27/06/2025	11.50	1393	986
28/06/2025	11.50	1379	988
29/06/2025	0.49	1583	1077
30/06/2025	0.00	1693	1236
1/07/2025	0.00	1638	1278

Appendix B.2 Pond Effluent Quality Discharged into the LTDA

Sample Date	Sample ID	pH	DO (mg/L)	TSS (mg/L)	BOD (mg/L)	SBOD (mg/L)	SCBOD (mg/L)	AmmN (mg/L)	NitraN (mg/L)	NitriN (mg/L)	DRP (mg/L)	Total P(mg/L)	Total N (mg/L)	Faecal Coliforms (cfu/100ml)	E. Coli (cfu/100ml)
16/07/2024	KAPITI-7075	8.2	11.4	94.4	87.8	5.6	4.9	31.3	0.604	0.168	4.24	6.08	40	27000	20000
14/08/2024	KAPITI-7354	8.6	11.96	95.8	92.1	10.4	2	28.4	0.672	0.16	4.11	5.66	44	71000	61000
19/09/2024	KAPITI-7676	7.5	7.6	18.6	20.4	6.7	2.3	24	0.363	0.062	3.21	3.72	28	11000	8000
17/10/2024	KAPITI-7931	7.9	8.1	45.4	41.1	12.4	8.3	25.9	0.836	0.543	4.08	4.87	35	38000	30000
20/11/2024	KAPITI-8238	8.0	4.8	44.4	37.5	6.5	3.4	20.5	0.55	0.148	3.91	5.46	30	25000	17000
18/12/2024	KAPITI-8514	8.4	10.5	82.8	49.1	3.2	<1	20.1	0.55	0.295	4.02	5.53	32	36000	30000
14/01/2025	KAPITI-8768	8.1	8.3	66.4	49.8	6.84	3.12	15.8	0.93	0.608	4.36	5.26	22	44000	22000
12/02/2025	KAPITI-9036	8.1	8.8	44.6	30	9.8	3.6	22.6	0.30	0.126	5.55	6.39	32	31000	16000
6/03/2025	KAPITI-9262	7.6	6.5	40.0	32.7	7.6	3.9	24.9	0.67	0.434	5.23	5.93	32	18000	13000
2/04/2025	KAPITI-9495	7.8	7.1	47.0	48.6	5.7	2	23.5	0.70	0.291	5.38	6.07	31	8000	8000
9/05/2025	KAPITI-9853	7.6	8.1	68.2	46.4	19.8	8.7	27.9	<0.23	0.017	4.23	5.74	40	420000	300000
12/06/2025	KAPITI-10169	7.5	1.3	29.2	22.6	7.8	5.2	34.8	<0.23	0.027	3.91	4.72	40	14000	11000

Appendix B.3 Bore and Spring Water Quality

Sample Site	Date	Wateroutlook Sample ID	Temp °C	pH	BOD (mg/L)	AmmN (mg/L)	NitraN (mg/L)	NitriN (mg/L)	SolubleN (mg/L)	DRP (mg/L)	TotalP (mg/L)	Total N (mg/L)	Total N (0.45) (mg/L)	Faecal Coliforms (cfu100ml)	E. Coli (100cfu/100ml)	Cond (µS/cm)
Bore 1	9/07/2024	KAPITI-6994	14.4	6.3	1.6	<0.015	<0.23	<0.015	0.0298	<0.05	<0.05	0.6	0	8.1	<1	78.9
	1/08/2024	KAPITI-7212	14	6.41	1.2	<0.015	<0.23	<0.015	0.0298	0.007	<0.05	0.3	0	6.7	<1	77
	5/09/2024	KAPITI-7544	13.2	6.4	<1	<0.015	0.941	<0.015	0.9708	<0.005	<0.05	1.5	0	12.4	4	109
	7/10/2024	KAPITI-7809	12.3	6.2	<1	<0.015	0.486	<0.015	0.5158	<0.005	<0.05	0.9	0	8.5	<1	91
	6/11/2024	KAPITI-8095	11.9	6.6	<1	0.016	0.698	<0.015	0.7289	<0.005	<0.05	1.1	0	8.9	1	96.58
	5/12/2024	KAPITI-8378	12.2	6.48	<1	<0.015	0.738	<0.015	0.7678	<0.005	<0.05	0.8	0	9.9	1	102.1
	9/01/2025	KAPITI-8729	21.4	6.4	1.74	0.019	0.539	<0.015	0.5729	0.004	<0.05	1.3	0	8.5	1	94.62
	10/02/2025	KAPITI-8992	12.1	6.34	1.2	<0.015	0.327	<0.015	0.3568	0.004	<0.05	1.9	0	7	<1	85.62
	11/02/2025	KAPITI-9018	12.3	6.3	<1	0.021	0.316	<0.015	0.3519	0.008	<0.05	0.8	0	6.9	5	82
	10/03/2025	KAPITI-9292	13	6.4	<1	<0.015	0.376	<0.015	0.4058	0.004	<0.05	0.4	0	7.5	<1	82
	14/04/2025	KAPITI-9615	14.1	6.2	<1	0.019	0.258	<0.015	0.2919	<0.005	<0.05	<0.5	0	7.3	1	81.7
	13/05/2025	KAPITI-9879	14.7	6.54	<1	0.018	<0.23	<0.015	0.0329	<0.005	<0.05	0.6	0	6.4	<1	78.65
	5/06/2025	KAPITI-10083	15.3	6.29	<1	0.021	<0.23	<0.015	0.0359	<0.005	<0.05	0.7	0	7.9	1	78.06
Bore 2	9/07/2024	KAPITI-6995	14.7	6	1.3	<0.015	5.56	<0.015	5.5898	0.497	0.571	5.4	0	17.6	4	219
	1/08/2024	KAPITI-7213	14.1	6.05	<1	0.026	6.32	<0.015	6.3609	0.513	0.522	6.8	0	16.8	1	218
	5/09/2024	KAPITI-7545	13.2	6.1	<1	<0.015	7.29	0.021	7.3259	0.44	0.494	8.2	0	24.2	115	286
	7/10/2024	KAPITI-7810	13	6.2	<1	0.02	3.55	<0.015	3.5849	0.535	0.606	3.9	0	15	2	191
	6/11/2024	KAPITI-8096	12.8	6.22	<1	0.019	4.37	<0.015	4.4039	0.507	0.556	4.5	0	15.5	1	202.1
	5/12/2024	KAPITI-8383	13.1	6.5	<1	0.017	3.32	<0.015	3.3519	0.485	0.53	4.3	0	15	1	172.9
	9/01/2025	KAPITI-8730	13.9	6.2	5.5	0.031	2.43	<0.015	2.4759	0.356	0.419	3	0	13.2	<1	168.9
	10/02/2025	KAPITI-8998	13.2	6.17	<1	0.017	1.95	<0.015	1.9819	0.526	0.514	2.5	0	14	1	155.2
	11/02/2025	KAPITI-9019	13.3	6.2	<1	0.02	2.1	<0.015	2.1349	0.477	0.489	2.5	0	13.7	4	154
	10/03/2025	KAPITI-9293	14.1	6.3	<1	0.023	1.7	<0.015	1.7379	0.467	0.618	2.1	0	13.5	1	145
	14/04/2025	KAPITI-9616	14.3	6.1	<1	0.018	2.74	<0.015	2.7729	0.483	0.531	3.1	0	16	<1	171.8
	13/05/2025	KAPITI-9880	14.5	6.31	<1	0.032	3.21	<0.015	3.2569	0.502	0.538	3.6	0	13.7	1	169.6
	5/06/2025	KAPITI-10084	14.8	6	<1	0.021	4.28	<0.015	4.3159	0.526	0.568	4.9	0	17	<1	188.7
Bore 3	9/07/2024	KAPITI-6996	13.2	6.1	1.1	<0.015	0.892	<0.015	0.9218	0.468	0.513	2.8	0	15.4	20	186

	1/08/2024	KAPITI-7214	11.9	6.2	<1	0.02	2.6	<0.015	0	0.561	0.621	2.6	0	15.3	31	180
	5/09/2024	KAPITI-7546	10.3	6.3	1	0.021	4	<0.015	0	0.661	0.771	4.7	0	19.4	350	236
	7/10/2024	KAPITI-7811	10.9	6.2	<1	0.019	1.3	<0.015	0	0.458	0.551	1.7	0	10.9	<1	127
	6/11/2024	KAPITI-8097	11.2	6.46	<1	0.02	2.42	<0.015	0	0.475	0.546	3.1	0	14.3	45	177.5
	5/12/2024	KAPITI-8384	12.4	6.44	<1	0.018	1.01	<0.015	0	0.622	0.716	1.9	0	24.7	3	150
	9/01/2025	KAPITI-8732	14.1	6.1	<1	0.018	1.31	<0.015	0	0.508	0.552	2.1	0	12.4	26	195.3
	10/02/2025	KAPITI-8999	14.1	6.17	<1	0.019	0.798	<0.015	0	0.652	0.608	1.4	0	12.6	1	164.2
	11/02/2025	KAPITI-9020	14.1	6.2	<1	0.024	1.01	<0.015	0	0.782	0.841	1.2	0	17	9	166
	10/03/2025	KAPITI-9294	15.4	6.4	<1	0.017	0.741	<0.015	0	0.662	0.71	1	0	11.6	1	123
	14/04/2025	KAPITI-9617	16.4	6.1	<1	0.024	2.6	<0.015	0	0.476	0.516	2.6	0	18.6	39	191
	13/05/2025	KAPITI-9881	16.8	6.32	<1	0.031	2.76	<0.015	0	0.487	0.545	3.2	0	17.9	1600	197.9
	5/06/2025	KAPITI-10085	16.1	6.09	<1	0.021	1.94	<0.015	0	0.579	0.597	2.6	0	18.1	21	186.5
Bore 4	9/07/2024	KAPITI-6997	14.1	6.2	1.4	<0.015	2.55	<0.015	2.5798	0.216	0.23	2.6	2.6	11.4	1	129
	1/08/2024	KAPITI-7215	13.8	6.19	<1	0.031	2.87	<0.015	2.9159	0.207	0.228	2.8	2.7	10.6	<1	134
	5/09/2024	KAPITI-7547	13.1	6.2	<1	<0.015	5.07	<0.015	5.0998	0.173	0.214	5.3	5.3	14.4	1	178
	7/10/2024	KAPITI-7812	13	6.2	1.2	<0.015	2.1	<0.015	2.1298	0.148	0.18	2.3	2.2	10.6	67	125
	6/11/2024	KAPITI-8099	12.9	6.38	<1	0.018	2.9	<0.015	2.9329	0.177	0.192	3.3	3.1	10.7	3	133.4
	5/12/2024	KAPITI-8385	12.9	6.36	<1	0.017	1.76	<0.015	1.7919	0.163	0.175	3	2	9.1	4	119.2
	9/01/2025	KAPITI-8733	13.7	6.2	3.2	0.025	1.31	<0.015	1.3499	0.126	0.165	1.9	1.9	10.3	<1	111.6
	10/02/2025	KAPITI-8995	12.8	6.23	<1	0.021	1.14	<0.015	1.1759	0.207	0.175	1.9	1.7	9.6	<1	108.8
	11/02/2025	KAPITI-9021	12.9	6.3	<1	0.02	1.08	<0.015	1.1149	0.161	0.182	1.5	1.4	9.6	6	107
	10/03/2025	KAPITI-9295	13.3	6.3	<1	0.018	1.06	<0.015	1.0929	0.164	0.222	1.2	1.2	9.7	<1	106
	14/04/2025	KAPITI-9618	13.9	6.2	<1	0.03	1.52	<0.015	1.5649	0.164	0.184	1.6	1.6	11	1	120.7
	13/05/2025	KAPITI-9882	14	6.4	<1	0.03	1.81	<0.015	1.8549	0.182	0.194	2.2	2	9.4	<1	124
	5/06/2025	KAPITI-10086	14.2	6.08	<1	<0.015	1.76	<0.015	1.7898	0.206	0.219	2.3	2.3	11.2	1	123.8
Bore 4a	9/07/2024	KAPITI-6998	13.3	6.3	1.5	0.026	0.611	<0.015	0.6519	0.072	0.16	0.6	0	8.1	<1	96
	1/08/2024	KAPITI-7216	13.4	6.35	<1	<0.015	0.689	<0.015	0.7188	0.041	<0.05	0.6	0	7.4	<1	94
	5/09/2024	KAPITI-7548	12.7	6.5	<1	<0.015	1.09	<0.015	1.1198	0.04	<0.05	1.3	0	7.8	<1	98
	7/10/2024	KAPITI-7813	13.7	6.2	<1	<0.015	0.958	<0.015	0.9878	0.041	<0.05	1	0	9.3	2	101
	6/11/2024	KAPITI-8106	13.6	6.53	<1	<0.015	0.951	<0.015	0.9808	0.04	<0.05	0.7	0	8.5	<1	100.2
	5/12/2024	KAPITI-8386	13.5	6.48	<1	<0.015	0.928	<0.015	0.9578	0.028	<0.05	1.3	0	8.1	1	104.6
	9/01/2025	KAPITI-8734	14.2	6.4	<1	0.02	0.992	<0.015	1.0269	0.041	<0.05	1.6	0	9.8	<1	101.5
	10/02/2025	KAPITI-8994	12.9	6.32	<1	0.024	0.702	<0.015	0.7409	0.05	<0.05	1.6	0	8.6	1	99.23

	11/02/2025	KAPITI-9022	13	6.3	<1	0.018	0.717	<0.015	0.7499	0.059	0.063	0.8	0	8.7	14	95
	10/03/2025	KAPITI-9296	13.2	6.4	<1	0.019	0.586	<0.015	0.6199	0.041	0.063	0.7	0	8.6	<1	94
	14/04/2025	KAPITI-9619	13	6.3	<1	<0.015	0.548	<0.015	0.5778	0.037	<0.05	0.6	0	8.1	<1	94.2
	13/05/2025	KAPITI-9883	13.1	6.57	<1	0.023	0.489	<0.015	0.5269	0.034	<0.05	1	0	6.6	<1	93.91
	5/06/2025	KAPITI-10087	13.3	6.17	<1	<0.015	0.592	<0.015	0.6218	0.035	<0.05	0.9	0	8	<1	95.22
Bore 5	9/07/2024	KAPITI-6999	13.6	6.1	1.4	0.036	2.59	<0.015	2.6409	0.13	0.16	2.5	2.3	17.9	<1	213
	1/08/2024	KAPITI-7217	13.4	6.18	<1	0.02	3.56	<0.015	3.5949	0.132	0.159	3.7	3.5	17.4	<1	214
	5/09/2024	KAPITI-7549	12.9	6	<1	0.022	2.92	<0.015	2.9569	0.097	0.139	4.7	3.7	23.2	16	196
	7/10/2024	KAPITI-7814	13.5	6.1	<1	0.019	6.05	0.018	6.087	0.096	0.14	6.7	6.3	22.3	3	263
	6/11/2024	KAPITI-8102	13.7	6.24	1.1	0.019	4.53	0.017	4.566	0.107	0.156	4.7	4.6	19.4	1	241.8
	5/12/2024	KAPITI-8381	14.4	6.18	<1	0.019	4.84	0.018	4.877	0.109	0.168	5.1	4.9	21.1	11	271.1
	9/01/2025	KAPITI-8735	15.6	6.1	1.4	0.024	4.18	0.022	4.226	0.068	0.177	5.1	4.9	23	<1	241.9
	10/02/2025	KAPITI-8993	14.9	6.08	1.4	0.042	3	0.023	3.065	0.156	0.175	4.1	4	22.1	<1	248
	11/02/2025	KAPITI-9023	15.2	6.2	<1	0.02	3.01	0.021	3.051	0.098	0.184	3.5	3.5	23.4	39	256
	10/03/2025	KAPITI-9297	15.8	6.2	<1	0.024	1.99	0.019	2.033	0.128	0.205	2.5	2.5	22.7	1	231
	14/04/2025	KAPITI-9620	15.7	6.1	<1	0.019	1.91	0.02	1.949	0.13	0.147	2.1	2	19.5	<1	210
	13/05/2025	KAPITI-9884	15.3	6.23	<1	0.034	3.39	0.024	3.448	0.137	0.172	3.9	3.9	21.5	1	247.8
	5/06/2025	KAPITI-10088	14.9	6.03	<1	0.019	3.05	0.016	3.085	0.126	0.147	4	4	22.1	1	225.9
Bore 6	9/07/2024	KAPITI-7000	10.6	6.7	1.6	<0.015	<0.23	<0.015	0.0298	<0.05	<0.05	0.1	0	6.6	<1	64
	1/08/2024	KAPITI-7218	9.2	6.82	<1	0.018	<0.23	<0.015	0.0329	0.009	<0.05	<0.5	0	6.1	<1	69
	5/09/2024	KAPITI-7550	9.2	7	<1	0.015	<0.23	<0.015	0.0299	0.004	<0.05	0.6	0	6.4	4	63
	7/10/2024	KAPITI-7815	9.8	6.8	1.1	0.016	<0.23	<0.015	0.0309	<0.005	<0.05	0.5	0	7.4	2	65
	6/11/2024	KAPITI-8103	14.3	7.13	<1	0.019	<0.23	<0.015	0.0339	0.026	<0.05	0.4	0	6.4	170	68.27
	5/12/2024	KAPITI-8387	12.6	6.8	<1	<0.015	<0.23	<0.015	0.0298	<0.005	<0.05	0.5	0	6.1	20	69.75
	9/01/2025	KAPITI-8736	14.1	6.8	<1	<0.015	<0.23	<0.015	0.0298	0.007	<0.05	0.8	0	6	<1	66.96
	10/02/2025	KAPITI-9002	14.8	6.66	<1	0.061	<0.23	<0.015	0.0759	0.009	<0.05	0.3	0	6.5	<1	74.95
	11/02/2025	KAPITI-9024	15.3	6.7	<1	0.018	<0.23	<0.015	0.0329	0.01	<0.05	0.2	0	6.2	1	74
	10/03/2025	KAPITI-9298	16.8	7	<1	0.019	<0.23	<0.015	0.0339	0.007	<0.05	0.4	0	7.2	<1	77
	14/04/2025	KAPITI-9621	15.7	6.7	<1	0.015	<0.23	<0.015	0.0299	<0.005	<0.05	<0.5	0	6	4	66
	13/05/2025	KAPITI-9885	14.3	6.96	<1	0.023	<0.23	<0.015	0.0379	<0.005	<0.05	0.4	0	4.9	1	67.59
	5/06/2025	KAPITI-10089	13.2	6.69	1	<0.015	<0.23	<0.015	0.0298	<0.005	<0.05	<0.5	0	8	1	64.21
Bore 7	9/07/2024	KAPITI-7001	11.7	6.7	1.2	0.015	<0.23	<0.015	0.0299	<0.05	<0.05	0.1	0	6.3	<1	67
	1/08/2024	KAPITI-7219	10.3	6.79	<1	0.018	<0.23	<0.015	0.0329	0.013	<0.05	0.1	0	8.1	4	69

	5/09/2024	KAPITI-7551	9.5	6.9	1	0.017	<0.23	<0.015	0.0319	0.005	<0.05	0.4	0	6.6	2	67
	7/10/2024	KAPITI-7816	9.8	6.7	<1	0.018	<0.23	<0.015	0.0329	<0.005	<0.05	0.3	0	7.3	19	67
	6/11/2024	KAPITI-8104	12.2	7.04	<1	<0.015	<0.23	<0.015	0.0298	0.013	<0.05	0.3	0	6.1	54	68.07
	5/12/2024	KAPITI-8388	12.1	6.79	<1	<0.015	<0.23	<0.015	0.0298	<0.005	<0.05	0.7	0	6.3	1	74.71
	9/01/2025	KAPITI-8737	13.9	6.6	<1	0.018	<0.23	<0.015	0.0329	0.007	<0.05	0.6	0	6.9	<1	75.91
	10/02/2025	KAPITI-9001	14.8	6.57	<1	0.022	0.233	<0.015	0.2699	0.003	<0.05	0.4	0	7	2	82.5
	11/02/2025	KAPITI-9025	14.8	6.6	<1	0.025	<0.23	<0.015	0.0399	0.01	<0.05	0.7	0	6.6	8	82
	10/03/2025	KAPITI-9299	16.1	6.7	<1	0.022	<0.23	<0.015	0.0369	0.012	<0.05	0.1	0	7.4	<1	82
	14/04/2025	KAPITI-9622	17.4	6.5	<1	<0.015	<0.23	<0.015	0.0298	<0.005	<0.05	<0.5	0	6	1	78.6
	13/05/2025	KAPITI-9886	17.2	6.75	<1	0.028	<0.23	<0.015	0.0429	<0.005	<0.05	0.7	0	5.2	12	77.36
	5/06/2025	KAPITI-10090	15.9	6.57	<1	<0.015	<0.23	<0.015	0.0298	<0.005	<0.05	0.7	0	7.2	2	69.29
Spring	1/08/2024	KAPITI-7220	11.1	6.47	1	0.029	0.806	<0.015	0.8499	0.013	<0.05	0.9	0	18.6	2	106
	5/09/2024	KAPITI-7552	12.8	6.6	1.1	0.019	1.38	<0.015	1.4139	<0.005	<0.05	1.7	0	8.9	2	107
	7/10/2024	KAPITI-7817	13.8	6.8	<1	0.022	1.06	<0.015	1.0969	<0.005	<0.05	1.5	0	9.5	36	104
	6/11/2024	KAPITI-8105	13.7	6.2	1	0.017	1.25	<0.015	1.2819	0.006	<0.05	1.6	0	7.8	9	103.4
	5/12/2024	KAPITI-8382	15.8	6.7	1.32	0.038	0.859	<0.015	0.9119	<0.005	<0.05	1.2	0	8.5	2000	104.1
	23/01/2025	KAPITI-8651	0	0	0	0	0	0	0	0	0	0	0	0	1200	0
	9/01/2025	KAPITI-8741	16.4	6.3	10.7	0.108	0.854	<0.015	0.9769	0.094	0.122	2.1	0	9.9	210	121.5
	13/01/2025	KAPITI-8780	16.4	6.3	0	0	0	0	0	0	0	0	0	0	67	121.5
	10/02/2025	KAPITI-9003	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10/03/2025	KAPITI-9300	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	14/04/2025	KAPITI-9623	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	13/05/2025	KAPITI-9887	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5/06/2025	KAPITI-10091	13.8	6.25	<1	0.017	<0.23	<0.015	0.0319	<0.005	<0.05	2.2	0	10.2	3	107.3

Appendix B.4 Daily observations of the two OWWTP Ponds

Date	Pond A Daily Observations					Pond B Daily Observations				
	pH	Dissolved Oxygen (mg/L)	Temp (°C)	Pond Colour	Odour	pH	Dissolved Oxygen (mg/L)	Temp (°C)	Pond Colour	Odour
1/07/2024	8.2	7.8	10	Green	1 - No Smell	8.1	6.9	9.8	Green	1 - No Smell
2/07/2024	8.3	6.9	10.1	Green	1 - No Smell	8.4	7.4	10	Green	1 - No Smell
3/07/2024	8.3	9.7	9.5	Green	1 - No Smell	8.4	11.9	9.9	Green	1 - No Smell
4/07/2024	8.5	11.6	8.5	Green	1 - No Smell	8.7	16.9	8.8	Green	1 - No Smell
5/07/2024	8.5	10.8	9	Green	1 - No Smell	8.7	14.6	8.9	Green	1 - No Smell
6/07/2024										
7/07/2024										
8/07/2024	8.6	17.6	8.7	Green	1 - No Smell	8.5	19.2	9.5	Green	1 - No Smell
9/07/2024	8.8	17.7	9.2	Green	1 - No Smell	8.7	20	8.7	Green	1 - No Smell
10/07/2024	8.7	15.6	9.1	Green	1 - No Smell	8.6	14.6	8.5	Green	1 - No Smell
11/07/2024	8.6	12.3	8.8	Green	1 - No Smell	8.6	13.2	8.4	Green	1 - No Smell
12/07/2024	8.6	14.4	8.4	Green	1 - No Smell	8.9	18.3	8.4	Green	1 - No Smell
13/07/2024										
14/07/2024										
15/07/2024	8.6	15.3	9.3	Green	1 - No Smell	8.8	16.2	9.2	Green	1 - No Smell
16/07/2024	8.4	12.4	10	Green	1 - No Smell	8.7	15.4	10.2	Green	1 - No Smell
17/07/2024	8.1	8	11.2	Green	1 - No Smell	8.4	11.9	11.1	Green	1 - No Smell
18/07/2024										
19/07/2024	8.1	7.6	10.5	Green	1 - No Smell	8.5	13	10.7	Green	1 - No Smell
20/07/2024										
21/07/2024										
22/07/2024	8	7.1	11.4	Green	1 - No Smell	8.2	10.5	11.5	Green	1 - No Smell
23/07/2024	8	8.5	10.5	Green	1 - No Smell	8.4	11.5	10.7	Green	1 - No Smell
24/07/2024	8.4	14.7	10.4	Green	1 - No Smell	8.9	19.94	10.8	Green	1 - No Smell
25/07/2024	8.5	16.33	10.2	Green	1 - No Smell	8.8	21.3	10.6	Green	1 - No Smell
26/07/2024	8.4	12.9	10.2	Green	1 - No Smell	8.6	14.4	9.9	Green	1 - No Smell
27/07/2024										

28/07/2024										
29/07/2024	8.4	8.9	12	Green	1 - No Smell	8.3	11.8	11.8	Green	1 - No Smell
30/07/2024	7.5	5.1	13.8	Green	1 - No Smell	8	7.6	11.9	Green	1 - No Smell
31/07/2024	8.4	16.2	12.6	Green	1 - No Smell	8.5	18.4	12.8	Green	1 - No Smell
1/08/2024	8.9	20	13.5	Green	1 - No Smell	8.9	19.7	12.9	Green	1 - No Smell
2/08/2024	8.5	12.6	10.6	Green	1 - No Smell	8.7	12.7	10.7	Green	1 - No Smell
3/08/2024										
4/08/2024										
5/08/2024	8.8	15.1	10.6	Green	1 - No Smell	8.7	14.7	9.8	Green	1 - No Smell
6/08/2024	8.7	17.4	10.6	Green	1 - No Smell	8.9	16.3	10.4	Green	1 - No Smell
7/08/2024	8.9	17.7	10.2	Green	1 - No Smell	8.9	20	10.4	Green	1 - No Smell
8/08/2024	8.6	13.7	10.1	Green	1 - No Smell	8.5	12.3	9.9	Green	1 - No Smell
9/08/2024	8.8	13.9	11	Green	1 - No Smell	8.7	13.9	10.5	Green	1 - No Smell
10/08/2024										
11/08/2024										
12/08/2024	8.4	10.2	11.5	Green	1 - No Smell	8.4	10.4	11.4	Green	1 - No Smell
13/08/2024	8.4	10.4	10.1	Green	1 - No Smell	8.6	12.3	10.3	Green	1 - No Smell
14/08/2024	8.9	18.6	10.3	Green	1 - No Smell	9	20	10.4	Green	1 - No Smell
15/08/2024										
16/08/2024	8.3	9.6	11.7	Green	1 - No Smell	8.3	9.5	11.6	Green	1 - No Smell
17/08/2024										
18/08/2024										
19/08/2024	8.2	11.3	13.1	Green	1 - No Smell	8.4	11.8	13	Green	1 - No Smell
20/08/2024	8.8	15.4	12.2	Green	1 - No Smell	8.5	12.2	11.6	Green	1 - No Smell
21/08/2024	8.5	12.4	10.4	Green	1 - No Smell	8.8	16.6	10.3	Green	1 - No Smell
22/08/2024	8.6	14	11.5	Green	1 - No Smell	8.7	15.5	10.8	Green	1 - No Smell
23/08/2024	8.6	15.4	11.7	Green	1 - No Smell	8.6	15	11.4	Green	1 - No Smell
24/08/2024										
25/08/2024										
26/08/2024	8.2	9	13.5	Green	1 - No Smell	8.1	8.6	13.3	Green	1 - No Smell
27/08/2024	7.9	4	13.5	Green	1 - No Smell	7.8	4.5	13.2	Green	1 - No Smell
28/08/2024	7.7	4.9	14.1	Green	1 - No Smell	7.9	7.4	14	Green	1 - No Smell
29/08/2024	7.8	5.3	13.9	Green	1 - No Smell	7.9	6.8	14	Green	1 - No Smell

30/08/2024	7.7	4.3	14	Green	1 - No Smell	8	7.2	13.4	Green	1 - No Smell
31/08/2024										
1/09/2024										
2/09/2024	8.6	18.8	17.2	Green	1 - No Smell	8.3	11.3	16.2	Green	1 - No Smell
3/09/2024	7.9	8.2	15.6	Green	1 - No Smell	7.8	6.7	15.4	Green	1 - No Smell
4/09/2024	7.7	6.4	13.5	Green	1 - No Smell	7.5	3.8	13.3	Green	1 - No Smell
5/09/2024	8.3	12.3	13.7	Green	1 - No Smell	7.8	9.3	13.2	Green	1 - No Smell
6/09/2024	8.3	9.9	12.8	Green	1 - No Smell	8	9.1	12.5	Green	1 - No Smell
7/09/2024										
8/09/2024										
9/09/2024	8.18	9.28	14.2	Green	1 - No Smell	7.86	7.46	14.2	Green	1 - No Smell
10/09/2024	8	7.7	13.7	Green	1 - No Smell	7.9	8.2	13.9	Green	1 - No Smell
11/09/2024	8.1	9.2	13.4	Green	1 - No Smell	8.3	11	13	Green	1 - No Smell
12/09/2024	8.3	10.5	14.1	Green	1 - No Smell	8	8.7	13.9	Green	1 - No Smell
13/09/2024	8.1	11	14.1	Green	1 - No Smell	7.8	7.2	13.5	Green	1 - No Smell
14/09/2024										
15/09/2024										
16/09/2024	7.6	5.1	15	Green	1 - No Smell	7.7	6.6	14.6	Green	1 - No Smell
17/09/2024	7.8	3.33	13	Green	1 - No Smell	7.8	5.7	13.2	Green	1 - No Smell
18/09/2024	7.9	4.2	14.4	Green	1 - No Smell	8.1	8.8	15	Green	1 - No Smell
19/09/2024	7.5	3.9	12.4	Green	1 - No Smell	7.8	8.4	12.2	Green	1 - No Smell
20/09/2024	7.7	4.4	13.1	Green	1 - No Smell	8	8.7	12.9	Green	1 - No Smell
21/09/2024										
22/09/2024										
23/09/2024	7.5	4.8	12.9	Green	1 - No Smell	7.8	8.9	12.5	Green	1 - No Smell
24/09/2024	7.5	4.6	12.4	Green	1 - No Smell	7.8	8.2	12.2	Green	1 - No Smell
25/09/2024	7.7	5.3	12.8	Green	1 - No Smell	8	9.4	12.9	Green	1 - No Smell
26/09/2024	7.5	4.4	11.9	Green	1 - No Smell	7.7	7.6	12	Green	1 - No Smell
27/09/2024	7.61	3.25	14.3	Clear	1 - No Smell	8.69	13.96	14.3	Green	1 - No Smell
28/09/2024										
29/09/2024										
30/09/2024	7.5	1.1	16.9	Clear	1 - No Smell	8.8	15.3	15.8	Green	1 - No Smell
1/10/2024	7.5	0.6	16.8	Clear	1 - No Smell	8.9	15.1	16.5	Green	1 - No Smell

2/10/2024	7.5	0.8	16.2	Green	1 - No Smell	8.8	13.8	16.4	Green	1 - No Smell
3/10/2024	7.5	0.8	16.9	Clear	1 - No Smell	8.5	10.4	16.5	Green	1 - No Smell
4/10/2024	7.5	1.2	17.1	Clear	1 - No Smell	8.3	10.6	16.9	Green	1 - No Smell
5/10/2024										
6/10/2024										
7/10/2024	7.6	3.7	17.3	Clear	1 - No Smell	8.2	7.7	16.9	Green	1 - No Smell
8/10/2024	7.6	3.2	16.4	Clear	1 - No Smell	8	6.4	16.2	Green	1 - No Smell
9/10/2024	7.8	5.4	15.4	Clear	1 - No Smell	7.9	6.6	15.3	Green	1 - No Smell
10/10/2024	8	8.4	15.8	Clear	1 - No Smell	8.8	17.4	16.1	Green	1 - No Smell
11/10/2024	8	7.7	14.9	Clear	1 - No Smell	8.6	12.8	14.5	Green	1 - No Smell
12/10/2024										
13/10/2024										
14/10/2024	8.3	12.1	16.4	Green	1 - No Smell	8.6	10.9	15.8	Green	1 - No Smell
15/10/2024	8.5	15.9	17	Green	1 - No Smell	8.4	9.4	17.1	Green	1 - No Smell
16/10/2024	8.6	16.5	16.3	Green	1 - No Smell	8.5	10.5	17.3	Green	1 - No Smell
17/10/2024	8.5	13.9	15	Green	1 - No Smell	7.5	3.5	14.9	Green	1 - No Smell
18/10/2024	8.5	16.5	15.8	Green	1 - No Smell	7.4	2.1	16.2	Green	1 - No Smell
19/10/2024										
20/10/2024										
21/10/2024	8.8	15.8	17.9	Green	1 - No Smell	7.5	0.5	17.7	Clear	1 - No Smell
22/10/2024	8.8	16.6	18.8	Green	1 - No Smell	7.5	1.4	19	Clear	1 - No Smell
23/10/2024	8.8	13.5	20	Green	1 - No Smell	7.6	0.2	20.2	Green	1 - No Smell
24/10/2024	8.8	12	18.3	Green	1 - No Smell	7.9	5.6	18	Green	1 - No Smell
25/10/2024	8.4	9.5	17.3	Green	1 - No Smell	7.8	8.3	17.3	Green	1 - No Smell
26/10/2024										
27/10/2024										
28/10/2024	8.1	6.7	16.1	Green	1 - No Smell	8.4	10.8	16.5	Green	1 - No Smell
29/10/2024	8.1	8.8	15.8	Green	1 - No Smell	8.2	9.5	15.7	Green	1 - No Smell
30/10/2024	8.1	8.5	15.5	Green	1 - No Smell	8.1	8.8	15.6	Green	1 - No Smell
31/10/2024	8.6	15.2	16.4	Green	1 - No Smell	8.9	17.5	16.1	Green	1 - No Smell
1/11/2024	8.3	8.1	16.3	Green	1 - No Smell	8.8	12.3	16.3	Green	1 - No Smell
2/11/2024										
3/11/2024										

4/11/2024	8.8	16.6	14.8	Green	1 - No Smell	9.2	19.2	14.7	Green	1 - No Smell
5/11/2024	8.3	9.7	15.7	Green	1 - No Smell	8.8	11.5	16.7	Green	1 - No Smell
6/11/2024	8.5	14.3	17.1	Green	1 - No Smell	8.5	17	16.4	Green	1 - No Smell
7/11/2024	8.6	16.1	18.2	Green	1 - No Smell	8.6	9.7	17.5	Green	1 - No Smell
8/11/2024	8.4	12.4	18.9	Green	1 - No Smell	8.3	6.1	18.4	Green	1 - No Smell
9/11/2024										
10/11/2024										
11/11/2024	8.4	10.3	19.1	Green	1 - No Smell	8.1	9.6	19.9	Green	1 - No Smell
12/11/2024	8.5	11.2	20.1	Green	1 - No Smell	8.6	12.6	20.9	Green	1 - No Smell
13/11/2024	8.5	13.6	21.5	Green	1 - No Smell	8.8	18.6	21.2	Green	1 - No Smell
14/11/2024	8	5.3	21.3	Green	1 - No Smell	8.7	13.4	21.2	Green	1 - No Smell
15/11/2024	7.4	2.8	20.8	Green	1 - No Smell	7.9	3.7	18.8	Green	1 - No Smell
16/11/2024										
17/11/2024										
18/11/2024	8.3	12	18.8	Green	1 - No Smell	8.5	13.8	18.9	Green	1 - No Smell
19/11/2024	8.4	13	20.6	Green	1 - No Smell	8.6	15.9	19.4	Green	1 - No Smell
20/11/2024	7.7	1.2	20.2	Green	1 - No Smell	8.2	7.4	20.3	Green	1 - No Smell
21/11/2024	7.4	1.9	17.8	Green	1 - No Smell	8.2	6.9	18	Green	1 - No Smell
22/11/2024	7.8	6.3	19	Green	1 - No Smell	8.8	15.96	18.5	Green	1 - No Smell
23/11/2024										
24/11/2024										
25/11/2024	7.6	7.2	19.4	Green	1 - No Smell	8.1	9.7	19.3	Green	1 - No Smell
26/11/2024	7.7	6.8	20	Green	1 - No Smell	8	8.2	19.4	Green	1 - No Smell
27/11/2024	7.6	5.1	20.6	Green	1 - No Smell	7.7	3.7	20.1	Green	1 - No Smell
28/11/2024										
29/11/2024										
30/11/2024										
1/12/2024										
2/12/2024	7.9	6.4	21.9	Green	1 - No Smell	7.7	4.4	21.7	Green	1 - No Smell
3/12/2024	7.7	1.1	22.5	Green	1 - No Smell	7.6	0.7	22.5	Green	1 - No Smell
4/12/2024	7.6	2.6	21.1	Green	1 - No Smell	7.7	2.7	21.3	Green	1 - No Smell
5/12/2024	7.4	0.6	19.8	Green	1 - No Smell	7.5	0.8	19.9	Green	1 - No Smell
6/12/2024	7.8	5.7	19.5	Green	1 - No Smell	8	9.2	19.9	Green	1 - No Smell

7/12/2024										
8/12/2024										
9/12/2024	8.1	11	20.6	Green	1 - No Smell	8.3	13.1	20.2	Green	1 - No Smell
10/12/2024	8.3	11.7	20.9	Green	1 - No Smell	8.1	6.8	20.6	Green	1 - No Smell
11/12/2024	8.3	10.5	20.8	Green	1 - No Smell	7.7	1	20.7	Green	1 - No Smell
12/12/2024	8.2	7.2	21.9	Green	1 - No Smell	7.9	4.9	22	Green	1 - No Smell
13/12/2024	8.3	12.7	22.7	Green	1 - No Smell	7.8	5.6	22.1	Green	1 - No Smell
14/12/2024										
15/12/2024										
16/12/2024	8.7	5.4	20.1	Green	1 - No Smell	8.3	8.3	20	Green	1 - No Smell
17/12/2024	8.7	5.4	20.1	Green	1 - No Smell	8.3	8.3	20	Green	1 - No Smell
18/12/2024	8.6	13.2	18.5	Green	1 - No Smell	8.9	18.2	19.1	Green	1 - No Smell
19/12/2024										
20/12/2024	8.9	19.8	22.6	Green	1 - No Smell	9.4	25.4	22	Green	1 - No Smell
21/12/2024										
22/12/2024										
23/12/2024	8.4	12.2	22.6	Green	1 - No Smell	8.8	8.5	22.2	Green	1 - No Smell
24/12/2024	0	0	0	0	0	0	0	0	0	0
25/12/2024	8.4	12.35	2.3	Green	1 - No Smell	9.4	17.9	23.7	Green	1 - No Smell
26/12/2024	8.4	6.8	23.6	Green	1 - No Smell	9.2	11.9	23.5	Green	1 - No Smell
27/12/2024	8.1	4.6	21.8	Green	1 - No Smell	8.8	7.8	21.5	Green	1 - No Smell
28/12/2024	8.5	9.9	20.4	Green	1 - No Smell	9.1	9.8	20.2	Green	1 - No Smell
29/12/2024	0	0	0	0	0	0	0	0	0	0
30/12/2024	8.2	3.4	23	Green	1 - No Smell	7.2	0.1	21.3	Green	1 - No Smell
31/12/2024	7.9	3.1	18.8	Green	1 - No Smell	8.5	2.1	18.8	Green	1 - No Smell
1/01/2025	7.8	5.4	18.9	Green	1 - No Smell	8.3	5.2	18.7	Green	1 - No Smell
2/01/2025	7.8	5.4	18.9	Green	1 - No Smell	8.3	5.2	18.7	Green	1 - No Smell
3/01/2025	8.6	5.2	20.7	Green	1 - No Smell	7.9	5.1	20.4	Green	1 - No Smell
4/01/2025	8.4	9.4	18.5	Green	1 - No Smell	7.7	3.5	18.4	Green	1 - No Smell
5/01/2025										
6/01/2025	8.4	9.4	18.5	Green	1 - No Smell	7.7	3.5	18.4	Green	1 - No Smell
7/01/2025	8.7	14.1	19.4	Green	1 - No Smell	5.7	5.7	19.8	Green	1 - No Smell
8/01/2025	8.7	15.57	21.5	Green	1 - No Smell	7.9	8.1	21.3	Green	1 - No Smell

9/01/2025	8.6	13.78	21.4	Green	1 - No Smell	7.8	7.1	20.4	Green	1 - No Smell
10/01/2025	8.3	8.7	20.1	Green	1 - No Smell	7.9	8.5	20.1	Green	1 - No Smell
11/01/2025										
12/01/2025										
13/01/2025	4.7	13.84	20.7	Green	1 - No Smell	8.7	21.62	21.6	Green	1 - No Smell
14/01/2025	8.3	10.8	19.8	Green	1 - No Smell	8.5	12.5	20.6	Green	1 - No Smell
15/01/2025	8.3	12.6	20.5	Green	1 - No Smell	8.6	13.1	21.1	Green	1 - No Smell
16/01/2025	8.5	13.8	20.9	Green	1 - No Smell	8.8	13.5	21.3	Green	1 - No Smell
17/01/2025	8.8	15.3	21.7	Green	1 - No Smell	8.8	17.1	22	Green	1 - No Smell
18/01/2025										
19/01/2025										
20/01/2025	8.6	16.4	22.3	Green	1 - No Smell	8.9	18	22.5	Green	1 - No Smell
21/01/2025	8.7	7	22.5	Green	1 - No Smell	9.2	11.1	22.4	Green	1 - No Smell
22/01/2025	8.4	13.78	24.9	Green	1 - No Smell	8.4	0.1	23.9	Green	1 - No Smell
23/01/2025	8.4	13.8	24.9	Green	1 - No Smell	8.4	0.1	23.9	Green	1 - No Smell
24/01/2025	7.9	1.8	23.4	Green	1 - No Smell	7.7	0.1	23	Green	1 - No Smell
25/01/2025										
26/01/2025										
27/01/2025	7.9	7.4	22.8	Green	1 - No Smell	7.9	1.2	22.8	Green	1 - No Smell
28/01/2025	8.1	0.1	20.4	Green	1 - No Smell	7.8	7.3	21.5	Green	1 - No Smell
29/01/2025	8.5	11.8	21.4	Green	1 - No Smell	8.1	9.4	21.4	Green	1 - No Smell
30/01/2025	8.2	6.8	20	Green	1 - No Smell	7.8	6	20.1	Green	1 - No Smell
31/01/2025	8.9	18.3	22	Green	1 - No Smell	7.8	4.7	20.9	Green	1 - No Smell
1/02/2025										
2/02/2025										
3/02/2025	8.8	18.4	23.4	Green	1 - No Smell	7.6	0.4	24.1	Clear	1 - No Smell
4/02/2025	8.9	20	25.5	Green	1 - No Smell	7.7	0.4	25.1	Green	2 - Slight Smell
5/02/2025	9.1	15.7	22.3	Green	1 - No Smell	7.7	4.5	23.6	Clear	1 - No Smell
6/02/2025	9.3	20	23.5	Green	1 - No Smell	8.2	10.2	22.6	Green	1 - No Smell
7/02/2025	8.6	18.66	24.3	Green	1 - No Smell	8.6	18.66	24.1	Green	1 - No Smell
8/02/2025										
9/02/2025										
10/02/2025	8.49	8.2	25.1	Green	1 - No Smell	7.74	1.6	24.1	Clear	1 - No Smell

11/02/2025	8.5	7.7	23.9	Green	1 - No Smell	7.7	1.3	24.2	Clear	1 - No Smell
12/02/2025	8.3	6.9	22.4	Green	1 - No Smell	7.7	5	22.3	Green	1 - No Smell
13/02/2025	7.8	2.7	22.6	Green	1 - No Smell	8.2	11.2	22.8	Green	1 - No Smell
14/02/2025	7.8	3.6	23.1	Green	1 - No Smell	8	8.7	22.9	Green	1 - No Smell
15/02/2025										
16/02/2025										
17/02/2025	7.6	0.5	22.5	Green	1 - No Smell	8.2	9.1	22.3	Green	1 - No Smell
18/02/2025	7.6	0.2	23.2	Green	1 - No Smell	8.2	8.6	22.9	Green	1 - No Smell
19/02/2025	7.8	6.4	22.5	Green	1 - No Smell	8.1	9.6	22.1	Green	1 - No Smell
20/02/2025	7.9	8.3	22.2	Green	1 - No Smell	8.2	8.2	21.9	Green	1 - No Smell
21/02/2025	8.6	16.6	23	Green	1 - No Smell	8.1	6.8	23.2	Green	1 - No Smell
22/02/2025										
23/02/2025										
24/02/2025	8.6	16.6	23	Green	1 - No Smell	8.1	6.8	23.2	Green	1 - No Smell
25/02/2025	8.5	13.4	22.6	Green	1 - No Smell	7.7	1.5	22.8	Green	1 - No Smell
26/02/2025	8.4	9.2	21.6	Green	1 - No Smell	7.8	2.4	21.8	Green	1 - No Smell
27/02/2025	8.5	11.3	21.8	Green	1 - No Smell	8.1	7.5	21.9	Green	1 - No Smell
28/02/2025	8.7	17.6	24	Green	1 - No Smell	8.7	19.6	24.2	Green	1 - No Smell
1/03/2025										
2/03/2025										
3/03/2025	8	6.2	23.1	Green	1 - No Smell	8.1	5.7	22.5	Green	1 - No Smell
4/03/2025	8.2	10.7	22.8	Green	1 - No Smell	8.2	7.9	22.3	Green	1 - No Smell
5/03/2025	7.6	2.9	20.1	Green	1 - No Smell	8	5.4	20.1	Green	1 - No Smell
6/03/2025	7.6	5.2	18.6	Green	1 - No Smell	8.1	8.8	18.9	Green	1 - No Smell
7/03/2025	7.8	6.6	19.1	Green	1 - No Smell	8.2	10.1	19.4	Green	1 - No Smell
8/03/2025										
9/03/2025										
10/03/2025	8	7.9	20	Green	1 - No Smell	8.2	11.3	20.6	Green	1 - No Smell
11/03/2025	7.8	4.7	19.3	Green	1 - No Smell	8.4	9.4	18.8	Green	1 - No Smell
12/03/2025	7.8	3.1	19	Green	1 - No Smell	8.2	10.4	18.6	Green	1 - No Smell
13/03/2025	7.9	4.6	19.2	Green	1 - No Smell	8.3	9.1	18.9	Green	1 - No Smell
14/03/2025	8.3	11.1	18.8	Green	1 - No Smell	8.8	15.9	18.5	Green	1 - No Smell
15/03/2025										

16/03/2025										
17/03/2025	8	8.2	20	Green	1 - No Smell	8	5.4	19.8	Green	1 - No Smell
18/03/2025	8	6.1	19.8	Green	1 - No Smell	7.9	3	19.7	Green	1 - No Smell
19/03/2025	7.9	5.7	17.4	Green	1 - No Smell	7.5	4.7	17.4	Green	1 - No Smell
20/03/2025	8.3	10.92	18	Green	1 - No Smell	8.1	8.1	18.1	Green	1 - No Smell
21/03/2025	8.8	8.2	19.2	Green	1 - No Smell	7.7	5.9	19.9	Green	1 - No Smell
22/03/2025										
23/03/2025										
24/03/2025	8.2	9.4	20.5	Green	1 - No Smell	7.8	7.1	20.5	Green	1 - No Smell
25/03/2025	8.2	9.4	20.5	Green	1 - No Smell	7.8	7.1	20.5	Green	1 - No Smell
26/03/2025	8.6	16.3	21.9	Green	1 - No Smell	8.2	9.9	21.3	Green	1 - No Smell
27/03/2025	8.3	11.6	20.8	Green	1 - No Smell	7.8	2.6	20.2	Green	1 - No Smell
28/03/2025	8.4	11.3	20.4	Green	1 - No Smell	7.8	2.7	20.1	Green	1 - No Smell
29/03/2025										
30/03/2025										
31/03/2025	8.4	10.6	17.9	Green	1 - No Smell	8	6.6	17.9	Green	1 - No Smell
1/04/2025	8.5	12.2	19.5	Green	1 - No Smell	7.8	5	19.8	Green	1 - No Smell
2/04/2025	8.1	7.2	18.6	Green	1 - No Smell	7.9	6.8	18.5	Green	1 - No Smell
3/04/2025	7.6	3.9	18.7	Green	1 - No Smell	7.5	4	18.4	Green	1 - No Smell
4/04/2025	7.7	4.3	18.9	Green	1 - No Smell	7.5	5.1	18.5	Green	1 - No Smell
5/04/2025										
6/04/2025										
7/04/2025	7.7	2.7	18.6	Green	1 - No Smell	7.7	3.6	18.4	Green	1 - No Smell
8/04/2025	7.8	5.7	16.7	Green	1 - No Smell	8.1	6.4	16.2	Green	1 - No Smell
9/04/2025										
10/04/2025	8.8	16.1	16.7	Green	1 - No Smell	8.3	9.7	16.4	Green	1 - No Smell
11/04/2025	8.3	9.7	16.8	Green	1 - No Smell	8.1	7.6	16.8	Green	1 - No Smell
12/04/2025										
13/04/2025										
14/04/2025	8.3	9.9	18.3	Green	1 - No Smell	7.7	4.4	18	Green	1 - No Smell
15/04/2025	7.8	3.7	16.1	Green	1 - No Smell	7.8	6.5	17.1	Green	1 - No Smell
16/04/2025	7.4	7.9	15.4	Green	1 - No Smell	7.8	8.7	15.8	Green	1 - No Smell
17/04/2025	8.7	18.5	16.6	Green	1 - No Smell	7.5	4.1	15.8	Green	1 - No Smell

18/04/2025	8.3	10.1	16.8	Green	1 - No Smell	7.5	3.1	16.5	Green	1 - No Smell
19/04/2025										
20/04/2025										
21/04/2025	7.5	1.4	18.9	Green	1 - No Smell	7.5	2	18.9	Green	1 - No Smell
22/04/2025	7.4	0.2	17.9	Green	1 - No Smell	7.4	0.3	17.9	Green	1 - No Smell
23/04/2025	7.6	3.8	16.8	Green	1 - No Smell	7.8	8.6	17.1	Green	0
24/04/2025	7.6	4.1	16	Green	1 - No Smell	7.6	6.8	16.5	Green	1 - No Smell
25/04/2025	7.5	2.3	13.9	Green	1 - No Smell	7.5	6.2	14.4	Green	0
26/04/2025										
27/04/2025										
28/04/2025	7.6	2.5	16.2	Green	1 - No Smell	7.4	2.8	16.5	Green	1 - No Smell
29/04/2025	7.6	2.1	17.4	Green	1 - No Smell	7.4	2.1	17.7	Green	1 - No Smell
30/04/2025	7.4	0.8	17.4	Green	1 - No Smell	7.4	2.1	17.7	Green	1 - No Smell
1/05/2025	7.3	0.3	16.2	Green	1 - No Smell	7.4	0.5	16.5	Green	1 - No Smell
2/05/2025	7.3	1.5	13.8	Green	1 - No Smell	7.3	0.6	13.9	Green	1 - No Smell
3/05/2025										
4/05/2025										
5/05/2025	7.4	1.3	11.5	Green	1 - No Smell	7.4	1.5	11.8	Green	1 - No Smell
6/05/2025	7.4	1.7	11.6	Green	1 - No Smell	7.4	1.7	12	Green	1 - No Smell
7/05/2025	7.4	3.3	14	Green	1 - No Smell	7.5	2.8	126	Green	1 - No Smell
8/05/2025	7.7	8.2	14.7	Green	1 - No Smell	7.5	2.8	14.2	Green	1 - No Smell
9/05/2025	7.6	4.7	15.4	Green	1 - No Smell	7.4	0.6	15.2	Green	1 - No Smell
10/05/2025										
11/05/2025										
12/05/2025	7.5	3.3	14	Green	1 - No Smell	7.5	4.3	14.3	Green	1 - No Smell
13/05/2025	7.5	2.3	14.7	Green	1 - No Smell	7.5	0.4	14	Green	2 - Slight Smell
14/05/2025	7.4	1.6	13.9	Green	1 - No Smell	7.3	3.7	14.1	Green	1 - No Smell
15/05/2025	7.1	4	13.7	Green	1 - No Smell	7.3	1.8	13.8	Green	1 - No Smell
16/05/2025	7.3	0.2	14.3	Green	1 - No Smell	7.2	2.9	14.4	Green	1 - No Smell
17/05/2025										
18/05/2025										
19/05/2025	7.3	0.1	15.1	Green	1 - No Smell	7.2	2.5	15	Green	1 - No Smell
20/05/2025	7.2	4.8	12.8	Green	1 - No Smell	7.4	4.1	12.6	Green	1 - No Smell

21/05/2025	7.6	6.1	13.2	Green	1 - No Smell	7.8	10.3	13	Green	1 - No Smell
22/05/2025	7.7	6.1	13	Green	2 - Slight Smell	7.7	6.8	13.1	Green	1 - No Smell
23/05/2025	7.9	10.1	13.9	Green	2 - Slight Smell	7.9	8.1	13.1	Green	1 - No Smell
24/05/2025										
25/05/2025										
26/05/2025	7.4	2.2	13	Green	1 - No Smell	7.6	4.1	13	Green	1 - No Smell
27/05/2025	7.63	8.21	13.3	Green	1 - No Smell	8	8.55	13.4	Green	1 - No Smell
28/05/2025	7.5	1.1	12.8	Green	1 - No Smell	7.6	4.1	12.9	Green	1 - No Smell
29/05/2025	7.4	1.1	13.3	Green	1 - No Smell	7.3	4	13.1	Green	1 - No Smell
30/05/2025	7.4	4.86	12.4	Green	1 - No Smell	7.54	2.14	12.4	Green	1 - No Smell
31/05/2025										
1/06/2025										
2/06/2025	7.5	1.9	12.2	Green	1 - No Smell	7.9	7.3	12.1	Green	1 - No Smell
3/06/2025	7.5	1.6	13	Green	1 - No Smell	7.4	7.8	12.6	Green	1 - No Smell
4/06/2025	7.6	0.3	13.4	Green	1 - No Smell	7.8	6.5	13.4	Green	1 - No Smell
5/06/2025	7.5	1.6	13	Green	1 - No Smell	7.7	5.1	13.2	Green	1 - No Smell
6/06/2025	7.6	1.2	13	Green	1 - No Smell	7.8	7.1	12.9	Green	1 - No Smell
7/06/2025										
8/06/2025										
9/06/2025	7.7	4.5	8.9	Green	1 - No Smell	7.8	4.7	8.6	Green	1 - No Smell
10/06/2025	7.8	5.1	9.1	Green	1 - No Smell	7.8	6	9.2	Green	1 - No Smell
11/06/2025	7.7	7.7	9.8	Green	1 - No Smell	7.8	5.4	9.8	Green	1 - No Smell
12/06/2025	7.3	0.1	15.8	Green	1 - No Smell	7.6	2.2	10.8	Green	1 - No Smell
13/06/2025	7.4	2.1	11.6	Green	1 - No Smell	7.4	2.5	11.7	Green	1 - No Smell
14/06/2025										
15/06/2025										
16/06/2025	7.4	2.4	8.8	Brown	1 - No Smell	7.2	4.2	9	Brown	1 - No Smell
17/06/2025	7.3	5.5	8.3	Green	1 - No Smell	7.4	1.9	8.4	Brown	1 - No Smell
18/06/2025	7.4	4.2	8.9	Green	1 - No Smell	7.5	3.8	9.1	Brown	1 - No Smell
19/06/2025	7.4	6.1	9.3	Green	1 - No Smell	7.5	3.8	9.1	Brown	1 - No Smell
20/06/2025	7.5	3.6	10	Brown	1 - No Smell	7.4	1.9	10	Brown	1 - No Smell
21/06/2025										
22/06/2025										

23/06/2025	7.62	4.26	9.5	Clear	1 - No Smell	7.51	2.5	9.4	Clear	1 - No Smell
24/06/2025	7.85	8.12	9.7	Clear	1 - No Smell	7.55	2.23	9.2	Clear	1 - No Smell
25/06/2025	7.66	3.97	10	Clear	1 - No Smell	7.33	1.3	10.3	Clear	1 - No Smell
26/06/2025	7.74	4.3	10.6	Green	1 - No Smell	7.61	1.39	10.7	Clear	1 - No Smell
27/06/2025	7.56	2.18	12	Clear	1 - No Smell	7.5	0.91	11.8	Clear	1 - No Smell
28/06/2025										
29/06/2025										
30/06/2025	7.5	0.5	11.3	Clear	1 - No Smell	7.5	1.4	11.3	Clear	1 - No Smell
1/07/2025	7.5	0.9	11.1	Clear	1 - No Smell	7.5	2.6	11	Clear	1 - No Smell

Appendix C: Meter Verification Details

ABB MEASUREMENT & ANALYTICS | TEST REPORT

ABB Ability™

Verification for measurement devices

Verification Report for:

FEP300/500; FEH300/500

Measurement made easy

Measurement & Analytics
Service

Installation Details

Meter Owner	KCDC
Machine Name	OTAKI WWTP LDTA Flowmeter
Medium	WasteWater

Customer Details

Site Address	Kapiti Coast District Council
Telephone	
Email	

Operator Details

Date and Time	26-06-2023 10:43:42
Operator's Name	Admin
Operator's Signature	

Overall Status - Passed

The flowmeter has passed its internal continuous verification and automatic self-calibration. It is working within +/- 2% of original factory calibration.

ABB Ability Verification for measurement devices verifies the function of the measurement product within the specification limits over the lifetime of the device with a total test coverage > 90% and complies with the requirements for traceable verification according to DIN EN ISO 9001:2015 - section 8.5

Sensor Information	
Sensor Type	Process 300 series
Sensor Model	
Sensor Size	DN 150
Sensor Serial No.	1
Sensor SAP No	?
Sensor Tag	?
Measuring Range Qmax	250.000 l/s
User Span	100.000 %
Liner Material	PTFE
Electrode Material	Hastelloy C-4
Sensor Span Ss	200.100 %
Sensor Zero Sz	0.000 mm/s
First Calibration Date of Sensor	00:00:00 2000/01/01
Sensor Run Hours	9351hrs -27804mins
Actual Flow Rate	0.000 l/s

Transmitter Information	
Diagnosis Functions	Sensor Status
Empty Pipe	OFF
Sensor Measurement	OFF
Transmitter Serial No	124978
Transmitter SAP Order No	?
Tag Name	FIT-1001
Tx Firmware Version	D200S069U01_01.06.00
System Zero	0.000 mm/s
Run Hours	18736hrs 29696mins
Communication	FEX300 HART
Pulses per Unit	1.000 /m³
Pulse Width	200.000 ms

Summary Verification of the Sensor

Coil Group	PASS
Coil Resistance Factory Fingerprint	17.000 Ohms
Coil Resistance Measured	15.991 Ohms
Coil Current Measured	199.849 mA
Reference	62.867 mV
Cable Length	3.500 m

Electrode Group	PASS
Electrode Group Status	No Alarms

Sensor Group	PASS
Sensor Group Status	No Alarms

Pipe Status	INFO
Empty Pipe	**ON**
Detector	1850 Hz
Threshold	3000 Hz

Totalizer Information

	Start	End	Difference
Forward	1480349.000 m³	1480349.000 m³	0.000 m³
Reverse	0.637 m³	0.637 m³	0.000 m³
Net	1480348.000 m³	1480357.000 m³	9.000 m³

Summary Verification of the Transmitter

Output Group	

Current Output 31/32		PASS
Applied	**Measured**	**Result**
4 mA	4.000 mA	PASS
12 mA	12.000 mA	PASS
20 mA	20.000 mA	PASS

Digital Output 51/52		PASS
Applied	**Measured**	**Result**
5000 Hz	5000.000 Hz	PASS
2625 Hz	2625.000 Hz	PASS
1000 Hz	1000.000 Hz	PASS

Digital Output 41/42		NOT EXECUTED
Applied	**Measured**	**Result**
5000 Hz		
2625 Hz		
1000 Hz		

Digital Input 81/82	NOT EXECUTED
Transmitter Group	**PASS**
Transmitter Group Status	No Alarms

Transmitter Calibration Verification	PASS

	Fingerprint	Measured	Result
10 m/s	10.181450 m/s	10.179650 m/s	PASS
5 m/s	5.078596 m/s	5.067461 m/s	PASS
Common Mode Rejection	-0.001262	-0.009602	PASS

Signal Quality		INFO
NV resets	0 /s	Info Only
Signal Quality (SNR)	70.000 dB	Info Only

Comments (Installation, Grounding etc.)

1st Verification

Verification Certificate has been generated by ABB Ability Verification for measurement devices variant "Licensed software testing" (ABB FEP300/500; FEH300/500 VDF Version 03.37).

ABB Ability Verification for measurement devices Version 04.00.00.7

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To find your local ABB contact, visit:

abb.com/contacts

For more information, visit:

abb.com/measurement

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ABB

Flow Meter Calibration Verification Certificate

Customer Information		Meter Information	
Customer:	Owner	**Meter Owner:**	Owner
		Meter Type:	MagMaster
		Sensor Size / Pipe ID:	250 mm
CalMaster2 Owner:		**Pipe Status:**	Full
		Sensor Serial No.:	P/50589/5/4
Verification Date:	5/22/2023 10:47:13 PM	**Transmitter Serial No.:**	vkh022497
Report Date:	6/29/2023 11:16:35 AM	**Tag:**	TxmTag
		Location:	Location

Overall Meter: Passed

The test results verify that this flow meter is functioning within normal working limits, and is within +/-2% of original calibration certification.

Summary of Results		Totaliser Information			
Coil Group:	Passed		**Start:**	**End:**	**Difference:**
Electrode Group:	Passed				
Sensor Group:	Passed	**Fwd: (m^3)**	11076140	11076148	8
Transmitter Signal Group:	Passed	**Rev: (m^3)**	16035	16035	0
Transmitter Driver Group:	Passed	**Net: (m^3)**	11060105	11060113	8
Transmitter Output Group:	Passed				

CalMaster Information		Post-Processing Information	
Serial No.:	v/cm22200-2	**CalMaster2 Version:**	1.00.1062
Firmware Version:	CM1.0.1099	**Scripts Version:**	1.01.2017
Test Script Version:	Issue 20	**Processing Script Version:**	8/14/2022 8:07:30 AM
		Download Date:	6/29/2023 10:40:27 AM
Next Calibration Date:	12/12/2023 12:30:10 PM	**Number of Tests Scored:**	2

CalMaster is fully traceable to National and International Standards.
For details refer to CalMaster Traceability Documentation.

Installation Comments:

6/29/2023 11:16:35 AM

Date/Time: _____ **Operator Signature:** _____ **Print Name:** _____

QSTA1358 Iss.2

World Flow Technology Centres

ABB Ltd. **ABB Inc.** **ABB Australia Pty Ltd.** **ABB Automation GmbH.**

Oldends Lane, Stonehouse Gloucestershire, GL10 3TA, U.K. Tel: +44 (0) 1453 826661 Fax: +44 (0) 1453 829671 e-mail: calmaster@gb.abb.com	125 East County Line Road Warminster, PA 18974-4995 U.S.A. Tel: +1 215 674 6000 Fax: +1 215 674 6394 e-mail: calmaster@us.abb.com	Bapaume Rd Moorebank NSW 2170 Tel: +61-2-9821-0111 Fax: +61-2-9821-0950	Dransfelder Str. 2 D-37079 Göttingen GERMANY Tel: +49 (0) 551 9050 Fax: +49 (0) 551 905711

Appendix D: OMM – 2025 Review