



Waiuku Wastewater Treatment Plant 2024-2025 Annual Report

Final - September 2025

Watercare 


QUALITY INFORMATION

Document	Annual Report
Date	30 September 2025
Name and position of originator	Diana Villa Ortega, Environmental Scientist
Report directory	DTWTP

REVISION HISTORY

Rev	Revision Date	Name	Position	Signature
1	DD/MM/YYYY	Michiel Jonker	Environmental Care Manager	
2	DD/MM/YYYY	Iris Tscharntke	Operations Controller	
3	30/09/2025	Jon Piggot	Head of Wastewater	

APPROVED

Date	Name	Position	Signature
DD/MM/YYYY	Michiel Jonker	Environmental Care Manager	

CONSENT CHANGE AND MONITORING HISTORY

Change Type	Description	Effective Date	Reference / Condition	Reporting / Monitoring Implications
Consent Issuance	Coastal permit 24130 (operative under s124 of the RMA) issued by Auckland Council for the discharge of treated wastewater into the Waiuku River. Includes limits on effluent quality (Condition 14), volume (Condition 6), and tidal timing (Condition 7).	3 July 2009 ¹	Consent 24130 – Conditions 6–15	Established 92nd percentile and median limits for cBOD ₅ , TSS, NH ₄ -N, TIN, TP, Enterococci, and Faecal coliforms. Requires regular monitoring and annual compliance reporting.
Odour Consent	Air discharge permit 24790 granted for odour emissions associated with the WWTP operation.	3 July 2009 ¹	Consent 24790	Requires odour management practices. No direct monitoring/reporting under annual report unless complaints are received.
Management Plans	Two management plans were prepared in 2014: General Management Plan, and Air Quality Management Plan (AQMP).	First written in 2014 Last review in September 2019 Expiry 2027		Management Plan sets out the operational, monitoring, reporting, and contingency procedures required to ensure the Waiuku WWTP operates in compliance with its resource consent (DIS60334129). AQMP provides guidance of odour management measures and is prepared as a condition of resource consent.
Monitoring Plan	Waiuku WWTP Management Plan (Final, 2014) prepared to meet Condition 10. Outlines operational procedures, effluent sampling, contingency protocols, QA/QC, and responsibilities.	November 2014	Condition 10	Establishes sampling frequencies, alarm and notification procedures, system checks, and roles. Forms the basis for compliance with effluent monitoring and maintenance conditions.

SCADA Upgrade	Upgrade of remote monitoring systems linking Waiuku WWTP to Watercare's Newmarket hub via Pukekohe SCADA interface.	Circa 2015–2017 (ongoing)	Management Plan, Section 2.5	Supports live monitoring of flow volumes, alarms, and effluent quality triggers. Enhances incident detection and reporting responsiveness.
UV Disinfection	UV disinfection system operational for final effluent polishing before discharge to meet microbial consent limits.	Prior to 2014	Condition 15; Management Plan Section 2.3.6	Enables compliance with enterococci and faecal coliform limits (Condition 14). Forms part of routine and bypass discharge assessment.

TABLE OF CONTENTS

Executive Summary.....	1
1 Introduction	3
1.1 Resource Consents and Management Plans	3
1.2 WWTP Description.....	3
2 Compliance	5
2.1 Introduction.....	5
2.2 Method Statement	5
2.2.1 Flow and discharge monitoring.....	5
2.2.2 Effluent quality monitoring.....	5
2.2.3 Shellfish monitoring.....	6
2.2.4 Incident recording.....	6
2.3 Effluent Volumes	6
2.3.1 Monitoring overview.....	6
2.3.2 Reporting year results (2024–2025)	6
2.3.3 Five-year context (2020–2025).....	8
2.4 Effluent Quality.....	9
2.4.1 Introduction and Compliance Basis	9
2.4.2 Compliance Summary (2024–2025).....	9
2.4.3 Seasonal variation in effluent quality (2024–2025).....	12
2.4.4 Five-year analyses (2020–2025).....	13
2.4.5 Summary	16
2.5 Complaints and Incidents	17
2.5.1 Complaints	17
2.5.2 Incidents.....	17
3 Upgrades and Future Actions	19
4 Conclusion.....	20
Appendix B. Effluent Quality Data	
Appendix C. Data Source	
Appendix D. Incident Report	
Appendix E. Oyster Quality Report	

LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviation	Description
BOD ₅	5-day biochemical oxygen demand
cBOD ₅	5-day carbonaceous biochemical oxygen demand
DO	Dissolved oxygen
DRP	Dissolved Reactive Phosphorous
NH ₄ -N	Ammoniacal nitrogen (as NH ₄ ⁺), reported in mg N/L
TIN	Total inorganic nitrogen (sum of NH ₄ ⁺ -N, NO ₂ ⁻ -N, and NO ₃ ⁻ -N)
TN	Total nitrogen
TP	Total phosphorus
TSS	Total suspended solids
WWTP	Wastewater treatment plant
UV	Ultraviolet (disinfection)
MABR	Membrane Aerated Biofilm Reactor
MBR	Membrane Bioreactor
I&I	Inflow and infiltration
IANZ	International Accreditation New Zealand
Pi Historian	Process data historian used to store operational plant data

EXECUTIVE SUMMARY

This report summarises Watercare's compliance performance for the Waiuku Wastewater Treatment Plant (WWTP) for the period 1 July 2024 to 30 June 2025, in accordance with the conditions of coastal permit DIS60334129¹. The assessment covers effluent discharge volumes, water quality results, incident reporting, shellfish monitoring, and progress on future upgrade plans.

Throughout the reporting period, the WWTP operated within its permitted daily discharge volume of 5,500 m³/day, with an annual average of 2,112 m³/day and no recorded exceedances. A monitoring non-compliance for Condition 13 occurred in December–January due to a flow meter transmitter malfunction, resulting in unrecorded data for several weeks. This was assessed as a technical (Category 2) non-compliance with low environmental risk, as no significant rainfall occurred during the outage.

Routine effluent quality monitoring showed general compliance with consented limits. The only parameter exceeding its 92nd percentile threshold was Total Inorganic Nitrogen (TIN), which peaked at 24 mg/L against a consent limit of 20 mg/L. This exceedance was considered a minor non-compliance, likely linked to seasonal inflow and infiltration effects during the wetter months. All other parameters, including ammonia, microbial indicators (enterococci and faecal coliforms), Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS), and Total Phosphorus (TP), remained within their respective limits. Five-year trend analyses revealed statistically significant downward trends in ammonia and microbial indicators, suggesting improving treatment performance over time.

Shellfish tissue monitoring was undertaken in February 2025 in accordance with Conditions 15–17. Results confirmed elevated *E. coli* concentrations in oysters collected near the outfall (OYS B), while upstream and reference sites remained well below guideline thresholds. These results align with historical patterns and reflect the influence of proximity to the discharge point.

Five non-compliance incidents are addressed in this report, including four emergency bypass discharges and one tidal-timing breach. Although only two bypasses technically occurred within the 2024–2025 reporting period, all four events (June–July 2025) are included here to present a complete picture of the winter bypass sequence and associated environmental effects. These discharges, totalling approximately 39,000 m³ of partially treated wastewater, were reported under Condition 25. The tidal-timing breach involved the release of ~22,000 m³ of fully treated effluent outside the authorised discharge window and constituted non-compliance with Condition 7. Receiving-water monitoring confirmed short-term impacts, with rapid recovery of dissolved oxygen and BOD, though elevated bacterial counts were observed where UV treatment was bypassed.

No public complaints were received regarding the WWTP during the reporting year.

Looking ahead, Watercare is progressing a regional strategy that includes redirecting treated effluent from Waiuku to the new Clarks Beach outfall. This change will require future upgrades to the Waiuku WWTP to ensure compliance with the more stringent discharge limits of the Clarks Beach consent.

¹ DIS60334129 is the replacement consent currently under review by Auckland Council. The original coastal permit (24130) remains active under s124 of the Resource Management Act until a decision is finalised.

Final designs are yet to be confirmed, but enhanced nutrient removal and disinfection processes are expected to be included.

1 INTRODUCTION

The Waiuku Wastewater Treatment Plant (WWTP) discharges treated effluent into the Waiuku River, part of the Manukau Harbour, under coastal permit 24130. This annual report documents Watercare's compliance with that permit from 1 July 2024 to 30 June 2025, including monitoring results, flow data, incidents, and operational highlights.

1.1 Resource Consents and Management Plans

Discharges and operations at the Waiuku WWTP are currently authorised under two active resource consents issued by Auckland Council (Table 2-1). These include a coastal permit for the discharge of treated wastewater and a permit for air discharge (odour).

The plant is operated in accordance with the Waiuku WWTP Management Plan (Last revision 2019) and Operations and Maintenance Manuals, which provide procedural guidance for effluent quality monitoring, system operation, contingency planning, and environmental reporting.

Table 2-1 Waiuku WWTP Consents

Consent Number	Description	Expiry Date
24130	Discharge of treated wastewater to the Waiuku River	3 July 2019*
24790	Discharge of odour to air	3 July 2019*

**These permits remain active under section 124 of the RMA while a replacement consent is being processed by Auckland Council.*

1.2 WWTP Description

The WWTP is located on designated land off Williams Road, Waiuku. The treatment process receives wastewater from the Waiuku township and the nearby steel mill via two influent pipelines. The plant uses a pond-based treatment system with polishing and disinfection prior to discharge.

The key components of the treatment train include:

- **Inlet screening:** Automatic and manual bypass screens remove gross solids from influent.
- **Aerated facultative pond (6.35 ha):** primary treatment through aerobic and facultative microbial activity.
- **Aerated retention pond (1.3 ha):** secondary maturation and further breakdown of organics.
- **Slag bed filters (10 beds):** tertiary polishing through bacterial uptake, filtration, denitrification and contaminant adsorption.
- **UV disinfection** – final pathogen inactivation prior to discharge.
- **Tidal storage pond** – holds disinfected effluent until release is permitted by tidal conditions.

Effluent is discharged via an outfall pipe to the Waiuku River during outgoing tides, as permitted under Condition 7 of consent 24130. Discharges are restricted to a maximum of three hours per tidal cycle, beginning one hour after ebb tide commences, and must occur at night where practicable.

Flow and rainfall are continuously monitored via magnetic flowmeters and SCADA telemetry. The WWTP is remotely monitored, and alarms are relayed through Watercare's Newmarket control centre via the Pukekohe interface.

2 COMPLIANCE

2.1 Introduction

Table 3-1 details the criteria Watercare uses when self-assessing its performance against its consents. The assessment of the WWTP's performance considers:

- Water quality monitoring results and commentary on emerging trends
- Recorded incidents and complaints
- Specific consent conditions.

Table 3-1 Compliance self-assessment criteria

Rating	Criteria
Category 1	Watercare has complied with the consent condition. Where a condition refers to a provision in a Management Plan, then the Plan has been referred to in assessing consent compliance.
Category 2	Watercare has not complied with the consent condition. Watercare has assessed the non-compliance as technical or having no more than minor adverse effect.
Category 3	Watercare has not complied with the consent condition. Watercare has assessed the non-compliance having the potential to result in more than minor adverse effects on the environment. Alternatively, since the last audit, there is evidence of repeat Category 2 non-compliance.
Category 4	Watercare has not complied with the consent condition. Watercare has assessed the non-compliance as having the potential to cause significant adverse effects on the environment. Alternatively, since the last audit, there is evidence of repeat Category 3 non-compliance.

2.2 Method Statement

Monitoring and reporting were undertaken following the specific conditions of the consent, Watercare's internal protocols, and the Council's Annual Network Performance Report template. See Appendix C for data IDs and tags.

2.2.1 Flow and discharge monitoring

Continuous flow monitoring was undertaken at the WWTP outfall in accordance with Condition 13. Daily flow volumes, discharge durations, and tidal timing were extracted from the plant's telemetry (PI) system. Data were checked against operational logs, and total annual discharge was calculated as the sum of valid daily volumes. Instances of equipment failure or missing data are identified in relevant Section 3.

2.2.2 Effluent quality monitoring

Effluent samples were collected from the designated final discharge sampling point at the frequency and for the parameters required by Condition 14. Sampling frequencies during the reporting year were as follows:

- Fortnightly: cBOD₅, TSS, Enterococci, Faecal coliforms
- Monthly: TIN, TP, DRP
- Weekly (field): pH, Dissolved Oxygen, Temperature
- Annually: trace metals (total and dissolved fractions of mercury, chromium, lead, copper, zinc, arsenic, nickel, and cadmium) (see appendix B3)

Analyses were carried out by Watercare's laboratory (where relevant). Results were collated, and compliance was assessed against the consent's median and 92nd percentile limits using 12-month rolling datasets. All censored microbiological data were treated in accordance with laboratory reporting protocols (see Table 3-1 notes).

Time-series data for nutrients and microbial indicators (for the period 2020-2025) were evaluated for seasonality and outliers using non-parametric approaches (Mann–Kendall trend tests and Kruskal–Wallis comparisons between summer and winter discharge periods). Outliers were identified against Tukey's interquartile range rule and cross-checked with operational records before inclusion. Graphical summaries (boxplots, polar plots, scatter plots) were generated in R (v4.3) with ggplot2. These analyses informed potential systematic trends- noting that they are indicative only.

2.2.3 Shellfish monitoring

Annual oyster sampling was completed in February 2025 at the five specified sites in accordance with Conditions 15 and 17. Field collection, handling, and analysis followed Ministry of Health/MPI protocols for shellfish hygiene monitoring. Bioresarches provided the raw results and quality assurance summary (Appendix E).

While field staff recorded basic site conditions, the consultant report did not include discharge quality, volume, or timing data on the day of sampling, nor did it relate sampling time to the tidal discharge window, as required under Condition 16. This omission has been assessed as a technical (Category 2) non-compliance. Steps will be taken to ensure this information is explicitly included in the 2025–2026 monitoring round.

2.2.4 Incident recording

Notifications were made to Council as soon as practicable, consistent with Conditions 24 and 25. Detailed records of timing, duration, estimated volume, and follow-up receiving-water monitoring are included in Appendix D.

2.3 Effluent Volumes

2.3.1 Monitoring overview

Consent limits (DIS60334129):

- **Daily volume (Condition 6):** $\leq 5,500 \text{ m}^3/\text{day}$, plus $+33 \text{ m}^3/\text{day}$ per 1 mm/day once weekly rainfall exceeds 40 mm/week.
- **Rate and timing (Condition 7):** Up to 6 h/day, starting 1 h after ebb tide; $\leq 3 \text{ h}$ per outgoing tide; $\leq 255 \text{ L/s}$. Daily discharge period may be extended by 2 minutes per 1 mm rainfall once $>40 \text{ mm/week}$. As far as practicable, discharge during night-time outgoing tides.
- **Instrumentation (Condition 13):** Continuous metering of total daily inflow and total daily discharge; discharge meter maintained to $\pm 5\%$ accuracy.

2.3.2 Reporting year results (2024–2025)

Note: The discharge volumes reported in this section include only routine, fully treated effluent released via the authorised outfall. Volumes associated with emergency bypass discharges, and the

tidal-timing breach (see Section 3.4.2) are excluded, as they did not pass through the full treatment train or the consented discharge point.

Figure 3 1 shows the daily rainfall and effluent discharge volumes between 1 July 2024 and 30 June 2025, along with annotations of the four bypass discharges and one tidal breach event that occurred during winter 2025.

Routine treated discharges

During the 2024–2025 reporting period, the WWTP discharged a total of 770,783 m³ of treated effluent via the authorised outfall, with an average daily flow of 2,112 m³/day and a maximum daily discharge of 3,804 m³/day. All routine discharges remained within the consented limit of 5,500 m³/day (Condition 6).

Compared to the previous year (2023–2024), the average daily discharge decreased slightly by 2.9% (–63 m³/day), with both years showing similar seasonal variation — higher discharges in winter/spring and lower flows in summer.

A monitoring non-compliance occurred in late December–January when the effluent flow meter transmitter failed, resulting in missing discharge data for approximately three weeks. This was assessed as a Category 2 (technical) non-compliance under Condition 13. As no major rainfall occurred during the outage, the likelihood of an unrecorded exceedance was considered low. The incident was reported in the Q3 compliance report to Auckland Council.

Emergency bypass discharges and tidal breach

In addition to routine discharges, the following non-routine incidents occurred during June–July 2025 due to sustained wet weather inflows and equipment failure:

- **Bypass Events (Condition 25):**

Four bypasses released partially treated (screened only) wastewater directly to the estuary, bypassing UV disinfection:

- **13–16 June 2025: ~13,000 m³ over 59.5 h**
- **21–22 June 2025: ~5,000 m³ over 23.5 h**
- **10–13 July 2025: ~16,200 m³ over 75 h**
- **21–22 July 2025: ~4,752 m³ over 22 h**

These events were triggered by high pond levels and were necessary to avoid overtopping. Each constitutes a non-compliance with Conditions 6, 7, and 14 due to discharge volume, tidal timing, and water quality exceedances.

- **Tidal-timing breach (Condition 7):**

A fully treated discharge of ~22,000 m³ occurred over a continuous 24-hour period between 25–26 June 2025 due to a failure in the Programmable Logic Controller (PLC) that controls tidal gates. Although the effluent was UV-treated, the discharge occurred outside the authorised tidal window and is considered a non-compliance with tidal release conditions.

Bypass events were notified to Council and are summarised in Section 3.4.2 and detailed further in the Incident Report (Appendix D).

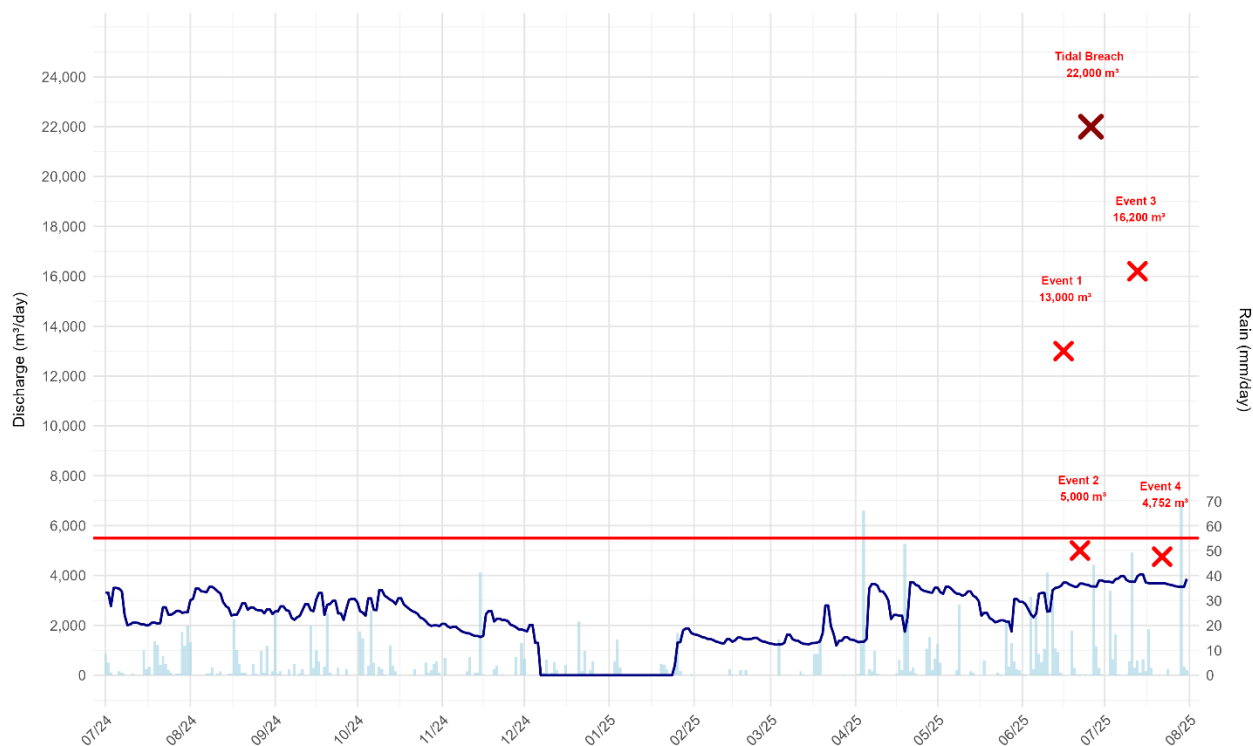


Figure 3-1. Daily rainfall and routine effluent discharge volumes at Waiuku WWTP (July 2024 – June 2025), with annotated non-compliance events. The dark blue line shows daily discharge volumes (m^3/day) from the authorised outfall; light blue bars show daily rainfall (mm). Red X markers indicate the four emergency bypass events and one tidal-timing breach recorded during June–July 2025, annotated with approximate volumes. These discharges did not occur through the authorised outfall and are excluded from the routine volume statistics.

2.3.3 Five-year context (2020–2025)

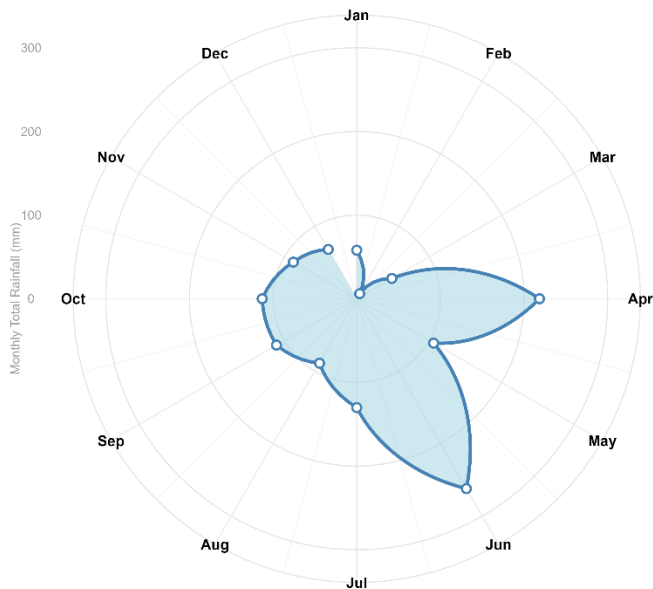
Figure 3-2 presents seasonal polar plots of monthly mean rainfall and mean effluent discharge volumes from July 2020 to June 2025. The rainfall plot shows a clear wet season peaking in late autumn and early winter (April–June), followed by lower rainfall between December and March. The discharge pattern displays a distinct lag, with peak outflows from July to October, typically after the highest rainfall months.

This lagged response reflects the time it takes for rainfall to infiltrate the catchment and reach the wastewater system as inflow and infiltration (I&I). Groundwater seepage and slow catchment drainage mean that elevated inflows can persist even after rainfall has declined. As a result, the storage ponds may still be close to capacity when the next rainfall event occurs, reducing buffer capacity. In 2025, this effect was clearly observed: although rainfall peaked in June, bypasses occurred in both June and July (see Section 3.4.2), when residual inflows kept ponds near full. This compounding of stormwater-driven inflows over successive weeks triggered emergency bypass discharges, despite individual rain events being moderate.

Overall, the plots highlight the strong seasonal coupling between rainfall and discharge, while also illustrating the importance of catchment lag and pond storage constraints in influencing overflow risk.

Annual Rainfall Cycle - Polar Plot (2020-2025)

Monthly means showing seasonal precipitation patterns



Annual Discharge Cycle - Polar Plot (2020-2025)

Monthly means showing cyclical patterns throughout the year

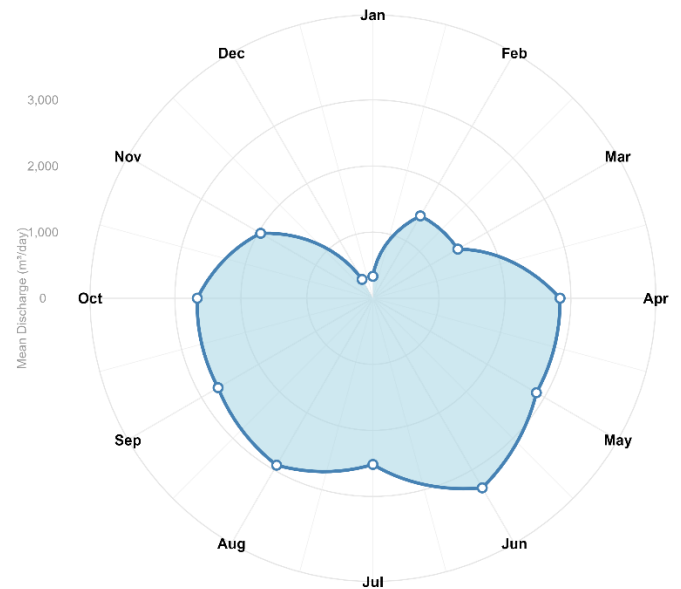


Figure 3-2. Seasonal patterns of rainfall and effluent discharge at Waiuku WWTP (2020–2025). Monthly mean values are plotted in polar format to illustrate annual cycles in rainfall (left) and treated effluent discharge (right). Radial distance represents the mean monthly total (rainfall) or mean daily discharge (m^3/day). Peaks and troughs indicate seasonal highs and lows. The observed lag between rainfall and discharge reflects delayed inflow and infiltration responses from the catchment and prolonged pond drainage following wet periods.

2.4 Effluent Quality

2.4.1 Introduction and Compliance Basis

This section presents an assessment of routine treated effluent quality monitored at the final discharge sampling point, post-UV disinfection, in accordance with Condition 14 of DIS60334129. Results are based on the regular fortnightly and monthly sampling schedule specified in the consent and reflect discharges that have passed through the full treatment process and authorised outfall.

Bypass events are excluded from this assessment because they did not follow the full treatment train and were not discharged via the consented outfall structure. As such, bypass discharges are not representative of standard WWTP performance and are addressed separately under Condition 25 in Section 3.4.2 and Appendix D.

2.4.2 Compliance Summary (2024–2025)

Routine post-UV effluent monitoring results are summarised in Table 3-1, with performance assessed against the applicable 92nd percentile, median, or seasonal limits defined under Condition 14.

Of the consented parameters:

- All parameters met the required limits, except for Total Inorganic Nitrogen (TIN), which exceeded the 92nd percentile limit.
- TIN recorded a 92nd percentile of 24 mg N/L, above the limit of 20 mg N/L.
- Ammoniacal nitrogen (NH₄-N) complied with seasonal 92nd percentile limits, remaining below both the 5 mg N/L (Nov–Apr) and 20 mg N/L (May–Oct) thresholds.
- Enterococci and faecal coliforms met both median and 92nd percentile limits, confirming microbiological compliance.
- cBOD₅, TSS, and TP remained within their respective percentile limits.

Additional monitored parameters such as Dissolved Oxygen (DO), pH, Temperature, and DRP are not subject to numerical limits but were consistently within operational expectations. These are included in Table 3-1 for context.

The exceedance of the TIN 92nd percentile was classified as a Category 2 (minor) non-compliance, likely influenced by seasonal inflow and infiltration effects during wetter months (see also Sections 3.3.3 and 3.3.4).

Shellfish tissue monitoring was also conducted during the reporting period under Conditions 15–17. Results from the February 2025 sampling confirmed elevated *E. coli* concentrations in oysters collected near the outfall (OYS B), exceeding guideline values for shellfish consumption. In contrast, upstream (OYS A) and reference (OYS C) sites remained well within recommended thresholds. These findings are consistent with historical patterns and reflect the influence of proximity to the discharge point. Full results and interpretation are provided in Appendix E.

Table 3-1. Waiuku WWTP effluent quality summary (1 July 2024 – 30 June 2025). Consent limits apply to median and 92nd percentile values as specified in Condition 14. Additional parameters are monitored for operational and environmental purposes only.

Parameter	N	Min	Mean	Max	Median	Consented Median	Median Compliant	92nd Percentile	Consented 92nd Percentile	92nd Percentile Compliant
BOD ₅ (mg/L)	24	1.40	3.63	7.80	3.35	–	–	5.812	≤ 20 mg/L	✓
Dissolved oxygen (DO) (mg/L)	33	1.4	4.73	6.6	4.52	–	–	6.482		–
DRP	24	0.0197	3.871	5.31	4.09	–	–	4.796	–	–
<i>Enterococci</i> (cfu/100 mL)	24	1.6	1.61	1.7	1.6	≤ 50	✓	1.7	≤ 150	✓
Faecal coliforms (cfu/100 mL)	24	1.6	1.88	5	1.6	–	–	2.212	≤ 430	✓
Ammoniacal nitrogen (NH ₄ -N) (mg/L)	24	0.063	4.454	14.5	1.395	–	–	13	≤ 5 (Nov–Apr); ≤ 20 (May–Oct)	✓
pH	24	7	7.38	7.8	7.3	–	–	7.8	–	–
Temperature (°C)	33	12.9	18.92	24.4	19.8	–	–	23.876	–	–
Total inorganic nitrogen (TIN) (mg/L)	24	3.5	14.25	25	13.5	–	–	24	≤ 20	✗
Total phosphorus (TP) (mg/L)	24	3.31	4.66	6.55	4.565	–	–	5.9732	≤ 8	✓
TSS (mg/L)	24	4.6	21.14	41.4	19	≤ 30 mg/L	✓	35.928	≤ 45 mg/L	✓

2.4.3 Seasonal variation in effluent quality (2024–2025)

Temporal variation in effluent concentrations during the reporting year (excluding emergency bypasses) is shown in Figure 3-3. Most parameters exhibited distinct seasonal patterns, reflecting the influence of wastewater composition, oxidation pond performance, and inflow/infiltration (I&I) dynamics.

Key observations include:

- Nutrients (TIN, NH₄-N) showed higher concentrations in winter and spring, followed by a marked decline in late summer (Jan–Mar). This pattern closely follows the seasonal rise in temperature and reflects the reliance on microbial activity for nitrogen removal in the oxidation ponds. Since bacterial metabolism is strongly temperature-dependent, colder months reduce nitrification rates. Notably, the 2024–2025 data suggest a delayed biological recovery, with NH₄-N and TIN remaining elevated through spring despite rising temperatures which is consistent with microbes slowly reactivating following winter dormancy, as described in pond-based systems (Martins & Marques, 2019²).
- TP, DRP, and TSS concentrations increased during the wet-weather months (Aug–Oct), likely due to higher inflow and infiltration (I&I) and reduced settling efficiency caused by elevated flows and pond mixing.
- cBOD₅ remained low overall, with minor increases in spring, potentially linked to pond temperature and loading.
- Microbial indicators (*Enterococci*, faecal coliforms) remained low and stable, with brief spring elevations but no breaches of consent limits.
- DO, pH, and Temperature tracked expected seasonal behaviour. DO remained well above the 2.0 mg/L threshold.

These seasonal fluctuations reflect both biological performance sensitivity and the effects of inflow and infiltration, particularly during high-rainfall months.

In addition to routine nutrient, solids, and microbiological monitoring, a suite of trace metal analyses was undertaken in February 2025. All trace metal results were very low and well within typical guideline values. Full results are provided in Appendix B3.

² Martins, R. C., & Marques, R. C. (2019). *Waste Stabilization Ponds*. In: *Biological Wastewater Treatment* (pp. 295–322). IWA Publishing.

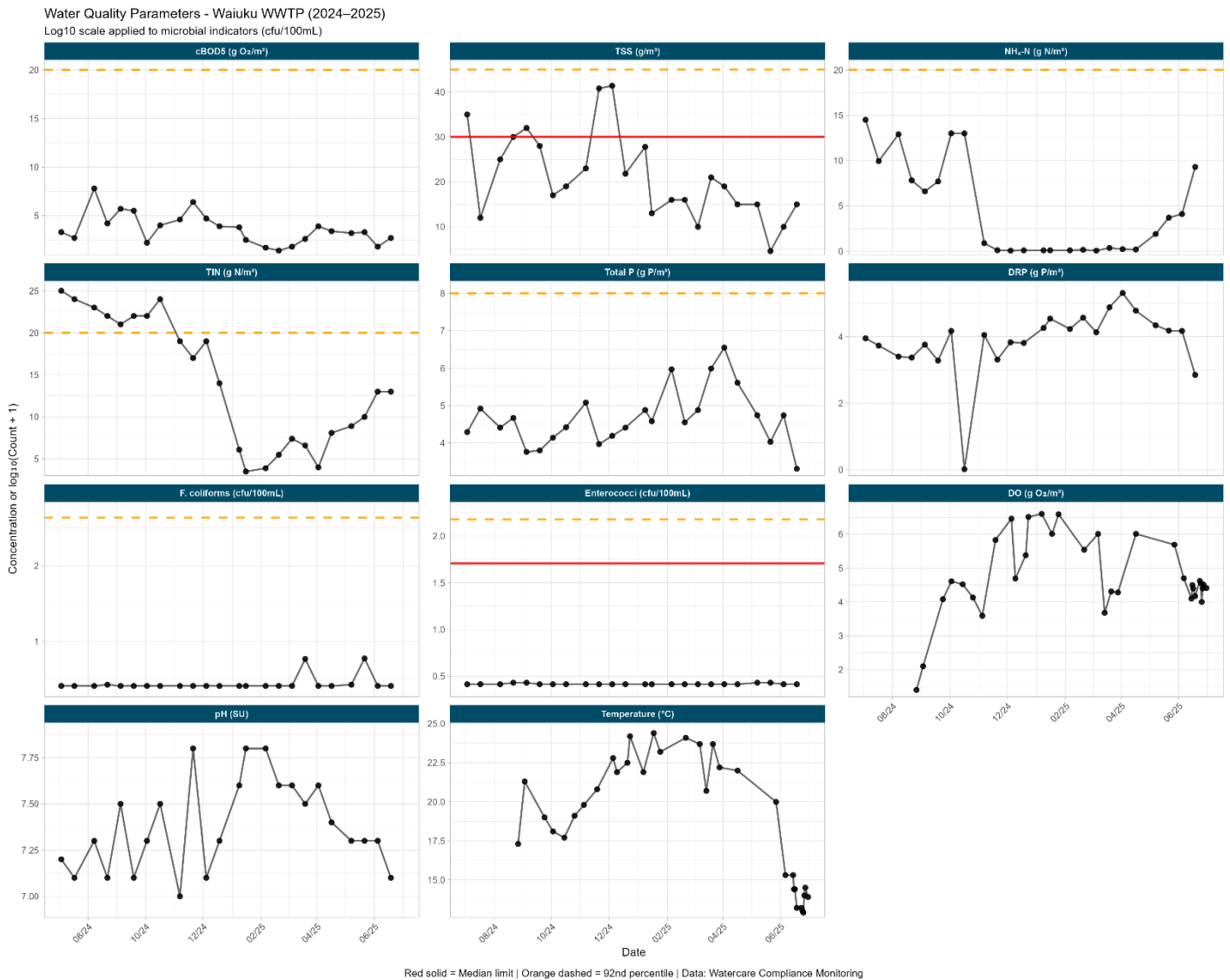


Figure 3-3. Time-series plots of effluent quality parameters at Waiuku WWTP (2024–2025). Dashed lines indicate consent limits where applicable

2.4.4 Five-year analyses (2020–2025)

Effluent quality data from the last five years (July 2020 to June 2025) were analysed to identify seasonal patterns and long-term trends in compliance parameters. These insights help contextualise year-to-year variation and support performance evaluation under variable loading and climate conditions.

2.4.4.1 Seasonality

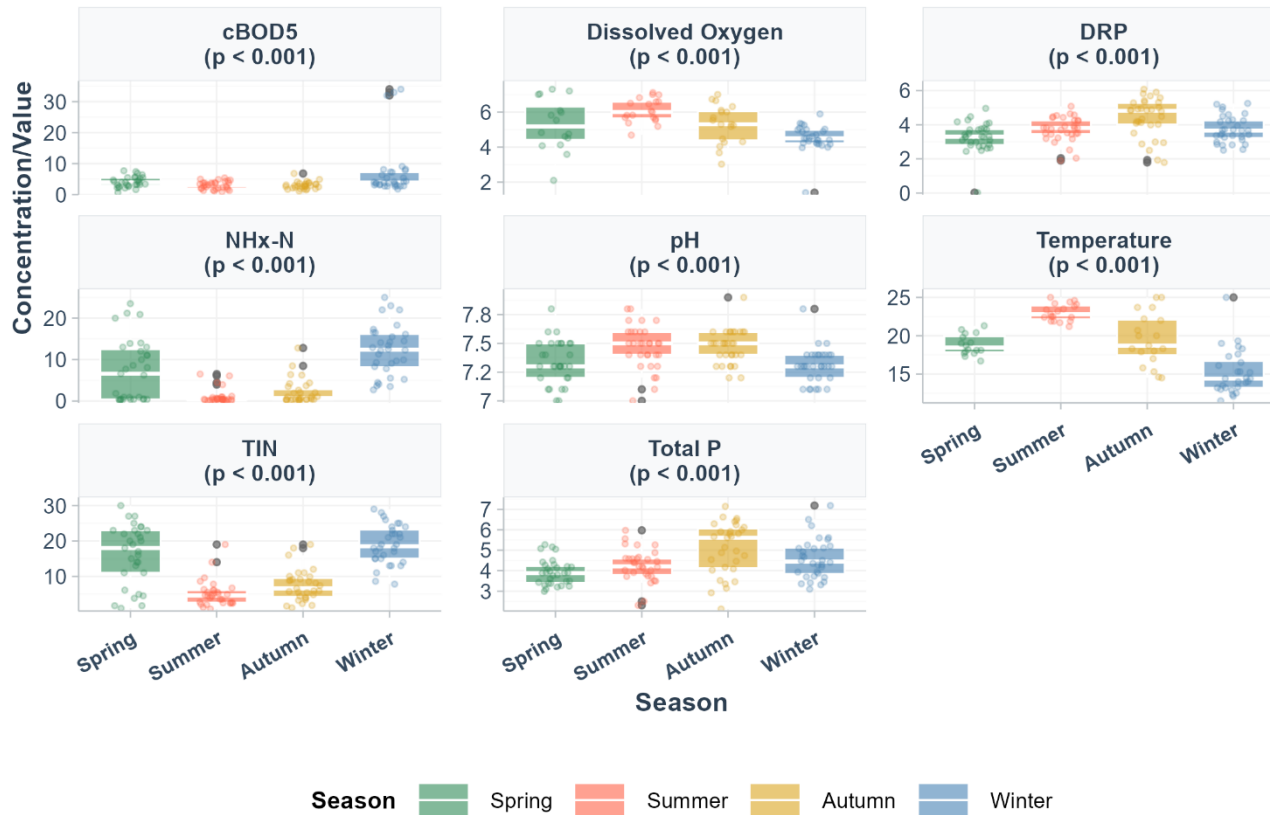
Kruskal–Wallis tests were used to assess differences across calendar months. Statistically significant seasonal patterns were observed in nutrients (TIN, NH₄-N, TP, DRP), TSS, DO, and temperature ($p < 0.05$). Other parameters did not show statistically significant seasonal variation.

As shown in Figure 3-4, seasonal peaks in nutrient concentrations and TSS typically occurred in late winter and spring (August–October), corresponding to periods of higher rainfall and inflow. In contrast, lower concentrations were observed during late summer and early autumn (February–April).

These patterns reflect the combined effects of temperature-dependent biological performance and wet weather inflow and infiltration (I&I), as discussed in Section 3.3.3. Notably, the seasonal profiles of $\text{NH}_4\text{-N}$ and TIN reinforce the 2024–2025 observations, which show that nitrifier activity recovers gradually post-winter.

Seasonal Patterns in Water Quality Parameters

Waiuku WWTP (2020-2025) | 8 parameters with significant seasonality ($p < 0.05$)



Statistical test: Kruskal-Wallis | Boxes show median \pm IQR | Points show individual measurements

Figure 3-4. Significant seasonal differences in effluent quality parameters at Waiuku WWTP (2020–2025). Boxplots illustrate parameters with significant seasonal variability (Kruskal–Wallis test, $p < 0.05$).

2.4.4.2 Long-term trends

To evaluate potential monotonic (one directional) trends in effluent quality, Mann–Kendall trend tests were applied across the five-year dataset, with Sen slope estimates used to quantify the rate of change. While most parameters remained stable, three parameters showed statistically significant trends at the 95% confidence level as shown in Figure 3-5:

- **Faecal coliforms:** Strong decreasing trend ($\tau = -0.23$, $p < 0.001$)
- **Enterococci:** Moderate decreasing trend ($\tau = -0.20$, $p = 0.0037$)
- **Ammonia (NH₄-N):** Strong decreasing trend ($\tau = -0.23$, $p < 0.001$)

The significant downward trends in microbial indicators (faecal coliforms and *Enterococci*) suggest continued reliability of the disinfection process over time, likely aided by consistent UV performance. The strong decline in NH₄-N points to improved nitrogen transformation efficiency, possibly linked to long-term optimisation of pond operations or better microbial adaptation.

No significant trends were detected for other parameters such as TIN, TP, DRP, cBOD₅, TSS, pH, or DO, indicating general stability in these indicators over the five-year period.

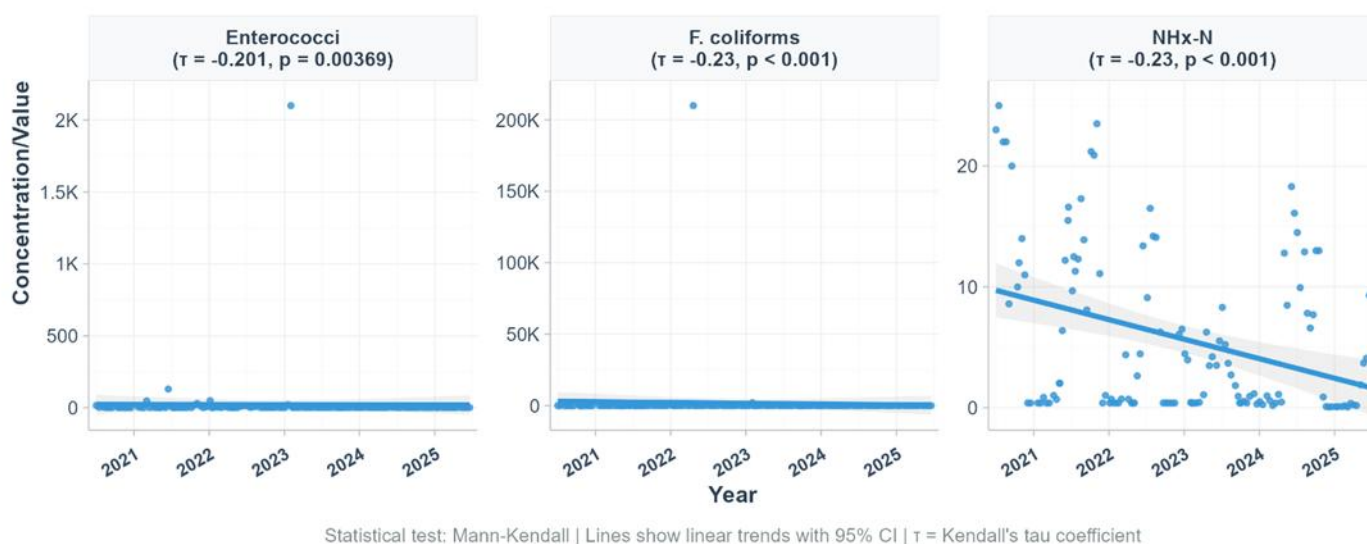


Figure 3-5. Significant long-term trends in effluent quality parameters at Waiuku WWTP (2020–2025). Results are based on Mann–Kendall trend tests; only parameters with statistically significant trends are shown. τ (tau) is Kendall's rank correlation coefficient, a non-parametric measure of trend direction and strength. Values range from -1 (strong downward trend) to $+1$ (strong upward trend), with p indicating the statistical significance of the trend.

2.4.5 Summary

This summary applies to routine, fully treated discharges. Bypass events and associated non-compliance are addressed separately in Section 3.4.2.

Routine effluent monitoring during the 2024–2025 reporting year showed that the WWTP performed well overall, with all parameters remaining compliant with consent limits except for Total Inorganic

Nitrogen (TIN), which exceeded the 92nd percentile limit. This exceedance was classified as a Category 2 (minor) non-compliance, likely influenced by seasonal inflow and infiltration during wetter months.

Ammonia (NH₄-N) complied with seasonal thresholds but displayed clear seasonal variation, peaking in winter and declining as temperatures rose, highlighting the oxidation pond system's dependence on temperature-sensitive microbial nitrification.

Other parameters, including cBOD₅, TSS, TP, *Enterococci*, and faecal coliforms, remained compliant and stable throughout the year. Long-term analysis revealed significant downward trends in NH₄-N and microbial indicators, indicating possible performance improvements over time.

No significant trends were observed for TIN, phosphorus, or solids, suggesting these remain operationally stable across years.

2.5 Complaints and Incidents

2.5.1 Complaints

No complaints relating to Waiuku WWTP were received during the 2024–2025 reporting period.

2.5.2 Incidents

Five non-compliance incidents occurred during the 2024–2025 reporting year: four emergency bypass discharges and one tidal-timing breach. All events were reported to Auckland Council under Conditions 25 and 27 of DIS60334129. Targeted environmental monitoring was undertaken at affected sites to assess effects and inform management responses. Full details are provided in the Incident Report (Appendix D).

Emergency bypass discharges (4 events)

Prolonged rainfall and high inflows during winter 2025 triggered four emergency bypass discharges to prevent pond overtopping. In total, approximately 39,000 m³ of partially treated (screened only) wastewater was discharged without UV disinfection. Each event constitutes a non-compliance with:

- **Condition 6 (Discharge Volume Limit)** — daily volumes exceeded the 5,500 m³/day limit.
- **Condition 7 (Tidal Discharge Timing)** — bypasses occurred outside the authorised discharge window.
- **Condition 14 (Effluent Quality Limits)** — faecal coliforms and enterococci exceeded consent thresholds; additional exceedances of TIN, TSS and cBOD₅ were recorded during Events 1–3.

Event details:

- **13–16 June 2025 (Event 1):** ~13,000 m³ over 59.5 hours. Breaches of Conditions 6, 7 and 14.
- **21–22 June 2025 (Event 2):** ~5,000 m³ over 23.5 hours. Breaches of Conditions 6, 7 and 14.
- **10–13 July 2025 (Event 3):** ~16,200 m³ over 75 hours. Breaches of Conditions 6, 7 and 14.
- **21–22 July 2025 (Event 4):** ~4,752 m³ over 22 hours. Breaches of Conditions 6, 7 and 14.

Although bypasses are triggered to protect the integrity of the WWTP during extreme inflows, they release effluent that has not passed through the full treatment train or consented outfall. Planning

measures and long-term infrastructure upgrades (see Section 4) are underway to reduce the need for emergency bypasses.

Tidal-timing breach (1 event)

On 25–26 June 2025, a fully treated effluent discharge (~22,000 m³) occurred continuously over a 24-hour period outside the authorised tidal window due to a failure of the Programmable Logic Controller (PLC) controlling the tidal gate. The discharge valve was manually opened to avoid critical pond levels; however, the replacement PLC was later found incompatible, extending the breach duration.

Although the effluent remained fully treated (including UV disinfection), this event constitutes a full non-compliance with both Condition 6 (daily discharge volume limit) and Condition 7 (tidal-timing requirement) because the discharge occurred at an unauthorised rate and time. While monitoring indicated only short-term effects due to the high quality of the effluent, the unauthorised discharge may have altered mixing dynamics in the estuary.

3 UPGRADES AND FUTURE ACTIONS

Watercare is implementing a long-term servicing strategy for the South-West region, including Waiuku, Clarks Beach, and Glenbrook Beach. Under this plan, the Waiuku WWTP will be retained and upgraded, with treated effluent redirected via a new pipeline to the Clarks Beach outfall, currently under construction.

To support this transition, a booster plant is planned for construction in 2026–2027. This interim upgrade will enhance the performance of the existing Waiuku WWTP and help maintain compliance ahead of the final discharge connection to Clarks Beach. The full-scale upgrade of the Waiuku WWTP will follow, designed to meet the more stringent discharge limits required under the Clarks Beach coastal permit.

While final design details are still in development, the upgraded Waiuku treatment system is expected to include enhanced nutrient removal and disinfection processes, likely mirroring elements of the Clarks Beach upgrade.

Key future actions include completion of detailed designs, construction of the transfer pipeline, staged implementation of the booster and full upgrades, and any necessary consent variations. The existing Waiuku outfall infrastructure will be reassessed once the new discharge route is operational. Further updates will be provided in subsequent reporting years as the programme progresses.

4 CONCLUSION

Overall, the Waiuku WWTP operated broadly in accordance with consent conditions during the 2024–2025 reporting period, with most treated discharges meeting consented water quality and volume limits. Non-compliances included one TIN exceedance, a temporary flow meter outage, four wet-weather bypass events, and one tidal-timing breach. All incidents were notified to Auckland Council in accordance with Conditions 24–27, and follow-up monitoring indicated localised, short-term effects only.

To address these issues, Watercare is advancing its South-West wastewater servicing strategy, which includes retaining and upgrading the Waiuku WWTP. Under this plan, treated wastewater will be redirected to the new Clarks Beach outfall, where tighter nutrient and microbial limits will apply. This transition will require enhanced treatment capacity at Waiuku and is expected to reduce bypass frequency and improve long-term consent compliance.

Appendix A. Assessment of Compliance

Table A-1 Assessment of Compliance with Consent Conditions – Waiuku Discharge to General Coastal Marine area and to air (#DIS60334129)

Condition Number	Consent condition Waiuku Discharge to General Coastal Marine area & to air (#DIS60334129)	Compliance Rating	Comments
1	These consents shall be carried out in accordance with the documents and drawings and all supporting additional information submitted with the application, detailed below, and all referenced by the council as resource consent number DIS60334129.	1	
2	Under section 125 of the RMA, these consents lapse five years after the date they are granted unless: a. The consents are given effect to; or b. The council extends the period after which the consents lapse.	1	
3	The consent holder shall pay the council an initial consent compliance monitoring charge of \$990.00 (inclusive of GST), plus any further monitoring charge or charges to recover the actual and reasonable costs incurred to ensure compliance with the conditions attached to these consents.	1	
4	DIS60334129 for the discharge to air and discharge to the coastal environment shall expire on June 15 2027, unless it has lapsed, been surrendered or been cancelled at an earlier date pursuant to the RMA.	1	
5	The servants or agents of the Council shall be permitted to have access to the relevant parts of the property at all reasonable times for the purpose of carrying out inspections, surveys, investigations, tests, measurements or take samples while adhering to the Consent Holder's health and safety policies.	1	
6	The Consent Holder shall ensure that the treated wastewater discharge volume does not exceed 5,500 m ³ /day plus 33 m ³ /day for every 1 mm/day of rainfall inclusive, once rainfall exceeds 40mm/week.	2	Routine treated discharges remained well within the 5,500 m ³ /day daily limit and adjusted wet-weather thresholds. However, a single tidal-timing breach on 25–26 June 2025 discharged ~22,000 m ³ of fully treated effluent outside the authorised window, exceeding the daily limit under Condition 6 as well as breaching Condition 7.
7	The Consent Holder shall discharge treated wastewater from the plant for up to 6 hours per day, commencing one hour after ebb tide, for a duration not exceeding 3 hours per outgoing tide, as far as practicable during the night rather than daytime outgoing tide and at a maximum discharge rate of 255 L/s over the maximum 6 hour daily discharge period. The daily discharge period may be extended 2 minutes per 1 mm of rainfall inclusive, once rainfall exceeds 40mm/week.	2	On 25–26 June 2025, a fully treated discharge occurred outside the authorised tidal window due to a PLC failure. The discharge lasted 24 hours and, although UV treated, breached timing restrictions. This is considered a technical non-compliance.

Condition Number	Consent condition Waiuku Discharge to General Coastal Marine area & to air (#DIS60334129)	Compliance Rating	Comments
8	The design and installation of any new system components shall be carried out under the supervision of a chartered professional engineer or other appropriately qualified person experienced in the design and installation of wastewater treatment systems. The supervising engineer/person shall inspect all the new works (as they are completed), and shall certify in writing to the Manager that all additional components of the wastewater treatment system have been designed, inspected and installed in accordance with standard engineering practice.	1	
9	The Consent Holder shall maintain a register of the authorised trade waste connections to the Waiuku WWTP and shall provide a copy of the updated register with the Annual Report.	1	
10	The Consent Holder shall ensure that 24 hours a day, seven days a week electronic monitoring systems are installed and maintained to operate in the event of any plant failure	2	A technical non-compliance occurred when the effluent flow meter transmitter failed from late December to 21 January. This prevented continuous flow monitoring for ~3.5 weeks, breaching the 24/7 electronic monitoring requirement. Repairs were delayed due to holiday availability. The event was notified to Council and reported under Condition 13 (Q3 report).
11	The Consent Holder shall update the existing Management Plan for the WWTP (dated September 2018) to include updated references to the requirements of this consent, specifically in terms of updating: a. Section 3.1 - Monitoring; b. Appendix A - Copies of Resource Consent; and c. Appendix D - Environmental Monitoring. The Management Plan shall be prepared by a suitably qualified engineer and shall be submitted to the Manager for certification within three months of the commencement of this consent.	1	The updated management plan for the Waiuku WWTP and the new AQMP sent to AC in September 2019
12	The Consent Holder shall comply with the requirements of the Management Plan once it has been finalised. All subsequent significant updates to the plan throughout the term of this consent shall be submitted to the Manager for certification.	1	
13	The Consent Holder shall ensure flow meters are maintained in place to measure the total daily inflow to the WWTP and the total daily discharge volume from the system into the Waiuku Estuary continuously. The discharge volume meter must be maintained to ensure an accuracy of plus or minus 5 percent.	2	The effluent flow meter transmitter failed from late December through mid-January, resulting in missing discharge data for ~3 weeks. Although there were no rain events and exceedances were unlikely, the event constitutes a monitoring non-compliance. This was reported in the Q3 compliance report to Auckland Council.

Condition Number	Consent condition Waiuku Discharge to General Coastal Marine area & to air (#DIS60334129)	Compliance Rating	Comments
14	<p>The Consent Holder shall monitor and analyse the parameters set out in the table below. All samples shall be analysed to the required detection limits at the sampling frequency set out below. Treated wastewater samples shall be collected following UV treatment and prior to discharge. The quality of the effluent discharged shall be equal to or better than the limit specified for that parameter (as applicable).</p> <p>Please see pages 6-7/16 of the consent document for further details.</p>	2	<p>Routine treated effluent sampling was conducted as required, and results met all consent limits except for TIN, which exceeded the 92nd percentile threshold and has been classified as a minor non-compliance (see Section 3.3). Note: This condition applies to routine, post-UV discharges only. Additional exceedances occurred during bypass discharges (see Condition 25 and Appendix D).</p>
15	<p>The Consent Holder shall collect Pacific oyster from 5 monitoring sites within Waiuku Inlet annually during the month of February. The sampling sites shall be located in the following areas:</p> <ul style="list-style-type: none"> a. A site upstream of the discharge point, with a minimum separation distance of 250m; b. A site approximately half the distance from the discharge point and the Needles site; c. A site adjacent to the Needles; d. A site adjacent to Okohaka Point; and e. A site adjacent to Gordon's Landing 	1	<p>The shellfish quality monitoring was done in February 2025 (see Appendix E).</p>
16	<p>On each monitoring occasion, the person(s) undertaking the sampling shall record the following conditions at the time of sampling;</p> <ul style="list-style-type: none"> a. The weather conditions on the day of sampling and the week prior; b. The effluent discharge quality, the discharge volume, discharge rate and discharge timing on the day of sampling, c. The tide characteristics specifically low and high tide heights. d. The time of sampling in relation to the commencement of discharge release at each sampling site, to ensure standardisation of results. 	2	<p>The oyster sampling was carried out in February 2025 in accordance with the condition; however, the consultant memo did not include effluent discharge quality, volume, rate, or timing data, nor did it relate sampling time to the discharge window. This is considered a technical (Category 2) non-compliance due to partial fulfilment of Condition 16 requirements. This will be addressed in the 2025–2026 monitoring round, with data linkage to discharge conditions included in the scope.</p>
17	<p>Samples of the Pacific oyster (<i>Crassostrea gigas</i>) shall be collected in accordance with the latest version of the Ministry of Health protocols for sampling bacteriological quality of shellfish with procedures confirmed following consultation with the Ministry of Primary Industry. Samples shall consist of five replicates made up of at least 12 shellfish at each sampling site. The shellfish samples shall be tested for E.coli bacteria.</p>	1	

Condition Number	Consent condition Waiuku Discharge to General Coastal Marine area & to air (#DIS60334129)	Compliance Rating	Comments
18	<p>The Consent Holder shall establish a series of monitoring sites upstream and downstream of the Waiuku Wastewater Treatment plant discharge. Water samples shall be collected at the following locations:</p> <ul style="list-style-type: none"> a. At least 250m upstream of the discharge point; b. Within 10m downstream of the discharge point; c. Half way between the discharge point and the Needles; d. Adjacent to the Needles; e. Adjacent to Okohaka Point; and f. Adjacent to Gordon’s Landing 	1	The water quality monitoring was done in December 2023 – March 2024 (See Appendix B).
19	<p>Monitoring shall be conducted on three occasions during the phytoplankton growing season December through March, in two growing seasons over the duration of the consent:</p> <ul style="list-style-type: none"> a. Growing Season 1: between December 2020 to March 2021 or December 2021 to March 2022); and b. Growing Season 2: between December 2023 to March 2024 	1	
20	<p>On each monitoring occasion, the person(s) undertaking the sampling shall record the following conditions at the time of sampling;</p> <ul style="list-style-type: none"> a. The weather conditions on the day of sampling and the week prior; b. The effluent discharge quality, the discharge volume, discharge rate and discharge timing on the day of sampling, c. The tide characteristics specifically low and high tide heights. d. The time of sampling in relation to the commencement of discharge release at each sampling site, to ensure standardisation of results. 	1	
21	<p>Water samples collected in accordance with Conditions 18 shall be collected from near surface on the latter half of the ebb tide, with the timing of sampling representing the period during which the effluent would flow down the Waiuku Estuary. The following field measurements shall also be undertaken at each site:</p> <ul style="list-style-type: none"> a. Ambient water temperature; b. Salinity; and c. Secchi depth. 	1	

Condition Number	Consent condition Waiuku Discharge to General Coastal Marine area & to air (#DIS60334129)	Compliance Rating	Comments
22	Water samples shall be analysed in the laboratory for the following parameters: a. Carbonaceous Biochemical Oxygen Demand (cBOD5); b. Suspended Solids; c. Turbidity; d. Chlorophyll-a; e. Total Phosphorus; f. Dissolved Reactive Phosphorus; g. Ammoniacal Nitrogen; h. Total Oxidised Nitrogen; i. Dissolved Inorganic Nitrogen; j. Enterococci; and k. Faecal Coliforms.	1	
23	The Consent Holder shall ensure that all relevant samples required by the conditions of this consent are collected and analysed in accordance with the 22 nd edition of “Standard Methods for the Examination of Water and Wastewater” (Standard Methods) published by the American Public Health Association (APHA), the Water Environment Federation (WEF), and the American Water Works Association (AWWA) or any subsequent edition or equivalent as may be approved in writing by the Manager.	1	
24	In the event of two consecutive results for any single parameter of samples collected in accordance with condition 14 not complying with the limits specified (without taking into account the exceedances otherwise allowed by the 92%tile provisions in the Table), the Consent Holder shall as soon as practicable of receipt of the second result notify the Manager of the exceedance in writing, outline mitigation measures taken and advise any further measures proposed to ensure compliance. If so instructed by the Manager, the Consent Holder shall increase the frequency of monitoring for that parameter to weekly for a specified period	1	
25	In the event of any unauthorised discharge that has bypassed the required treatment train from the treatment system into the Waiuku Inlet, the Consent Holder shall notify the Manager and Auckland Regional Public Health Service as soon as practicable.	1	All bypass events were notified to Auckland Council and Auckland Regional Public Health Service as required under Condition 25. Further details are provided in Appendix D and quarterly reporting
26	The Consent Holder shall ensure that the results of the monitoring undertaken in accordance with condition 14 are reported to the Manager quarterly within 20 working days of the period ending 31 December, 31 March, 30 June and 30 September each year.	1	

Condition Number	Consent condition Waiuku Discharge to General Coastal Marine area & to air (#DIS60334129)	Compliance Rating	Comments
27	<p>The Consent Holder shall prepare an Annual Report and provide it to the Manager by 30 September each year. The Annual Report shall cover:</p> <ul style="list-style-type: none"> a. A summary of the monthly results of all of the effluent discharge samples results set out in condition 14 for the period up to 30 June each year (the first being due on the 30 June following the commencement of the consent); b. An analysis and interpretation of all reporting data required by this consent for the past year; c. The level of compliance with each monitoring consent condition, with recommendations and a timetable for rectifying any non-compliance; d. General plant performance, including: <ul style="list-style-type: none"> (i) Any trends in changes in the discharge quality standards over time; (ii) The performance and effectiveness of the UV unit; (iii) The levels of indicator pathogenic microorganisms; e. The effectiveness of total phosphorus removal and nutrient levels through the various seasons; and f. Any trends Indicated over recent years. e. Any trends and status of Inflow and Infiltration (I&I) effects on total flow volumes and comment on flows during any peak storm events; f. A review of any changes in Influent load to the plant and any corresponding changes in the ammoniacal nitrogen levels; g. A Receiving Environment Report compiling the results of the environmental monitoring; h. Any key system maintenance and/or upgrade work completed within the prior year and proposed in the forthcoming year, and changes (if any) to the Management Plan; i. A review on the performance and improvements of the WWTP achieved in the past year; j. An updated Register of any trade wastes connected to the plant; k. Details of any complaints received in accordance with the conditions of this consent. 	1	This report
28	<p>Signage shall be erected, in prominent locations of public interest and likely access, within 6 months of the exercise of this consent. The signage shall warn of public health concerns regarding shellfish gathering from effects from the exercise of this consent. It shall also specify that there should be no contact recreation or shellfish gathering or fishing within a conservatively estimated mixing zone around the discharge point. The signage wording and location shall be to the satisfaction of the Manager, in consultation with the Medical Officer of Health. A review of the wording, placement of and need for, the signage may be instigated from time to time, by the Manager, in consultation with the Consent Holder.</p>	1	
29	<p>The Consent Holder shall ensure that all processes on site are operated, maintained, supervised, monitored and controlled to ensure that emissions authorised by this consent are maintained at the minimum practicable level.</p>	1	

Condition Number	Consent condition Waiuku Discharge to General Coastal Marine area & to air (#DIS60334129)	Compliance Rating	Comments
30	The Consent Holder shall ensure that beyond the boundary of the site. There is no dust and/or odour caused by discharges from the site, which in the opinion of an enforcement officer is noxious, offensive or objectionable.	1	
31	The Consent Holder shall ensure that no discharges from any activity on the site give rise to visible emissions (other than heat haze, water vapour and clean steam) to an extent which, in the opinion of an enforcement officer is noxious, dangerous, offensive or objectionable.	1	
32	The Consent Holder shall ensure that beyond the boundary of the site, there shall be no hazardous air contaminant, caused by discharges from the site, which causes, or is likely to cause, an adverse effect to human health, the environment or property.	1	
33	The Consent Holder shall ensure that no part of any process that discharges to air is operated without the associated emissions control equipment being fully operational and functioning correctly.	1	
34	The Consent Holder shall ensure that all staff and contractors undertaking works on site are aware of, and adhere to, all conditions of this consent	1	
35	The Consent Holder shall ensure that wind direction and the proximity to neighbouring properties are considered prior to undertaking any potentially odorous activities at the site.	1	
36	All sludge removal from the oxidation ponds and subsequent de-watering and disposal shall be carried out in a manner that minimises odour.	1	
37	All sludge removed from the ponds shall be disposed of to an appropriately authorised facility.	1	
38	The Manager shall be advised in writing no less than 10 working days prior to the commencement of desludging activities. The written notice shall include: a. the timing and method of desludging; b. precautionary measures proposed to ensure compliance with the conditions of this consent during desludging; and c. the contact details of the person responsible for the desludging activities.	1	
39	The Consent Holder shall ensure that a walkover inspection of the WWTP site is undertaken at least once a week to identify any odours that may be originating from the site. The results shall be recorded and any odour potentially detectable off-site investigated immediately. Any remedial action shall be undertaken as soon as practicable. The procedures for the walkover, recording of the results and any remedial actions taken shall be as specified in the Air Quality Management Plan (AQMP) required by the conditions of this consent.	1	

Condition Number	Consent condition Waiuku Discharge to General Coastal Marine area & to air (#DIS60334129)	Compliance Rating	Comments
40	<p>An Air Quality Management Plan (-AQMP") shall be submitted to the Manager for review within three months of the date of commencement of this consent. The AQMP is to accurately record all monitoring, management and operational procedures, methodologies and contingency plans required to comply with the conditions of this consent. The AQMP may form part of an overall management plan for the site. It shall include, but not be limited to, the following details:</p> <ul style="list-style-type: none"> a. the process equipment, maintenance, monitoring and recording procedures; b. procedures for responding to process contingencies; c. procedures for monitoring dissolved oxygen within the ponds and the actions to be taken to minimise the potential for odour; d. if regular odour complaints are received then details regarding the process for a review of operation practices in order to minimise odour effects further, e. walkover inspections; f. complaints investigation, monitoring and reporting; and g. the identification of key staff and contractors responsibilities and contact details. 	1	The updated management plan for the Waiuku WWTP and the new AQMP sent to AC in September 2019
41	The AQMP shall be reviewed by the Consent Holder at least once every year. Any proposed changes shall be submitted to the Manager for review prior to implementation.	1	
42	<p>The Consent Holder shall ensure that a Council enforcement officer is notified as soon as practicable in the event of any significant discharge to air which has potential to result in a breach of these conditions or to cause adverse effects on the environment. The following information shall be provided:</p> <ul style="list-style-type: none"> a. details of the nature of the discharge; b. an explanation of the cause of the incident; and c. details of remediation action taken. 	1	
43	All records, monitoring and test results required by the conditions of this consent shall be made available on request, during operating hours, to a Council enforcement officer and shall be kept by the Consent Holder for a minimum period of two years from the date of each entry for the duration of the consent.	1	

Condition Number	Consent condition Waiuku Discharge to General Coastal Marine area & to air (#DIS60334129)	Compliance Rating	Comments
44	<p>The conditions of these consents may be reviewed by the Manager pursuant to section 128 of the Act, by giving notice pursuant to section 129, in the month of October each year in order:</p> <ul style="list-style-type: none"> a. to deal with any significant adverse effects on the environment arising from the exercise of the consent which was not foreseen at the time the application was considered and which is appropriate to deal with at the time of the review; and/or b. to consider the adequacy of conditions which prevent nuisance and adverse effects beyond the boundary of the site, particularly if regular or frequent complaints have been received and validated by a Council enforcement officer; and/or c. to consider developments in control technology and management practices that would enable practical reductions in the discharge of contaminants into air; and/or d. to alter the monitoring requirements, Including requiring further monitoring, or e. increasing or reducing the frequency of monitoring; and f. to take account of any Act of Parliament, regulation, national policy statement, regional policy statement or relevant regional plan that relates to limiting, recording or mitigating emissions by this consent. 	1	
45	<p>The Consent Holder shall within 3 months of the commencement of this consent facilitate the establishment and maintenance of a Community Liaison Group ('CLG'). The Consent Holder shall invite representatives of the following parties to participate in the CLG:</p> <ul style="list-style-type: none"> a. The Council (being the Consent Compliance Officer or the Manager); b. Representatives of local iwi and other community groups; and c. Other representatives of the local community who have expressed an interest in or concerns with the discharges of contaminants to the Consent Holder since the last CLG annual meeting. <p>The purpose of the CLG shall be to provide a forum to:</p> <ul style="list-style-type: none"> d. Facilitate communication and dialogue between the Consent Holder, the Council and the community on Issues concerning plant operation, performance and upgrade works. e. Facilitate communication and dialogue between the Consent Holder and the local community on effects on the community arising from plant operations and on future intentions. 	1	Last meeting was in May 2025
46	<p>The Consent Holder shall use its best endeavours to ensure that formal meetings of the CLG are held at least once annually and where practicable within three months of the completion of the Annual Report (required by June each year) unless it is cancelled or deferred subject to agreement being obtained from all parties who attended the prior year's CLG meeting or have requested to be invited to all future CLG meetings. The Consent Holder shall provide an appropriate venue for the CLG meetings, inform all parties listed above of each CLG meeting a minimum of ten working days prior to the scheduled meeting date, and provide the minutes of the CLG meeting to all parties listed above within ten working days following the CLG Meeting.</p>	1	

Condition Number	Consent condition Waiuku Discharge to General Coastal Marine area & to air (#DIS60334129)	Compliance Rating	Comments
47	<p>The Consent Holder shall assist the CLG to fulfil its purpose by providing information to CLG parties on:</p> <ul style="list-style-type: none"> a. Any concerns and complaints of the local community, aspects of non-compliance and remedial actions or proposals; b. Plant performance, including an overview of the most recent quarterly and annual compliance monitoring and receiving environment assessment reports; c. Any investigations and works at the plant and about any future proposals for the plant; and d. Updates on Issues that have been resolved. 	1	
48	<p>All complaints received by the Consent Holder about the discharges shall be logged immediately. The information shall include:</p> <ul style="list-style-type: none"> a. The date, time, location and nature of the complaint; b. Name, phone number and address of the complainant unless the complainant wishes to remain anonymous; c. Action taken by WSL to remedy the problem; d. Any equipment failure and remedial action taken; e. The weather conditions at the time of the complaint including estimates of wind direction, wind strength, temperature and cloud cover; and f. The date and name of the person making the entry. Details of any complaints received that affect the Consent Holder's ability to comply with the conditions of consent shall be provided to the Auckland Council within 24 hours of receipt of the complaint(s) or on the next working day. All other complaints shall be provided in the Annual Report required by the conditions of this consent. 	1	

Appendix B. Effluent Quality Data

Appendix B1. Flows and Rainfall

Table B1. Monthly Discharge Volumes and Rainfall (1 July 2024 – 30 June 2025).

Date	Effluent Volume (m ³)	Rainfall (mm)
1/07/2024	3315	8.59
2/07/2024	3315	5.06
3/07/2024	2773	1.01
4/07/2024	3501	0
5/07/2024	3501	0
6/07/2024	3470	1.52
7/07/2024	3358	1.01
8/07/2024	2411	0.5
9/07/2024	2007	0
10/07/2024	2036	0
11/07/2024	2108	0.51
12/07/2024	2108	0
13/07/2024	2093	0
14/07/2024	2042	0
15/07/2024	2042	10.22
16/07/2024	1993	2.55
17/07/2024	2017	3.58
18/07/2024	2110	0
19/07/2024	2110	13.79
20/07/2024	2070	12.26
21/07/2024	2089	4.09
22/07/2024	2723	7.66
23/07/2024	2723	4.6
24/07/2024	2427	2.04
25/07/2024	2427	1.02
26/07/2024	2494	0
27/07/2024	2579	0.51
28/07/2024	2579	0.51
29/07/2024	2505	17.37
30/07/2024	2519	11.75
31/07/2024	2519	19.9
1/08/2024	3004	13.31
2/08/2024	3069	0
3/08/2024	3476	0
4/08/2024	3476	0
5/08/2024	3362	0

Date	Effluent Volume (m ³)	Rainfall (mm)
6/08/2024	3350	0
7/08/2024	3339	0.51
8/08/2024	3544	0.51
9/08/2024	3544	3.06
10/08/2024	3463	0
11/08/2024	3358	0.51
12/08/2024	3274	1.54
13/08/2024	2927	0
14/08/2024	2772	0
15/08/2024	2691	0.51
16/08/2024	2393	0.51
17/08/2024	2430	22.47
18/08/2024	2430	10.22
19/08/2024	2629	4.6
20/08/2024	2888	1.02
21/08/2024	2888	1.02
22/08/2024	2625	0
23/08/2024	2717	0
24/08/2024	2717	4.6
25/08/2024	2628	0.51
26/08/2024	2600	0
27/08/2024	2600	9.71
28/08/2024	2482	1.02
29/08/2024	2643	11.75
30/08/2024	2643	0
31/08/2024	2457	1.53
1/09/2024	2558	25.03
2/09/2024	2558	0.51
3/09/2024	2762	1.54
4/09/2024	2762	0
5/09/2024	2610	0
6/09/2024	2581	2.55
7/09/2024	2303	0
8/09/2024	2221	4.6
9/09/2024	2323	0
10/09/2024	2382	0.51
11/09/2024	2617	2.5
12/09/2024	2852	0
13/09/2024	2852	0
14/09/2024	2605	20
15/09/2024	2570	3
16/09/2024	3041	10
17/09/2024	3298	5.5

Date	Effluent Volume (m ³)	Rainfall (mm)
18/09/2024	3298	0
19/09/2024	2418	3.5
20/09/2024	2825	25
21/09/2024	2852	1
22/09/2024	2979	0
23/09/2024	2979	0
24/09/2024	2480	3
25/09/2024	2480	0
26/09/2024	2219	0
27/09/2024	2662	2.5
28/09/2024	3029	0
29/09/2024	3060	0
30/09/2024	3060	0
1/10/2024	2933	0
2/10/2024	2572	17.62
3/10/2024	2509	14.88
4/10/2024	2389	0
5/10/2024	3082	4
6/10/2024	3082	26
7/10/2024	2624	5
8/10/2024	2609	0
9/10/2024	3409	3.5
10/10/2024	3409	2.5
11/10/2024	3190	0.5
12/10/2024	3111	0
13/10/2024	3032	12
14/10/2024	2969	4
15/10/2024	2851	1.5
16/10/2024	3085	0
17/10/2024	3085	0
18/10/2024	2840	0
19/10/2024	2747	0
20/10/2024	2651	0
21/10/2024	2575	0
22/10/2024	2529	2.5
23/10/2024	2465	0
24/10/2024	2308	0
25/10/2024	2266	0
26/10/2024	2167	5
27/10/2024	2038	1
28/10/2024	1977	2
29/10/2024	1998	4.5
30/10/2024	1998	5.5

Date	Effluent Volume (m ³)	Rainfall (mm)
31/10/2024	1972	1
1/11/2024	2061	0
2/11/2024	2061	7
3/11/2024	1959	0
4/11/2024	1905	0
5/11/2024	1943	0
6/11/2024	1943	0
7/11/2024	1853	0
8/11/2024	1766	0
9/11/2024	1721	0
10/11/2024	1686	1.5
11/11/2024	1673	7.5
12/11/2024	1615	0
13/11/2024	1573	1
14/11/2024	1573	1
15/11/2024	1529	41.5
16/11/2024	1577	0.5
17/11/2024	2448	0
18/11/2024	2574	0
19/11/2024	2574	0
20/11/2024	2155	2.5
21/11/2024	2265	4
22/11/2024	2265	0
23/11/2024	2210	0.5
24/11/2024	2210	0
25/11/2024	2168	0
26/11/2024	2023	0
27/11/2024	1986	0
28/11/2024	1920	7.5
29/11/2024	1837	0
30/11/2024	1837	13
1/12/2024	1796	6.71
2/12/2024	1760	0
3/12/2024	2014	0
4/12/2024	2014	0
5/12/2024	1296	0
6/12/2024	1296	0
7/12/2024	0	0
8/12/2024	0	1.03
9/12/2024	0	6.19
10/12/2024	0	0
11/12/2024	0	1.04
12/12/2024	0	5.15

Date	Effluent Volume (m ³)	Rainfall (mm)
13/12/2024	0	2.07
14/12/2024	0	0
15/12/2024	0	0
16/12/2024	0	4.12
17/12/2024	0	0
18/12/2024	0	0
19/12/2024	0	0
20/12/2024	0	0
21/12/2024	0	21.67
22/12/2024	0	1.55
23/12/2024	0	9.8
24/12/2024	0	0
25/12/2024	0	2.07
26/12/2024	0	5.67
27/12/2024	0	0
28/12/2024	0	0
29/12/2024	0	0
30/12/2024	0	0.52
31/12/2024	0	0.51
1/01/2025	0	0
2/01/2025	0	0
3/01/2025	0	5.68
4/01/2025	0	14.44
5/01/2025	0	3.1
6/01/2025	0	0
7/01/2025	0	0
8/01/2025	0	0
9/01/2025	0	0
10/01/2025	0	0
11/01/2025	0	0
12/01/2025	0	0
13/01/2025	0	0
14/01/2025	0	0
15/01/2025	0	0
16/01/2025	0	0
17/01/2025	1	0
18/01/2025	1	0
19/01/2025	0	0
20/01/2025	0	4.64
21/01/2025	0	4.13
22/01/2025	0	2.5
23/01/2025	0	0
24/01/2025	1	0

Date	Effluent Volume (m ³)	Rainfall (mm)
25/01/2025	401	4.5
26/01/2025	1313	17
27/01/2025	1327	1.5
28/01/2025	1791	0
29/01/2025	1875	0
30/01/2025	1875	0
31/01/2025	1693	0.5
1/02/2025	1641	0
2/02/2025	1621	0
3/02/2025	1579	0
4/02/2025	1528	0
5/02/2025	1505	0
6/02/2025	1454	0
7/02/2025	1451	0
8/02/2025	1410	0
9/02/2025	1351	0
10/02/2025	1322	0
11/02/2025	1281	0
12/02/2025	1281	0
13/02/2025	1443	0
14/02/2025	1443	2.5
15/02/2025	1342	0.5
16/02/2025	1399	0
17/02/2025	1511	0
18/02/2025	1511	2
19/02/2025	1456	0
20/02/2025	1440	2
21/02/2025	1440	0
22/02/2025	1459	0
23/02/2025	1496	0
24/02/2025	1496	0
25/02/2025	1412	0
26/02/2025	1355	0
27/02/2025	1336	0
28/02/2025	1295	0
1/03/2025	1266	0
2/03/2025	1251	0
3/03/2025	1221	0
4/03/2025	1238	14.5
5/03/2025	1238	0
6/03/2025	1298	0
7/03/2025	1627	0
8/03/2025	1627	0

Date	Effluent Volume (m ³)	Rainfall (mm)
9/03/2025	1445	0
10/03/2025	1394	0
11/03/2025	1383	0
12/03/2025	1305	1.5
13/03/2025	1258	0.5
14/03/2025	1252	0
15/03/2025	1238	0
16/03/2025	1286	0
17/03/2025	1290	8.5
18/03/2025	1309	8.5
19/03/2025	1353	14.5
20/03/2025	1688	0
21/03/2025	2795	0
22/03/2025	2795	0
23/03/2025	1968	0
24/03/2025	1652	0
25/03/2025	1188	0
26/03/2025	1385	0
27/03/2025	1385	0
28/03/2025	1528	0.5
29/03/2025	1528	0
30/03/2025	1430	0
31/03/2025	1419	0
1/04/2025	1383	0
2/04/2025	1323	0.51
3/04/2025	1337	13.79
4/04/2025	1337	66.33
5/04/2025	1441	0
6/04/2025	3479	2.56
7/04/2025	3661	1.53
8/04/2025	3661	9.69
9/04/2025	3591	0.51
10/04/2025	3356	0
11/04/2025	3356	0
12/04/2025	3212	0
13/04/2025	2994	0
14/04/2025	2254	0
15/04/2025	2416	0
16/04/2025	2416	0.52
17/04/2025	2386	6.12
18/04/2025	2386	2.04
19/04/2025	1744	53.08
20/04/2025	2306	21.94

Date	Effluent Volume (m ³)	Rainfall (mm)
21/04/2025	3730	1.54
22/04/2025	3730	3.06
23/04/2025	3622	0.51
24/04/2025	3583	0
25/04/2025	3438	0
26/04/2025	3384	0
27/04/2025	3355	10.72
28/04/2025	3323	15.31
29/04/2025	3310	2.04
30/04/2025	3508	6.56
1/05/2025	3508	12.5
2/05/2025	3326	5
3/05/2025	3265	0
4/05/2025	3547	0
5/05/2025	3547	0
6/05/2025	3468	0
7/05/2025	3347	0
8/05/2025	3267	2
9/05/2025	3256	28.5
10/05/2025	3189	0
11/05/2025	3227	0
12/05/2025	3359	0
13/05/2025	3359	1.5
14/05/2025	3188	1
15/05/2025	3122	0
16/05/2025	2974	0
17/05/2025	2388	0
18/05/2025	2501	6
19/05/2025	2501	0
20/05/2025	2291	0
21/05/2025	2227	0
22/05/2025	2122	0
23/05/2025	2155	1
24/05/2025	2202	0.5
25/05/2025	2202	0
26/05/2025	2153	21.5
27/05/2025	2153	3.5
28/05/2025	1752	13
29/05/2025	3049	5.5
30/05/2025	3049	2.5
31/05/2025	2941	2
1/06/2025	2941	0.5
2/06/2025	2861	0.5

Date	Effluent Volume (m ³)	Rainfall (mm)
3/06/2025	2666	0
4/06/2025	2453	31.5
5/06/2025	2320	2.5
6/06/2025	2477	24
7/06/2025	3263	8.5
8/06/2025	3299	5.28
9/06/2025	3299	10.72
10/06/2025	2554	41.5
11/06/2025	2566	0.5
12/06/2025	3409	32.5
13/06/2025	3502	11
14/06/2025	3522	9.5
15/06/2025	3579	1
16/06/2025	3716	0
17/06/2025	3716	0
18/06/2025	3645	0
19/06/2025	3598	18
20/06/2025	3551	3
21/06/2025	3551	0.5
22/06/2025	3673	0.5
23/06/2025	3673	0
24/06/2025	3634	0.5
25/06/2025	3621	0
26/06/2025	3561	0.5
27/06/2025	3561	44.5
28/06/2025	3554	11.5
29/06/2025	3804	3
30/06/2025	3804	0.5

Appendix B2. Effluent Quality Parameters

Table B2. Effluent quality results at Waiuku WWTP (1 July 2024 – 30 June 2025).

Date	DO (mg/L)	pH (SU)	T (°C)	cBOD5 (mg/L)	TSS (mg/L)	NHX-N (mg/L)	Enterococci (cfu/100mL)	FC (cfu/10 0mL)	TIN (mg/L)	TP (mg/L)	DRP (mg/L)
3/07/2024	NA	7.2	NA	3.3	35	14.5	1.6	1.6	25	4.29	3.95
17/07/2024	NA	7.1	NA	2.7	12	9.94	1.6	1.6	24	4.92	3.73
7/08/2024	NA	7.3	NA	7.8	25	12.9	1.6	1.6	23	4.41	3.4
21/08/2024	NA	7.1	NA	4.2	30	7.82	1.7	1.7	22	4.67	3.37
26/08/2024	1.4	NA	17.3	NA	NA	NA	NA	NA	NA	NA	NA

2/09/2024	2.1	NA	21.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
4/09/2024	NA	7.5	NA	5.7	32	6.6	1.7	1.6	21	3.76	3.76	
18/09/2024	NA	7.1	NA	5.5	28	7.7	1.6	1.6	22	3.8	3.28	
23/09/2024	4.08	NA	19	NA	NA	NA	NA	NA	NA	NA	NA	
2/10/2024	4.61	7.3	18.1	2.2	17	13	1.6	1.6	22	4.14	4.17	
14/10/2024	4.52	NA	17.7	NA	NA	NA	NA	NA	NA	NA	NA	
16/10/2024	NA	7.5	NA	4	19	13	1.6	1.6	24	4.42	0.02	
25/10/2024	4.13	NA	19.1	NA	NA	NA	NA	NA	NA	NA	NA	
4/11/2024	3.59	NA	19.8	NA	NA	NA	NA	NA	NA	NA	NA	
6/11/2024	NA	7	NA	4.6	23	0.89	1.6	1.6	19	5.08	4.05	
18/11/2024	5.83	NA	20.8	NA	NA	NA	NA	NA	NA	NA	NA	
20/11/2024	NA	7.8	NA	6.4	40.8	0.11	1.6	1.6	17	3.97	3.31	
4/12/2024	NA	7.1	NA	4.7	41.4	0.065	1.6	1.6	19	4.19	3.83	
5/12/2024	6.46	NA	22.8	NA	NA	NA	NA	NA	NA	NA	NA	
9/12/2024	4.69	NA	21.9	NA	NA	NA	NA	NA	NA	NA	NA	
18/12/2024	NA	7.3	NA	3.9	21.8	0.091	1.6	1.6	14	4.41	3.81	
20/12/2024	5.38	NA	22.5	NA	NA	NA	NA	NA	NA	NA	NA	
23/12/2024	6.51	NA	24.2	NA	NA	NA	NA	NA	NA	NA	NA	
6/01/2025	6.6	NA	21.9	NA	NA	NA	NA	NA	NA	NA	NA	
8/01/2025	NA	7.6	NA	3.8	27.8	0.093	1.6	1.6	6.1	4.88	4.26	
15/01/2025	NA	7.8	NA	2.5	13	0.1	1.6	1.6	3.5	4.58	4.54	
17/01/2025	6.01	NA	24.4	NA	NA	NA	NA	NA	NA	NA	NA	
24/01/2025	6.59	NA	23.2	NA	NA	NA	NA	NA	NA	NA	NA	
5/02/2025	NA	7.8	NA	1.7	16	0.1	1.6	1.6	3.9	5.97	4.23	
19/02/2025	NA	7.6	NA	1.4	16	0.16	1.6	1.6	5.5	4.55	4.57	
20/02/2025	5.54	NA	24.1	NA	NA	NA	NA	NA	NA	NA	NA	
5/03/2025	NA	7.6	NA	1.8	10	0.063	1.6	1.6	7.4	4.88	4.13	
7/03/2025	6.01	NA	23.7	NA	NA	NA	NA	NA	NA	NA	NA	
14/03/2025	3.68	NA	20.7	NA	NA	NA	NA	NA	NA	NA	NA	
19/03/2025	NA	7.5	NA	2.6	21	0.36	1.6	4.9	6.6	5.99	4.88	
21/03/2025	4.31	NA	23.7	NA	NA	NA	NA	NA	NA	NA	NA	
28/03/2025	4.28	NA	22.2	NA	NA	NA	NA	NA	NA	NA	NA	
2/04/2025	NA	7.6	NA	3.9	19	0.23	1.6	1.6	4	6.55	5.31	
16/04/2025	6.01	7.4	22	3.4	15	0.19	1.6	1.6	8.1	5.61	4.78	
7/05/2025	NA	7.3	NA	3.2	15	1.9	1.7	1.7	8.9	4.74	4.34	
21/05/2025	NA	7.3	NA	3.3	4.6	3.7	1.7	5	10	4.03	4.18	
27/05/2025	5.69	NA	20	NA	NA	NA	NA	NA	NA	NA	NA	
4/06/2025	NA	7.3	NA	1.8	10	4.1	1.6	1.6	13	4.74	4.17	
6/06/2025	4.7	NA	15.3	NA	NA	NA	NA	NA	NA	NA	NA	
14/06/2025	4.1	NA	15.3	NA	NA	NA	NA	NA	NA	NA	NA	
15/06/2025	4.5	NA	14.4	NA	NA	NA	NA	NA	NA	NA	NA	
16/06/2025	4.4	NA	14.4	NA	NA	NA	NA	NA	NA	NA	NA	
18/06/2025	4.17	7.1	13.2	2.7	15	9.3	1.6	1.6	13	3.31	2.85	
23/06/2025	4.62	NA	13.2	NA	NA	NA	NA	NA	NA	NA	NA	

24/06/2025	4.55	NA	13	NA	NA	NA	NA	NA	NA	NA	NA
25/06/2025	4	NA	12.9	NA	NA	NA	NA	NA	NA	NA	NA
26/06/2025	4.4	NA	14	NA	NA	NA	NA	NA	NA	NA	NA
27/06/2025	4.51	NA	14.5	NA	NA	NA	NA	NA	NA	NA	NA
30/06/2025	4.41	NA	13.9	NA	NA	NA	NA	NA	NA	NA	NA

Table B3. Trace metals in Effluent Waiuku WWTP (1 July 2024 – 30 June 2025).

Entry Date	Metal	Description	Unit	Result
12/02/2025	Mercury	Mercury (Total)	mg/L	0.00005
12/02/2025	Chromium	Chromium (Dissolved)	mg/L	0.0005
12/02/2025	Lead	Lead (Total)	mg/L	0.0001
12/02/2025	Copper	Copper (Total)	mg/L	0.0021
12/02/2025	Zinc	Zinc (Total)	mg/L	0.0027
12/02/2025	Arsenic	Arsenic (Total)	mg/L	0.0024
12/02/2025	Chromium	Chromium (Total)	mg/L	0.0005
12/02/2025	Zinc	Zinc (Dissolved)	mg/L	0.001
12/02/2025	Arsenic	Arsenic (Dissolved)	mg/L	0.0022
12/02/2025	Copper	Copper (Dissolved)	mg/L	0.0014
12/02/2025	Mercury	Mercury (Total)	mg/L	0.00005
12/02/2025	Nickel	Nickel (Total)	mg/L	0.00083
12/02/2025	Lead	Lead (Total)	mg/L	0.0001
12/02/2025	Lead	Lead (Dissolved)	mg/L	0.0001
12/02/2025	Cadmium	Cadmium (Total)	mg/L	0.00005
12/02/2025	Nickel	Nickel (Dissolved)	mg/L	0.00066
12/02/2025	Nickel	Nickel (Total)	mg/L	0.00012
12/02/2025	Chromium	Chromium (Total)	mg/L	0.0005
12/02/2025	Zinc	Zinc (Total)	mg/L	0.0054
12/02/2025	Cadmium	Cadmium (Total)	mg/L	0.00005
12/02/2025	Cadmium	Cadmium (Dissolved)	mg/L	0.00005
12/02/2025	Copper	Copper (Total)	mg/L	0.00043
12/02/2025	Mercury	Mercury (Dissolved)	mg/L	0.00005
12/02/2025	Arsenic	Arsenic (Dissolved)	mg/L	0.0024

Appendix C. Data Source

Table C-1: Download location of environmental monitoring data used in this report

Category	Parameter	Source platform	Tag/ID or Form
Effluent volume	Daily effluent discharge	Pi	DTCBO_52_FT_1001_FM_VOL_DAY
Environmental – External	Rainfall	Auckland Council Environmental Data Portal	Location – Waitangi @ Diver Road
Effluent quality	cBOD ₅	Pi	DTCBO_48_13_S4UVE_CBOD5
Effluent quality	TSS	Pi	DTCBO_48_13_S4UVE_TSS
Effluent quality	NH ₄ -N (Ammoniacal N)	Pi	DTCBO_48_13_S4UVE_NH4N
Effluent quality	TIN (NO _x + NH ₄ -N)	Pi	DTCBO_48_13_S4UVE_TIN
Effluent quality	TN	Pi	DTCBO_48_13_S4UVE_TN
Effluent quality	TP	Pi	DTCBO_48_13_S4UVE_TP
Effluent quality	Faecal coliforms	Pi	DTCBO_48_13_S4UVE_FC
Effluent quality	DO (Dissolved oxygen)	Infrastructure Data – Field Data Form	DTCBO Field data
Effluent quality	pH	Infrastructure Data – Field Data Form	DTCBO Field data
Effluent quality	Temperature	Infrastructure Data – Field Data Form	DTCBO Field data

Appendix D. Incident Report

Appendix E. Oyster Quality Report