



Clarks Beach Wastewater Treatment Plant 2024-2025 Annual Report

Final - September 2025

Watercare 


QUALITY INFORMATION

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REVISION HISTORY

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CONSENT CHANGE AND MONITORING HISTORY

Change Type	Description	Effective Date	Reference / Condition	Reporting / Monitoring Implications
Consent Issuance	R/REG/2015/4227-A (CST60083001-A) issued by Auckland Council for treated wastewater discharge to Manukau Harbour. Includes effluent quality limits (Condition 18), flow limits (Condition 16), and monitoring/reporting requirements.	15 June 2016	Consent R/REG/2015/4227-A	Established core performance parameters (BOD ₅ , TSS, NH ₄ -N, TIN, faecal coliforms) with median and 92 nd ile limits. Required weekly sampling and annual reporting.
Monitoring Plan	Clarks Beach WWTP Management Plan prepared and approved, outlining procedures for effluent sampling, monitoring locations, reporting, and roles/responsibilities.	March 2020 (Rev 1 issued)	Management Plan (Condition 12)	Established operational procedures for sampling frequency, QA/QC, contractor responsibilities, and data reporting workflows. No REMP was required under the consent.
Decommissioning	Gravel bed closed and sand filters decommissioned in late 2024 as part of the upgrade works. A temporary ultrafiltration unit was installed to maintain treatment levels while the new MABR system is prepared.	November 2024	Not specified (operational change)	Changed the final treatment pathway, shifting nutrient polishing from gravel/sand filtration to ultrafiltration. No change in monitoring design but prompted close performance tracking.
Upgrade Works Begin	A temporary MABR unit was installed to maintain treatment performance during the winter 2025. Upgrade to Clarks Beach WWTP initiated, including new tanks, electrical systems, and temporary treatment units. Aim is to	2024–2025 construction year	Watercare delivery team	Upgrade supports growth in Clarks Beach and Glenbrook Beach. No new monitoring yet but works flagged in reporting due to potential performance variability.

Change Type	Description	Effective Date	Reference / Condition	Reporting / Monitoring Implications
	significantly improve effluent quality and reliability.			
New Outfall Construction	Outfall pipeline construction began, involving 100 m HDPE pipe tunnelled into Waiuku Channel.	May 2026 (TBM launch)	Outfall consent (2018); Condition 16–18	New discharge location to enable higher-capacity, better-dispersed treated wastewater release. Expected to replace current outfall by June 2026.

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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
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 presents the performance of the Clarks Beach Wastewater Treatment Plant (WWTP) for the 2024–2025 reporting year. While routine treated effluent discharges remained within consented limits, two emergency bypass events during winter 2025 released a combined total of approximately 6,700 m³ of partially treated wastewater. These events exceeded the maximum daily discharge volume under Condition 16 and breached effluent quality limits. They were caused by extreme rainfall and highlight the plant’s vulnerability under high inflow conditions.

The plant discharged an annual average of approximately 595 m³/day of treated effluent, with a maximum daily flow of 1,350 m³/day. These values remained well below the 2,500 m³/day consent limit. Routine monitoring showed full compliance under Condition 18 when assessed on an annual basis, although Total Inorganic Nitrogen (TIN) exceeded the 20 mg/L limit during several months (August to December 2024), and faecal coliforms exceeded the 92nd percentile limit. However, both parameters remained compliant under Condition 18b, which allows a limited frequency of exceedances.

Environmental monitoring at Clarks Beach and Waiau Beach confirmed that enterococci levels remained below recreational guideline values (less than 200 cfu/100 mL) and returned to background within 1 to 3 days. Elevated suspended solids persisted slightly longer and were the most notable observed effect.

Slight upward trends in TIN and Total Nitrogen (TN) highlight the limits of pond-based nitrogen removal as inflows increase. Dissolved oxygen levels showed a positive upward trend, indicating improved aeration efficiency. pH values remained within acceptable ranges.

Upgrades currently underway include expansion of the plant to a capacity of 5,200 m³/day and construction of a new outfall into the Waiuku Channel. These are scheduled for hot commissioning in February 2026. The works will provide greater treatment resilience, reduce the likelihood of bypass events, and ensure the plant can continue to meet consent requirements while supporting the needs of a growing community and protecting the Manukau Harbour.

1 INTRODUCTION

The Clarks Beach Wastewater Treatment Plant (WWTP) discharges treated wastewater into the Manukau Harbour under coastal permit R/REG/2015/4227-A. This report documents Watercare's compliance with that permit for the period 1 July 2024 to 30 June 2025, including results from effluent quality monitoring, flow volumes, incidents, and operational updates.

1.1 Resource consents and management plans

Discharges and operations at the WWTP are currently authorised under five active consents issued by Auckland Council (Table 2-1). These include consents for treated wastewater discharge, temporary construction discharges, coastal occupation, stormwater discharges, and air discharges.

The WWTP operates under a Watercare WWTP Management Plan (Rev. 1, 2020) and a Discharge to Coastal, Bulk Outfall (DTCBO) document, both of which outline the operational and environmental controls associated with the treatment system and its planned upgrades.

Table 2-1 Clarks Beach WWTP Management Plans

Consent Number	Description	Expiry Date
DIS60221613	Discharge of treated wastewater to the Waiuku Channel	30 Aug 2038
DIS60069647	Temporary discharge to land (construction dewatering)	27 Feb 2027
CST60221618	Occupation of coastal marine area (outfall structure)	30 Aug 2053
DIS60069649	Discharge of stormwater to land	27 Feb 2033
DIS60069648	Discharge of odour to air	27 Feb 2033

1.2 WWTP description

The WWTP is located on designated land adjacent to the Clarks Beach Golf Club, opposite 97 Stella Drive, Clarks Beach. The plant originally consisted of an inlet screen, oxidation pond, two subsurface-flow rock filters, three sand filter beds, and a 16-lamp UV disinfection unit.

During the reporting year (July 2024 – June 2025), significant changes were made to the treatment process as part of planned upgrades:

- Subsurface gravel beds and sand filters were decommissioned in November 2024 to enable the construction of new infrastructure.
- A temporary ultrafiltration (UF) unit was installed and began operating in November 2024, providing an interim tertiary treatment solution.
- In autumn 2025, a winter Membrane Aerated Biofilm Reactor (MABR) was introduced to improve treatment performance during colder months, particularly for nitrogen removal.

The WWTP also includes a side-stream Membrane Bioreactor (MBR) system, which processes up to ~200 m³/day of screened influent. The MBR-treated stream is blended with flows processed through the oxidation pond and temporary UF system before undergoing UV disinfection.

Treated effluent exits the plant via a maintenance manhole on the golf course, flowing through a stormwater drain into a constructed wetland system. From there, it enters a series of irrigation reservoirs before being discharged to the lower Waiuku River via the existing outfall.

These interim configurations will remain in place until commissioning of the upgraded WWTP and new marine outfall, scheduled for completion in mid-2026.

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 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 Methods-data and statistical analysis

2.2.1 Data collation and quality assurance

All operational and compliance monitoring data were collated from Watercare's Pi Historian system and laboratory records (IANZ-accredited). All environmental monitoring data and associated data IDs/tags used in this report are listed in Appendix C (Table C-1).

Daily flow and rainfall data were cross-checked against plant log sheets to verify completeness. Laboratory results were reviewed for quality flags, detection limits, and chain-of-custody consistency. Outliers were assessed against operational context (e.g., rainfall events, maintenance activities) and retained unless evidence indicated analytical or transcription error. Where values were below detection, half the detection limit was applied for statistical analyses, consistent with previous annual reporting practice.

2.2.2 Compliance assessment: effluent volumes

Condition 16 of the coastal permit (R/REG/2015/4227-A) limits the maximum daily discharge to 2,500 m³/day, plus incidental rainfall on the pond, rock filters, and sand filters. Flows are continuously recorded via flow meters at the plant outlet and stored in Pi Historian. Rainfall for Clarks Beach is referenced to the Waiuku WWTP rain gauge, which provides representative coverage for the area.

2.2.3 Compliance assessment: effluent quality

Compliance with consent conditions was assessed against the limits specified in Condition 18 (median and 92nd percentile for BOD₅, TSS, TIN, NH₄-N, and faecal coliforms). For each parameter:

- Median compliance: evaluated across 12 consecutive monthly samples, allowing up to six exceedances.
- 92nd percentile compliance: evaluated across 12 consecutive monthly samples, allowing up to one exceedance.

2.2.4 Statistical analyses

To evaluate long-term trends and seasonal patterns, the following non-parametric tests were applied:

- Mann–Kendall trend test: used to detect monotonic trends in effluent quality parameters over the 2020–2025 dataset. This test is robust to non-normal distributions and missing values.
- Sen’s slope estimator: applied alongside Mann–Kendall to quantify the rate of change where significant trends were detected.
- Kruskal–Wallis test: used to identify significant seasonal differences (winter, spring, summer, autumn) in effluent quality parameters. Seasonal grouping was based on meteorological definitions.

2.2.5 Data presentation

Results are presented as:

- Annual compliance summary tables (showing medians, 92nd percentiles, and compliance status).
- Time-series plots of effluent quality parameters to illustrate intra-annual variability and highlight any exceedances.
- Boxplots and trend plots where statistical tests identified significant trends or seasonal differences.

2.3 Effluent volumes

2.3.1 Reporting year results (2024–2025)

Figure 3-1 shows the daily treated effluent discharge volumes and rainfall between 1 July 2024 and 30 June 2025.

- **Routine treated effluent:** During the reporting year, the WWTP discharged a total of 217,299 m³ of treated effluent, with an average daily flow of 595 m³/day and a maximum daily flow of 1,350 m³/day. All routine daily values remained within the consented maximum discharge limit of 2,500 m³/day.
- **Nonroutine bypass discharges:** In addition to normal operations, two emergency bypass discharges occurred during winter 2025 under extreme wet weather inflow conditions:
 - 12–13 June 2025: ~1,500 m³ of partially treated wastewater bypassed filtration and UV disinfection.
 - 30–31 July 2025: ~5,200 m³ bypassed treatment — exceeding the 2,500 m³/day flow limit in Condition 16.

Together, these bypasses released approximately 6,700 m³ of partially treated wastewater to the Manukau Harbour. Because they exceeded consented flow and quality parameters, they are recorded as non-compliances.

- Compared with the previous year (2023–2024; total 268,273 m³, average 735 m³/day), routine treated effluent volumes decreased slightly.
- Peaks in routine discharge continued to coincide with rainfall events, particularly during August 2024 and June 2025, but all routine discharges stayed within consent thresholds.

Further details on the bypass events are provided in Section 3.4.2 and the Incident Report (Appendix D).

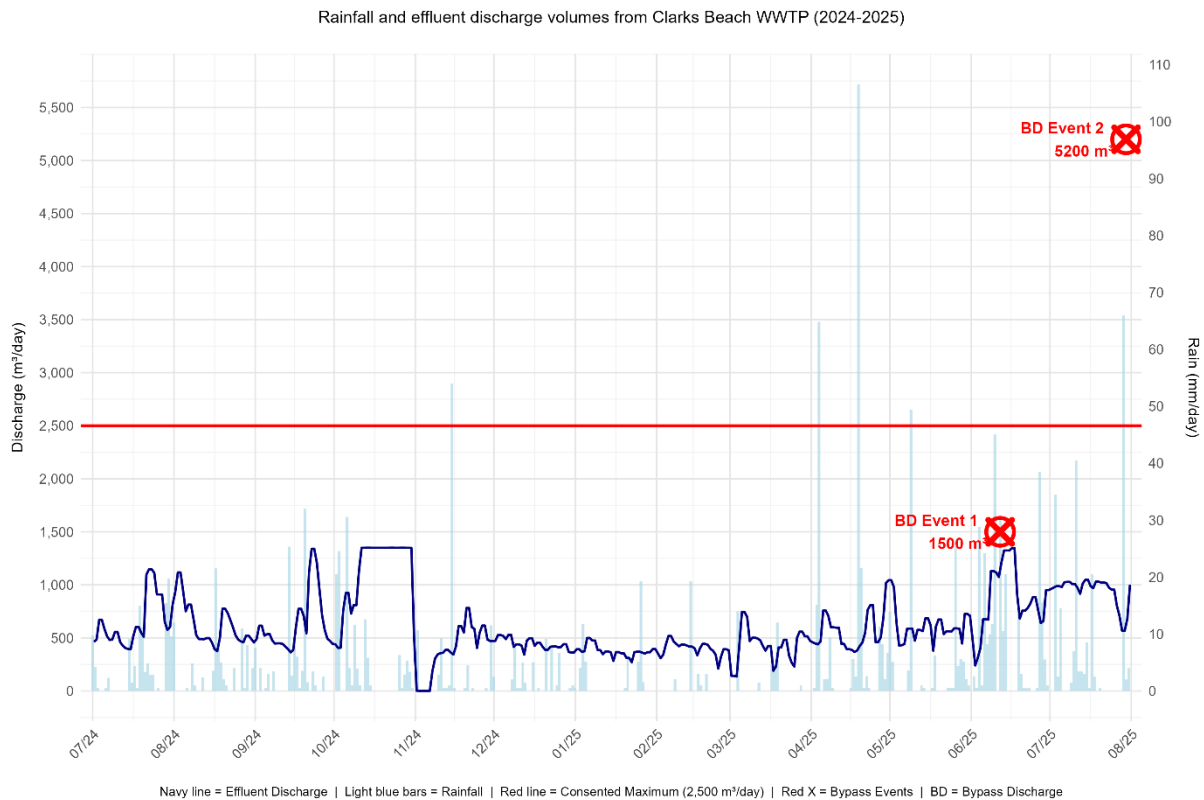


Figure 3-1: Rainfall and effluent volumes discharged from Clarks Beach WWTP outfall to Manukau Harbour (2024-2025).

2.3.2 Five-year context (2020–2025)

Long-term analyses illustrate the seasonal and inter-annual variability of discharge volumes.

- **Seasonality:** WWTP discharge data from the past five years show strong seasonality, closely linked to rainfall trends (Figure 3-3). Winter and early spring months (June–October) experience consistently higher discharge volumes, with monthly means ranging from approximately 475 to 600 m³/day, reflecting increased inflow and infiltration (I&I) during the wet season. In contrast, summer and early autumn (January–April) flows are lower, stabilising

around 350–430 m³/day. This seasonal discharge pattern closely mirrors the regional rainfall cycle (Figure 3-2), with peak rainfall also occurring between June and October.

- Inter-annual trend:** Over the five-year period from July 2020 to July 2025, average daily discharge volumes have shown a weak but increasing trend (Mann–Kendall Tau = 0.156; $p = 0.079$). Annual means have grown from approximately 450 m³/day in 2020–2021 to 595 m³/day in 2024–2025, with a peak of 735 m³/day recorded in 2023–2024. This trajectory reflects gradual growth in the Clarks Beach catchment but is only significant at a lower confidence interval ($p < 0.1$).
- Compliance:** Routine discharges have consistently remained well within the consented daily maximum of 2,500 m³/day. Across the five-year period, no routine exceedances of flow limits have occurred. However, occasional emergency bypass discharges were triggered during intense rainfall events; notably two instances in 2025 and similar wet-weather events in 2022–2023. These bypasses are managed in accordance with consent conditions and reported through incident logs and follow-up sampling.

Annual Rainfall Cycle - Polar Plot (2020-2025)
 Monthly means showing seasonal precipitation patterns

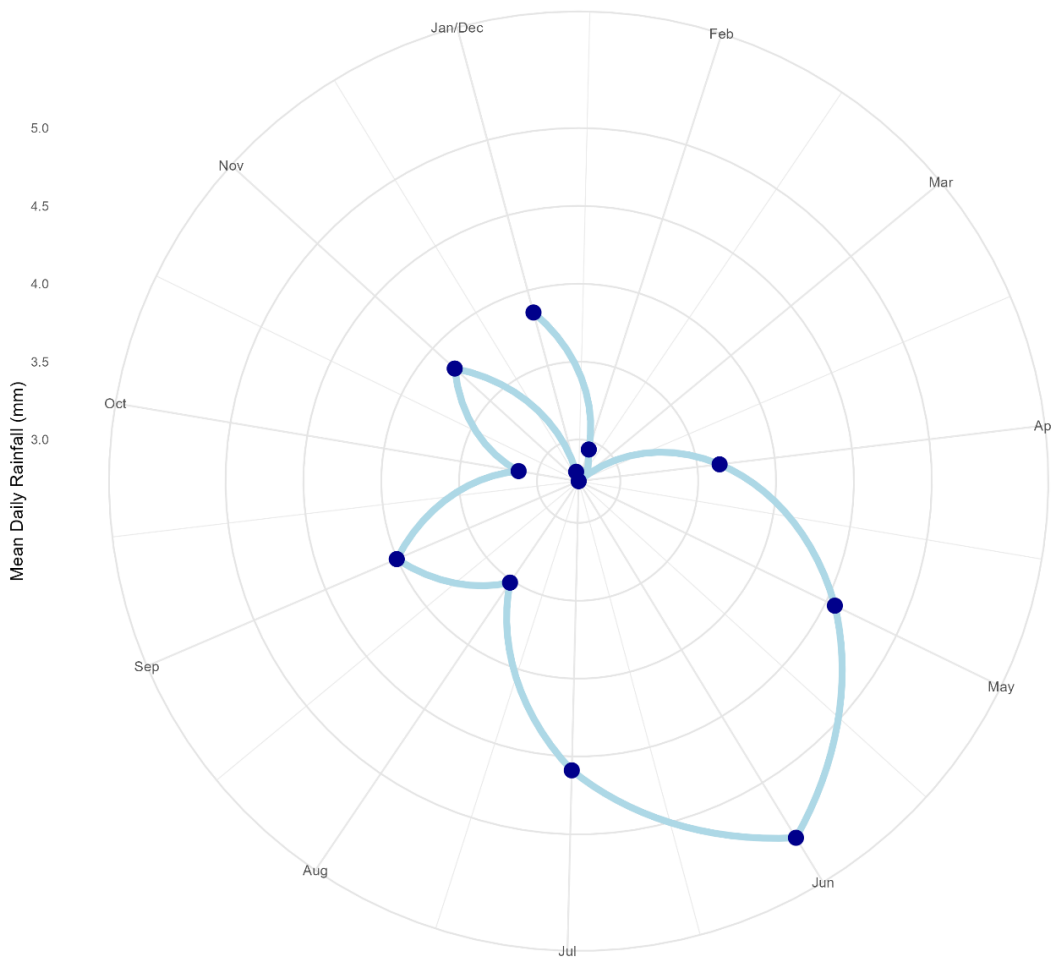


Figure 3-2: Five-year rainfall cycle (2020–2025) at Clarks Beach WWTP. Radial distance from the centre represents mean daily rainfall; outward peaks indicate wetter months; inward dips indicate drier months.

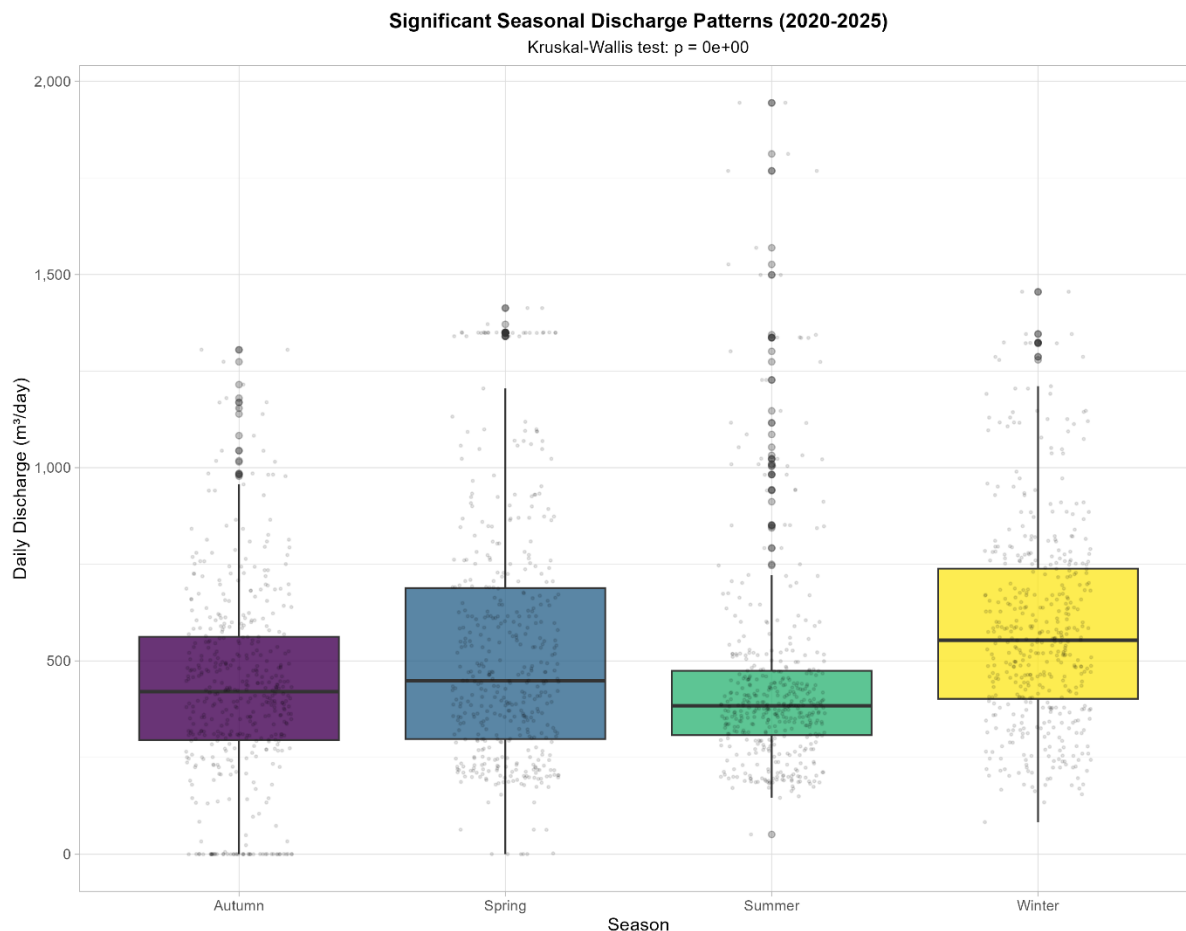


Figure 3-3 Seasonal variability in daily discharge volumes at Clarks Beach WWTP (2020–2025). Boxplots show median, quartiles, and outliers, indicating higher discharges in winter and spring, consistent with rainfall-driven inflows. Statistical testing (Kruskal–Wallis, $p < 0.001$) confirmed that seasonal differences in discharge volumes are significant.

2.4 Effluent quality

2.4.1 Compliance summary (2024–2025)

Tables 3-1 and 3-1A present the effluent quality results and compliance assessment.

Key findings:

- All consented parameters were compliant under Condition 18 and 18b.
- Faecal coliforms exceeded the 92nd percentile (Table 3-1) but remained compliant when assessed using the regulatory method (Table 3-1A), as exceedances were confined to June 2025.
- The TIN concentrations exceeded the 20 mg/L limit in several months (Aug–Dec 2024) but returned to compliant levels from January onward.

Table 3-1. Clarks Beach WWTP effluent quality results (1 July 2024 – 30 June 2025). Consent limits apply to median and 92nd percentile values as specified in Condition 18. Additional parameters are monitored for operational and environmental purposes only.

Parameter	n	Minimum	Average	Maximum	Median	Consented Median	Median Compliant	92 nd Percentile	Consented 92 nd Percentile	92 nd Percentile Compliant
BOD₅ (mg/L)	33	0.50	2.63	9.00	1.30	20.0	✓	6.89	45.0	✓
TSS (mg/L)	32	1.00	12.07	81.60	2.30	30.0	✓	46.38	90.0	✓
Ammoniacal nitrogen (mg/L)	33	0.034	4.80	32.00	0.24	10.0	✓	13.32	20.0	✓
Total inorganic nitrogen (mg/L)	33	3.90	12.79	34.0	11.0	20.0	✓	22.88	–	–
Faecal coliforms (cfu/100 mL)	32	1.6	29.50	660.0	1.6	14.0	✓	60.88	43.0	X ¹
Dissolved oxygen (mg/L)	31	2.59	5.95	9.88	6.05	–	No Limit	8.88	–	No Limit
pH	31	5.84	6.95	7.62	7.02	–	No Limit	7.37	–	No Limit
Temperature (°C)	31	13.6	18.83	23.8	18.3	–	No Limit	–	–	No Limit
Total nitrogen (mg/L)	33	5.10	15.24	40.0	13.0	–	No Limit	–	–	No Limit
Total phosphorus (mg/L)	26	0.034	0.31	3.68	0.071	–	No Limit	–	–	No Limit

¹ The calculated 92nd percentile exceeded the limit. However, under Condition 18b (allowable exceedance frequency), this is assessed as compliant because only one exceedance occurred within the 12-month period.

Table 3-1A. Monthly compliance with Condition 18b (Jul 2024 – Jun 2025). A tick (✓) indicates all samples in that month complied with the consent limit; a cross (X) indicates at least one exceedance of the consent limit. For TIN, only a median limit applies. For faecal coliforms, both median and 92nd percentile limits apply. Numbers within brackets indicate the compliant results proportion.

Month	BOD ₅ (20 / 45)	TSS (30 / 90)	NH ₄ -N (10 / 20)	TIN (20)	F. coliforms (14 / 43)
Jul-24	✓	✓	✓	✓	✓
Aug-24	✓	✓	✓	X	✓
Sep-24	✓	✓	✓	X	✓
Oct-24	✓	✓	✓	X	✓
Nov-24	✓	✓	✓	X	✓
Dec-24	✓	✓	X	X	✓
Jan-25	✓	✓	✓	✓	✓
Feb-25	✓	✓	✓	✓	✓
Mar-25	✓	✓	✓	✓	✓
Apr-25	✓	✓	✓	✓	✓
May-25	✓	✓	✓	✓	✓
Jun-25	✓	✓ (high but <90)	✓	✓	X

Note: Faecal coliform exceedances in June 2025 coincided with wet-weather bypasses. TIN exceeded its limit during colder months (Aug–Dec 2024) due to reduced bacterial activity. A single ammonia exceedance also occurred in December 2024; levels returned to normal as temperatures rose.

2.4.2 Concentration patterns (2024–2025)

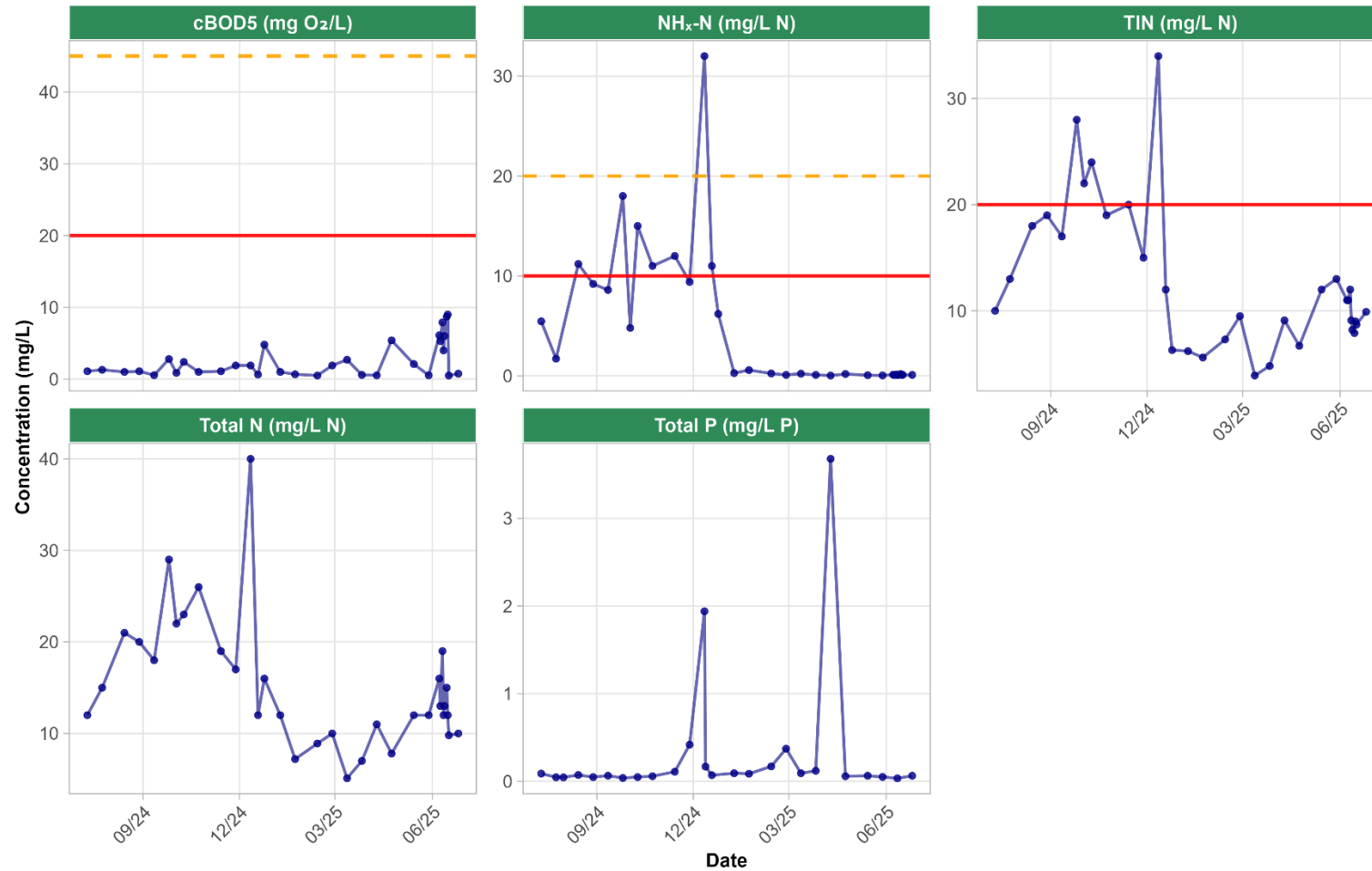
Figure 3-5a and 3-5b present time-series plots for key effluent quality parameters during the reporting year. These provide insight into short-term variability and seasonal responses beyond the statistical summaries in Table 3-1.

- BOD₅:** Concentrations were consistently low across the year, with most results near or below 2 mg/L. Occasional increases (up to 9 mg/L) were observed, but these remained well within consent limits and do not indicate any operational concern.
- TSS:** Results were typically <10 mg/L throughout the year, confirming effective solids removal. Elevated concentrations occurred in June 2025 (up to 82 mg/L), coinciding with wet-weather conditions and high inflows. These results remained below the 92nd percentile consent limit of 90 mg/L but highlight the system’s sensitivity under hydraulic stress.
- Ammoniacal nitrogen (NH₄-N):** Concentrations were low for most of the year (<1 mg/L), indicating effective nitrification. A cluster of elevated results was observed in late 2024, with one peak reaching 32 mg/L in December. Despite this spike, the 12-month median (0.24 mg/L) and 92nd percentile (13.32 mg/L) remained well within consent limits, consistent with temporary stress on the biological process during wetter month.

- **Total inorganic nitrogen (TIN):** Values were generally stable between 6–15 mg/L. Several higher results (20–34 mg/L) occurred in spring 2024, but the annual median (11.0 mg/L) remained compliant with the 20 mg/L limit.
- **Faecal coliforms:** Most results were at or near the detection limit (1.6 cfu/100 mL). Elevated concentrations occurred in June 2025 (25, 94, 120, 660 cfu/100 mL), coinciding with heavy rainfall and bypass events. These values lifted the calculated 92nd percentile above the consent threshold, but under Condition 18b compliance rules, this was confined to one month out of 12 and is therefore compliant.

Nutrient Parameters - Clarks Beach WWTP (2024-2025)

cBOD5, Nitrogen & Phosphorus Species with Consent Limits

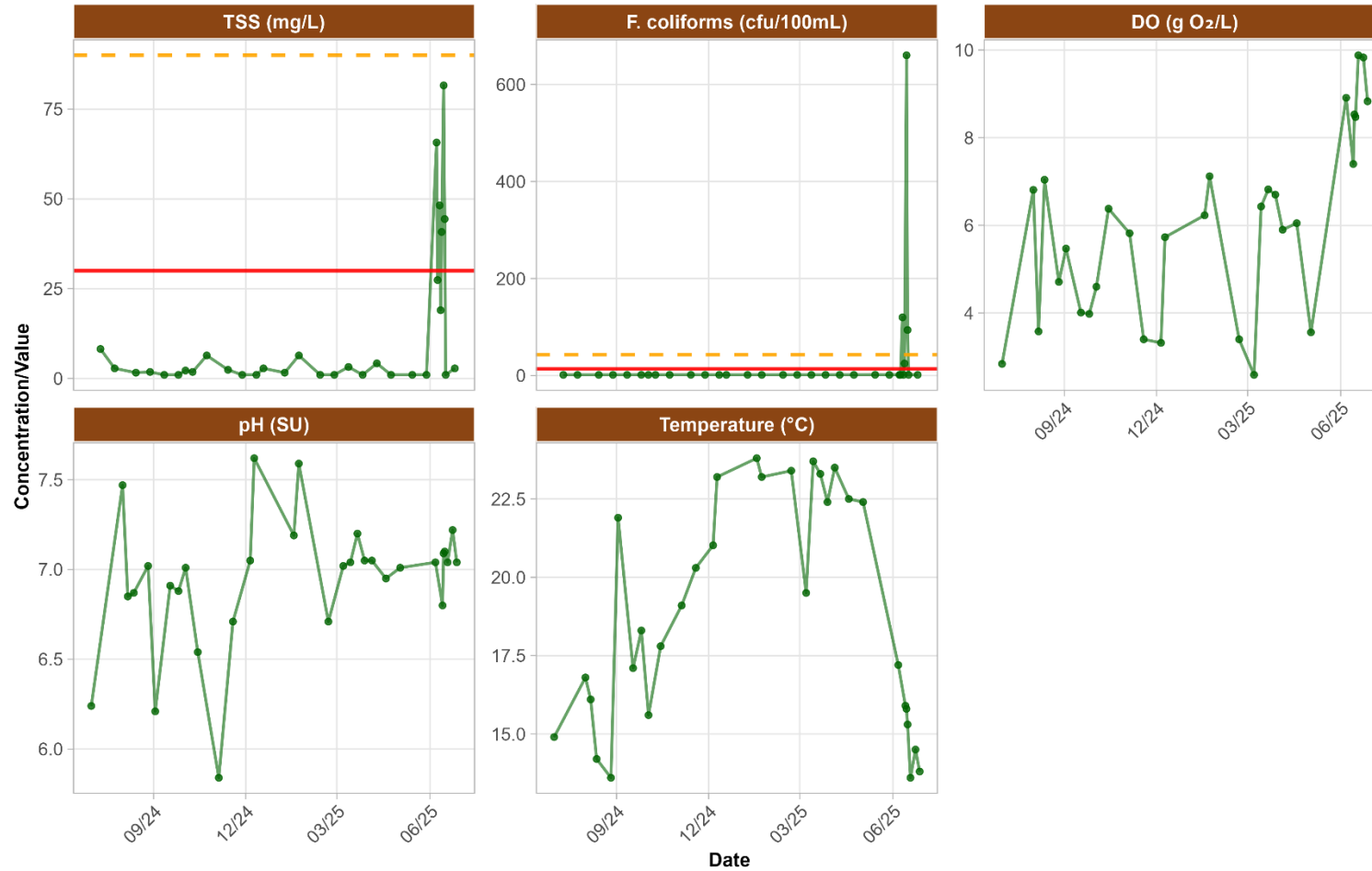


Red solid = Median limit | Orange dashed = 92nd percentile limit | Blue = Measured values

Figure 3-5a. Time-series plots of effluent nutrient parameters at Clarks Beach WWTP (2024–2025). Red lines indicate median limits and dash lines 92nd percentiles where applicable.

Physical & Microbiological Parameters - Clarks Beach WWTP (2024-2025)

TSS, F. coliforms, DO, pH & Temperature



Red solid = Median limit (TSS, F. coliforms only) | Orange dashed = 92nd percentile limit | Green = Measured values

Figure 3-5b. Time-series plots for effluent physical and microbiological parameters at Clarks Beach WWTP (2024–2025). Red lines indicate median limits and dash lines 92nd percentiles where applicable.

2.4.3 Five-year analyses (2020–2025)

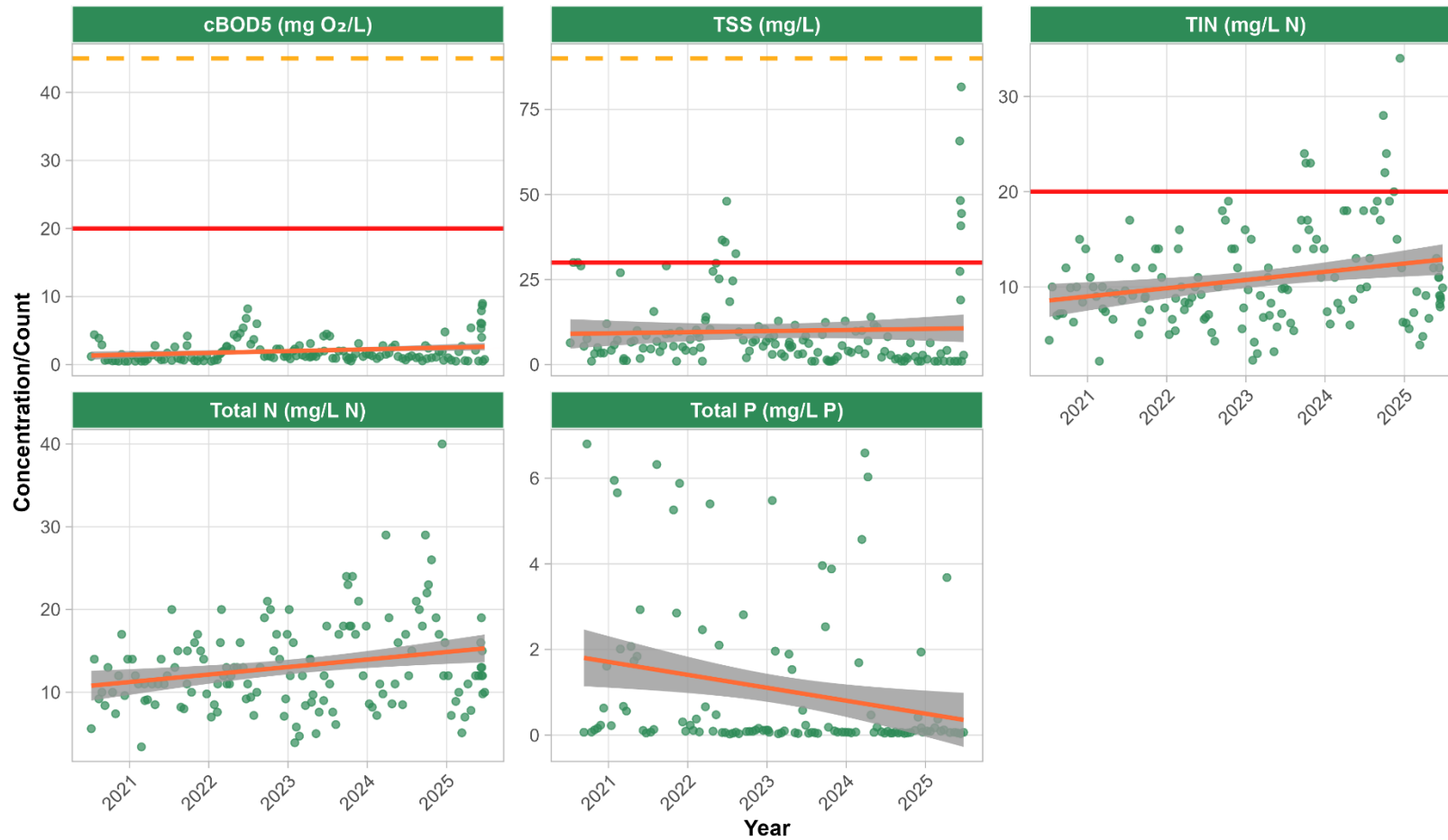
Long-term datasets provide context on how effluent quality has changed over the past five years. Figures 3-6 and 3-7 present only those parameters where statistically significant patterns were measured. Mann–Kendall trend tests (Figure 3-6) were applied to all monitored parameters to measure the significance of temporal changes (trends), and seasonal variability was assessed with Kruskal–Wallis tests (Figure 3-7). Only parameters with statistically significant changes ($p < 0.05$) are shown for both seasonal and temporal trend analyses.

Note: Dissolved oxygen (DO), temperature, and pH were excluded from the five-year analyses due to insufficient historical data; reliable records for these parameters have only been available since mid-2022.

- **cBOD₅:** A slight but statistically significant upward trend was observed, although concentrations remain very low (typically <5 mg/L) and well within consent limits. Seasonal analysis showed no meaningful differences, confirming consistently good organic matter removal.
- **TSS:** A significant downward trend was detected, indicating gradual improvement in solids removal efficiency over time. Seasonal differences were minor, with only slightly higher variability in winter months linked to wet-weather inflows.
- **Ammoniacal nitrogen (NH₄-N):** No significant trends were detected. Monthly compliance checks reveal that exceedances of the 20 mg/L limit are typically confined to the colder months (winter–spring), when microbial activity in the oxidation ponds is reduced. These seasonal exceedances were statistically confirmed (Kruskal–Wallis, $p < 0.05$), indicating the system’s sensitivity to temperature-driven variability.
- **Total inorganic nitrogen (TIN):** A modest but statistically significant upward trend was detected. Peaks (>25 mg/L) were more frequent in spring months. This pattern likely reflects the influence of bacterial nutrient removal, which is lower during colder months.
- **Total nitrogen (TN):** A slight but significant upward trend was also identified, consistent with the observations for TIN. Seasonal differences were less pronounced, but higher values in spring and early summer suggest incomplete nutrient removal during periods of higher loading.
- **Total phosphorus (TP):** Although not subject to consent conditions, TP showed a significant downward trend despite increases in mean discharge volumes. This is a positive outcome, as phosphorus is one of the main drivers of eutrophication in receiving waters. Seasonal variation was minimal, suggesting that TP variation in discharge is probably driven by operational activity rather than season factors.

Water Quality Parameters - Significant Trends (5-Year Analysis)

Parameters with Statistically Significant Temporal Trends ($p < 0.05$)

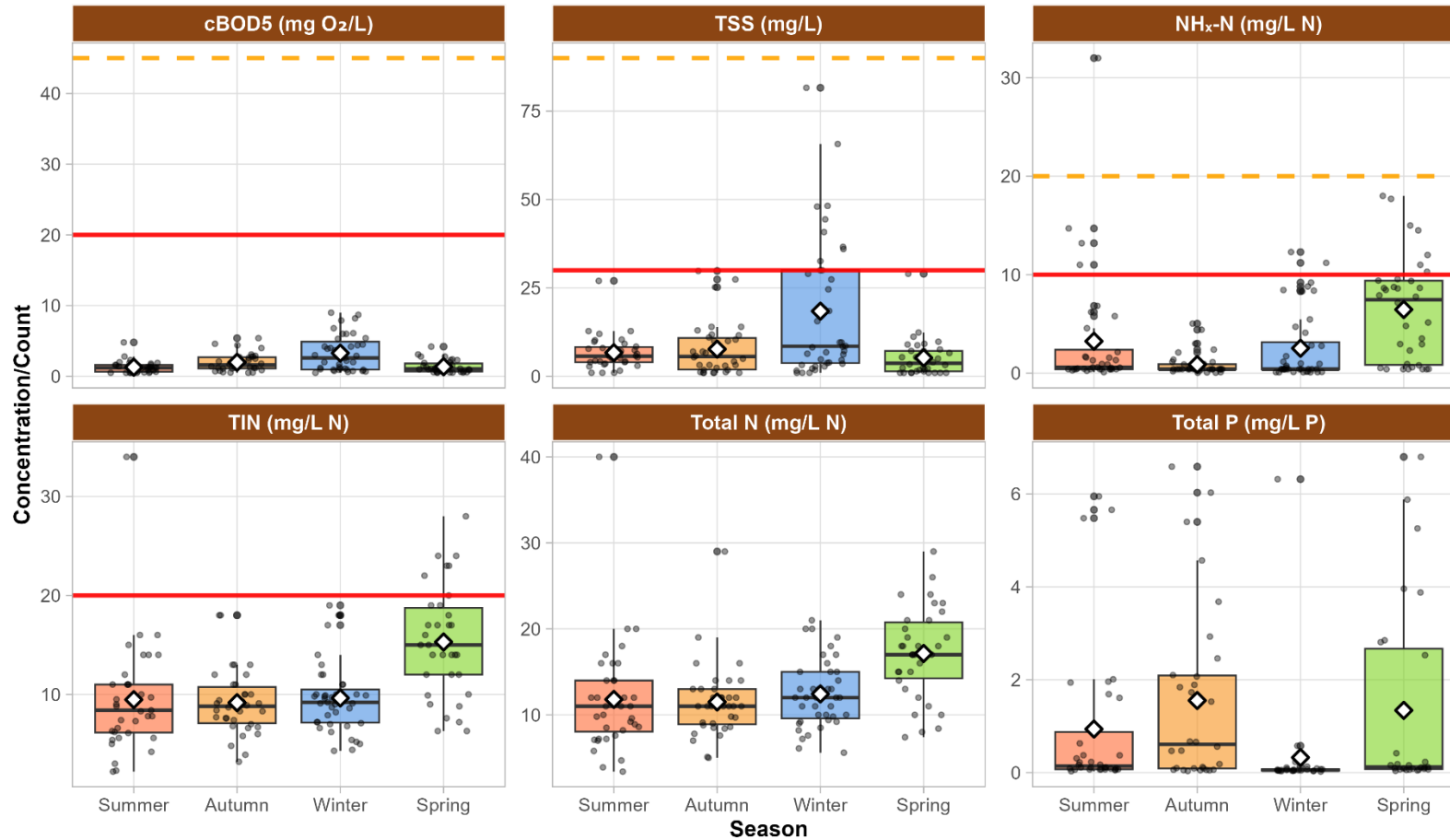


Red solid = Median limit | Orange dashed = 92nd percentile limit | Green = Measured values | Orange line = Trend

Figure 3-6. Significant long-term trends in effluent quality parameters at Clarks Beach WWTP (2020–2025). Results are based on Mann–Kendall trend tests; only parameters with statistically significant trends are shown.

Water Quality Parameters - Significant Seasonal Patterns (5-Year Analysis)

Parameters with Statistically Significant Seasonal Variation ($p < 0.05$)



Red solid = Median limit | Orange dashed = 92nd percentile limit | Diamonds = Seasonal means

Figure 3-7. Significant seasonal differences in effluent quality parameters at Clarks Beach WWTP (2020–2025). Boxplots illustrate parameters with significant seasonal variability (Kruskal–Wallis test, $p < 0.05$).

2.4.4 Summary

Effluent quality monitoring in 2024–2025 confirmed compliance with all consented limits. Faecal coliform and TIN concentrations exceeded limits during wet months but remained within the allowable exceedance frequency under Condition 18b. All other parameters remained compliant.

These patterns reflect the influence of seasonal temperature and inflow conditions on the oxidation pond's bacterial processes. Long-term trends show improving solids removal and stable organic matter treatment, but slight increases in nitrogen suggest growing pressure on treatment capacity, reinforcing the importance of the planned 2026 upgrade.

2.5 Complaints and incidents

2.5.1 Complaints

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

2.5.2 Incidents

Two emergency bypass discharges occurred during the 2024–2025 reporting period, both associated with extreme rainfall and high inflows to the Clarks Beach WWTP. These bypasses resulted in the release of partially treated wastewater to the Manukau Harbour and were classified as non-compliant events due to exceedance of multiple consent conditions.

- **12–13 June 2025 (Event 1):**

Approximately 1,500 m³ of partially treated wastewater was discharged over 6 hours and 45 minutes. The discharge bypassed the plant's filtration and UV disinfection stages. Analysis of final effluent samples showed exceedances of consent limits for:

- **Total suspended solids (TSS)** — exceeded the 30 mg/L limit
- **Total nitrogen (TN)** — marginally exceeded the 20 mg/L limit
- **Faecal coliforms** — exceeded the 14 cfu/100 mL limit by several orders of magnitude
- **Condition 18** (Discharge Quality Limits) was breached for the above parameters. While discharge volumes remained within the 2,500 m³/day flow limit (Condition 16), the bypass was still deemed non-compliant based on water quality.

- **30–31 July 2025 (Event 2):**

A second bypass occurred approximately six weeks later, discharging an estimated 5,200 m³ over 10 hours. This event also bypassed the filtration and UV treatment steps and coincided with high tide, which aided dilution. Consent breaches included:

- Discharge volume exceeded 2,500 m³/day, breaching Condition 16
- Faecal coliforms and cBOD₅ exceeded respective consent thresholds
- Condition 18 was again breached based on water quality exceedances
- Condition 1 may be considered breached due to the bypass operating outside the design specifications and treatment train described in the Management Plan.

In total, the two events discharged approximately 6,700 m³ of partially treated wastewater to the Manukau Harbour. Both incidents were reported to Auckland Council in accordance with consent requirements and are further detailed in the Incident Report (Appendix D).

Although bypasses are triggered under extreme conditions to protect the integrity of the WWTP, these incidents highlight the limitations of the current treatment system during wet-weather inflows. The planned upgrade to a 5,200 m³/day capacity with enhanced treatment is expected to eliminate the need for emergency bypasses and improve compliance under high-flow conditions.

3 UPGRADES AND FUTURE ACTIONS

The WWTP is currently undergoing a significant upgrade to ensure it can continue to meet consent conditions and accommodate population growth in the south-west Auckland region. This investment will support improved environmental outcomes for the Manukau Harbour and strengthen the long-term resilience of the network.

3.1 Treatment plant upgrade

The upgraded treatment plant will have the capacity to process up to 5,200 m³/day, more than tripling the current capacity of 1,600 m³/day. This expansion responds to forecasted growth in the Clarks Beach, Glenbrook Beach, Waiuku, and Kingseat communities. Current inflows average ~450 m³/day, but during extreme wet-weather events (e.g. January 2023), flows have reached over 2,000 m³/day.

As part of the upgrade, membrane-based treatment technologies (MABR and ultrafiltration) are being introduced to improve effluent quality and enhance nutrient removal, especially under variable flow conditions. This will increase reliability during colder months and wet-weather periods.

A temporary treatment unit was commissioned in June 2025 to maintain compliance while the main plant is under construction. The full upgraded facility is scheduled to be operational by mid-2026.

3.2 Outfall construction

A new harbour outfall pipeline is under construction, designed to discharge highly treated effluent approximately 100 m into the Waiuku Channel. This high-energy tidal environment allows for rapid dispersion and dilution. The outfall has been consented since 2018 and is designed to accommodate projected growth in the region.

The outfall is expected to be commissioned alongside the upgraded plant in mid-2026.

3.3 Future benefits and compliance implications

These upgrades are expected to:

- Improve treatment performance under high inflow conditions
- Reduce the likelihood of emergency bypass discharges
- Enhance nutrient removal during colder months
- Support continued compliance with discharge limits
- Enable the Clarks Beach WWTP to serve a population of ~6,000 in the near term, with flexibility for future staged expansions.

4 CONCLUSION

During the 2024–2025 reporting period, the WWTP consistently met its consent conditions under normal operating circumstances. Routine effluent volumes remained well below the 2,500 m³/day limit, and all monitored water quality parameters were compliant under Condition 18, including during seasonal fluctuations.

Non-compliances were limited to two emergency bypass discharges during extreme rainfall events in June and July 2025. While these incidents required the release of partially treated wastewater, they were promptly reported and managed in accordance with consent requirements.

Long-term data indicate that treatment performance has generally improved or remained stable for most parameters, particularly BOD₅, TSS, and TP. However, upward trends in nitrogen species (TIN, TN) point to the limits of pond-based nutrient removal under present day conditions.

The ongoing plant upgrade, including expanded treatment capacity, membrane aeration, and a new harbour outfall, will directly address these constraints. Once operational in mid-2026, the upgraded facility will significantly improve resilience to inflow peaks, reduce the likelihood of bypass events, and support continued compliance as the serviced population grows.

Appendix A. Assessment of Compliance

Table A-1 Assessment of Compliance with Consent Conditions – Clarks Beach Discharge to Water (#R/REG/2015/4228-A)

Condition Number	Consent Condition Clarks Beach Discharge to Water (#R/REG/2015/4227-A)	Compliance Rating	Comments
01	The discharges to the coastal environment, land or water, and air associated with the processing of wastewater at the Clarks Beach Wastewater Treatment Plan shall be carried out in accordance with the plans and all information submitted with the application, detailed below, and all referenced by the authorising agency as consent number R/REG/2015/4227, R/REG/2015/4228 and R/REG/2017/844 and as varied by CST60083001-A, DIS60084111-A, DIS60084200-A: Please refer to page 7/12 of the consent document for further details.	2	Two emergency bypass discharges occurred in June and July 2025 under high inflow conditions. As bypasses are not described in the submitted management plan or consented discharge route, these events are considered a technical non-compliance. Both were reported to Auckland Council and are further detailed in Section 3.4 and Appendix D.
02	Consent R/REG/2017/4227 for the coastal permit to discharge contaminants to the general coastal marine environment shall expire 10 years from the date it is granted unless it has been surrendered or been cancelled at an earlier date pursuant to the RMA.	1	Compliant.
05	The servants or agents of the Council shall be permitted to have access to the relevant parts of the WWTP and treated wastewater discharge facilities 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	Compliant.
06	The consent holder shall maintain a register of the authorised trade waste connections to the Clarks Beach WWTP, and shall provide a copy of the updated register with the Annual Report required by general condition 15.	N/A	We do not have any customers requiring Trade Waste Agreements in the Clarks Beach catchment. However, under the Auckland Council Trade Waste Bylaw 2013, we do not require 'low risk' customers such as cafes, takeaways, hairdressers etc to hold Trade Waste Agreements.
07	The conditions of these consents may be reviewed by the Council Manager pursuant to section 128 of the Act, by giving notice pursuant to section 129; Please refer to page 8/12 of the consent document for further details.	1	Compliant.
08	Any complaints received by the consent holder about the discharges shall be logged immediately. The information shall include: Please refer to page 8/12 of the consent document for further details	1	Compliant. Please refer to 3.4.1.

Condition Number	Consent Condition Clarks Beach Discharge to Water (#R/REG/2015/4227-A)	Compliance Rating	Comments
09	The consent holder shall ensure a flow meter is maintained in place to measure the total wastewater inflow to the WWTP and the total treated wastewater discharge volume from the WWTP. The discharge volume meter shall be maintained to ensure an accuracy of plus or minus five percent.	1	Ongoing.
10	The consent holder shall collect and keep data of the daily rainfall levels at a location that provides representative indications of rainfall levels at the WWTP. This data shall be made available to the Council Manager on request.	1	Ongoing.
11	The consent holder shall collect monitoring data and samples from the outlet of the UV disinfection system and before the treated wastewater discharge pumping station at a point agreed to between the consent holder and the Council Manager, and shall record and analyse the samples for the following parameters, to the required detection limits and at the specified frequency: Please refer to page 9/12 of the consent document for further details.	1	Ongoing.
12	The consent holder shall ensure that the samples required by condition 11 of the Coastal Permit are collected and analysed in accordance with the 22nd edition of the '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 Council Manager.	1	Compliant.
13	In the event of two consecutive results for any single parameter of samples collected in accordance with general condition 11 and 12, not complying with the limits specified in condition 18 of the Coastal Permit, the consent holder shall as soon as practicable on receipt of the second result notify the Council Manager of the exceedance in writing, outline the mitigation measures taken, and advise any further measures proposed to ensure compliance. If so, instructed by the Council Manager, the consent holder shall increase the frequency of monitoring for that parameter to weekly for a specified period agreed to by the consent holder and the Council Manager.	1	Compliant.
14	The consent holder shall ensure that the results of the monitoring undertaken in accordance with general conditions 9 and 10 (discharge flows and rainfall) and condition 18 of the Coastal Permit (discharge qualities) are reported to the Council Manager quarterly within 20 working days of the period ending 31 December, 31 March, 30 June and 30 September each year.	1	Compliant.
15	The consent holder shall prepare an Annual Report and provide it to the Council Manager by 30 September each year. The Annual Report is to cover: Please refer to page 10/12 of the consent document for further details.	N/A	This report
16	The consent holder shall ensure that the volume of wastewater entering the artificial combined stormwater and wastewater channel does not exceed a maximum flow of 2,500m ³ /day, plus any incidental flow from rainfall on the Clarks Beach WWTP oxidation pond, rock filter and sand filters.	2	A bypass discharge on 30–31 July 2025 released ~5,200 m ³ over 24 hours, exceeding the 2,500 m ³ /day limit. This constitutes a technical non-compliance

Condition Number	Consent Condition Clarks Beach Discharge to Water (#R/REG/2015/4227-A)	Compliance Rating	Comments
			with Condition 16. See Section 3.2 and Appendix D for details.
17	Wastewater shall enter the existing constructed combined stormwater and wastewater channel located within the Clarks Beach Golf Course area at or about Grid Reference NZTM: NZTM:- Easting: 1751164.86 / Northing: 5888012.29.	1	Ongoing.
18	The consent holder shall ensure that the quality of the wastewater discharged is equal to or better than the following parameter concentrations.	2	Complied under routine operations. Exceedances occurred during emergency bypass events in June and July 2025 (see Incident Report in Appendix D)

Table A-2 Assessment of Compliance with Consent Conditions – Clarks Beach Discharge to Land (#R/REG/2015/4228-A)

Condition Number	Consent Condition Clarks Beach Discharge to Land (#R/REG/2015/4228-A)	Compliance Rating	Comments
01	The discharges to the coastal environment, land or water, and air associated with the processing of wastewater at the Clarks Beach Wastewater Treatment Plan shall be carried out in accordance with the plans and all information submitted with the application, detailed below, and all referenced by the authorising agency as consent number R/REG/2015/4227, R/REG/2015/4228 and R/REG/2017/844 and as varied by CST60083001-A, DIS60084111-A, DIS60084200-A: Please refer to page 7/12 of the consent document for further details.	1	Compliant.
03	Consent R/REG/2015/4228 for the discharge of contaminants to land or water shall expire 10 years from the date it is granted unless it has been surrendered or been cancelled at an earlier date pursuant to the RMA.	1	Compliant.
05	The servants or agents of the Council shall be permitted to have access to the relevant parts of the WWTP and treated wastewater discharge facilities 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	Compliant.
06	The consent holder shall maintain a register of the authorised trade waste connections to the Clarks Beach WWTP, and shall provide a copy of the updated register with the Annual Report required by general condition 15.	N/A	We do not have any customers requiring Trade Waste Agreements in the Clarks Beach catchment. However, under the Auckland Council Trade Waste Bylaw 2013, we do not require 'low risk' customers such as cafes, takeaways,

Condition Number	Consent Condition Clarks Beach Discharge to Land (#R/REG/2015/4228-A)	Compliance Rating	Comments
			hairdressers etc to hold Trade Waste Agreements.
07	The conditions of these consents may be reviewed by the Council Manager pursuant to section 128 of the Act, by giving notice pursuant to section 129; Please refer to page 8/12 of the consent document for further details.	1	Compliant.
08	Any complaints received by the consent holder about the discharges shall be logged immediately. The information shall include: Please refer to page 8/12 of the consent document for further details	1	Compliant. Please refer to 3.4.1
09	The consent holder shall ensure a flow meter is maintained in place to measure the total wastewater inflow to the WWTP and the total treated wastewater discharge volume from the WWTP. The discharge volume meter shall be maintained to ensure an accuracy of plus or minus five percent.	1	Ongoing.
10	The consent holder shall collect and keep data of the daily rainfall levels at a location that provides representative indications of rainfall levels at the WWTP. This data shall be made available to the Council Manager on request.	1	Ongoing.
11	The consent holder shall collect monitoring data and samples from the outlet of the UV disinfection system and before the treated wastewater discharge pumping station at a point agreed to between the consent holder and the Council Manager and shall record and analyse the samples for the following parameters, to the required detection limits and at the specified frequency: Please refer to page 9/12 of the consent document for further details.	1	Ongoing.
12	The consent holder shall ensure that the samples required by condition 11 of the Coastal Permit are collected and analysed in accordance with the 22nd edition of the '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 Council Manager.	1	Compliant.
13	In the event of two consecutive results for any single parameter of samples collected in accordance with general condition 11 and 12, not complying with the limits specified in condition 18 of the Coastal Permit, the consent holder shall as soon as practicable on receipt of the second result notify the Council Manager of the exceedance in writing, outline the mitigation measures taken, and advise any further measures proposed to ensure compliance. If so instructed by the Council Manager, the consent holder shall increase the frequency of monitoring for that parameter to weekly for a specified period agreed to by the consent holder and the Council Manager.	1	Compliant.
14	The consent holder shall ensure that the results of the monitoring undertaken in accordance with general conditions 9 and 10 (discharge flows and rainfall) and condition 18 of the Coastal Permit (discharge	1	Compliant.

Condition Number	Consent Condition Clarks Beach Discharge to Land (#R/REG/2015/4228-A)	Compliance Rating	Comments
	qualities) are reported to the Council Manager quarterly within 20 working days of the period ending 31 December, 31 March, 30 June and 30 September each year.		
15	The consent holder shall prepare an Annual Report and provide it to the Council Manager by 30 September each year. The Annual Report is to cover: Please refer to page 10/12 of the consent document for further details.	N/A	This report.
19	The consent holder shall manage and maintain the integrity of the oxidation pond, rock filter and sand filters and other structures that form part of the wastewater treatment process so as to minimise the volume of seepage from such structures as far as practicable.	1	Ongoing.

Table A-3 Assessment of Compliance with Consent Conditions – Clarks Beach Discharge to Air (#R/REG/2017/844-A)

Condition Number	Consent Condition Clarks Beach Discharge to Air (#R/REG/2017/844-A)	Compliance Rating	Comments
01	The discharges to the coastal environment, land or water, and air associated with the processing of wastewater at the Clarks Beach Wastewater Treatment Plan shall be carried out in accordance with the plans and all information submitted with the application, detailed below, and all referenced by the authorising agency as consent number R/REG/2015/4227, R/REG/2015/4228 and R/REG/2017/844 and as varied by CST60083001-A, DIS60084111-A, DIS60084200-A: Please refer to page 7/12 of the consent document for further details.	1	Compliant.
04	Consent R/REG/2017/844 for the discharge of contaminants to air shall expire 10 years from the date it is granted unless it has been surrendered or been cancelled at an earlier date pursuant to the RMA.	1	Compliant.
05	The servants or agents of the Council shall be permitted to have access to the relevant parts of the WWTP and treated wastewater discharge facilities 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	Compliant.
06	The consent holder shall maintain a register of the authorised trade waste connections to the Clarks Beach WWTP, and shall provide a copy of the updated register with the Annual Report required by general condition 15.	1	We do not have any customers requiring Trade Waste Agreements in the Clarks Beach catchment. However, under the Auckland Council Trade Waste Bylaw 2013, we do not require 'low risk' customers such as cafes, takeaways, hairdressers etc to hold Trade Waste Agreements.

Condition Number	Consent Condition Clarks Beach Discharge to Air (#R/REG/2017/844-A)	Compliance Rating	Comments
07	The conditions of these consents may be reviewed by the Council Manager pursuant to section 128 of the Act, by giving notice pursuant to section 129; Please refer to page 8/12 of the consent document for further details.	1	Compliant.
08	Any complaints received by the consent holder about the discharges shall be logged immediately. The information shall include: Please refer to page 8/12 of the consent document for further details	1	Compliant. Please refer to 3.2.4.
09	The consent holder shall ensure a flow meter is maintained in place to measure the total wastewater inflow to the WWTP and the total treated wastewater discharge volume from the WWTP. The discharge volume meter shall be maintained to ensure an accuracy of plus or minus five percent.	1	Ongoing.
10	The consent holder shall collect and keep data of the daily rainfall levels at a location that provides representative indications of rainfall levels at the WWTP. This data shall be made available to the Council Manager on request.	1	Ongoing.
11	The consent holder shall collect monitoring data and samples from the outlet of the UV disinfection system and before the treated wastewater discharge pumping station at a point agreed to between the consent holder and the Council Manager, and shall record and analyse the samples for the following parameters, to the required detection limits and at the specified frequency: Please refer to page 9/12 of the consent document for further details.	1	Ongoing.
12	The consent holder shall ensure that the samples required by condition 11 of the Coastal Permit are collected and analysed in accordance with the 22nd edition of the '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 Council Manager.	1	Compliant.
13	In the event of two consecutive results for any single parameter of samples collected in accordance with general condition 11 and 12, not complying with the limits specified in condition 18 of the Coastal Permit, the consent holder shall as soon as practicable on receipt of the second result notify the Council Manager of the exceedance in writing, outline the mitigation measures taken, and advise any further measures proposed to ensure compliance. If so instructed by the Council Manager, the consent holder shall increase the frequency of monitoring for that parameter to weekly for a specified period agreed to by the consent holder and the Council Manager.	1	Compliant.
14	The consent holder shall ensure that the results of the monitoring undertaken in accordance with general conditions 9 and 10 (discharge flows and rainfall) and condition 18 of the Coastal Permit (discharge qualities) are reported to the Council Manager quarterly within 20 working days of the period ending 31 December, 31 March, 30 June and 30 September each year.	1	Compliant.

Condition Number	Consent Condition Clarks Beach Discharge to Air (#R/REG/2017/844-A)	Compliance Rating	Comments
15	The consent holder shall prepare an Annual Report and provide it to the Council Manager by 30 September each year. The Annual Report is to cover: Please refer to page 10/12 of the consent document for further details.	N/A	This report - sent in October 2024.
20	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.	1	Compliant.
21	The consent holder shall ensure that no air discharges from any activity on the WWTP site are in the opinion of a Council enforcement officer noxious, dangerous, offensive or objectionable beyond the designated WWTP boundary.	1	Ongoing
22	The consent holder shall ensure that all staff and contractors undertaking works at the WWTP site are aware of, and adhere to, all conditions of this consent.	1	Ongoing
23	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	Ongoing
24	The Council Manager shall be advised in writing no less than 10 working days prior to the commencement of any desludging or other activities that could cause odour release. The written notice shall include: Please refer to pages 11/12 and 12/12 of the consent document for further details.	1	Compliant
25	When a periodic maintenance procedure has the potential to produce noxious, offensive or objectionable odour such as cleaning the rock filter media, the consent holder shall at least ten months prior to undertaking the proposed works discuss these works with the Council Manager and if deemed necessary shall apply for a short-term air discharge consent to cover said works.	1	Compliant
26	The consent holder shall ensure that a Council Manager 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: 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	Compliant
27	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	Compliant

Appendix B. Effluent Quality Data

Appendix B1. Flows and Rainfall

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

Date	Discharge Volume (m3)	Rainfall (mm)
1/07/2024	463	9.72
2/07/2024	484	4.17
3/07/2024	671	0.46
4/07/2024	671	0
5/07/2024	585	0
6/07/2024	515	0.46
7/07/2024	480	2.32
8/07/2024	485	0
9/07/2024	556	0
10/07/2024	556	0
11/07/2024	460	0
12/07/2024	426	0
13/07/2024	404	0
14/07/2024	396	0
15/07/2024	393	9.16
16/07/2024	516	1.45
17/07/2024	604	4.33
18/07/2024	604	0.49
19/07/2024	549	14.94
20/07/2024	511	11.09
21/07/2024	1097	3.37
22/07/2024	1147	4.82
23/07/2024	1147	2.9
24/07/2024	1113	2.89
25/07/2024	910	0
26/07/2024	910	0.48
27/07/2024	907	0
28/07/2024	652	0
29/07/2024	576	15.43
30/07/2024	601	19.76
31/07/2024	816	9.64
1/08/2024	934	12.05
2/08/2024	1117	0
3/08/2024	1117	0
4/08/2024	942	0
5/08/2024	751	0

Date	Discharge Volume (m3)	Rainfall (mm)
6/08/2024	814	0.49
7/08/2024	814	0
8/08/2024	674	4.82
9/08/2024	527	0.96
10/08/2024	489	0
11/08/2024	489	0
12/08/2024	488	2.43
13/08/2024	498	0
14/08/2024	498	0
15/08/2024	455	0
16/08/2024	394	3.51
17/08/2024	375	21.54
18/08/2024	498	8.52
19/08/2024	775	4.954225
20/08/2024	775	2.055775
21/08/2024	734	1
22/08/2024	669	0
23/08/2024	600	0
24/08/2024	524	4.01
25/08/2024	484	0
26/08/2024	467	0
27/08/2024	459	11.02
28/08/2024	521	0.5
29/08/2024	521	8.02
30/08/2024	489	0
31/08/2024	457	4.01
1/09/2024	488	7.51
2/09/2024	615	0
3/09/2024	615	4.01
4/09/2024	521	0
5/09/2024	535	0.5
6/09/2024	535	3.01
7/09/2024	475	0
8/09/2024	447	3.5
9/09/2024	449	0
10/09/2024	449	0
11/09/2024	442	0
12/09/2024	417	0
13/09/2024	393	0
14/09/2024	364	25.34006
15/09/2024	388	2.719936
16/09/2024	601	8.51
17/09/2024	774	6.01

Date	Discharge Volume (m3)	Rainfall (mm)
18/09/2024	774	0.5
19/09/2024	704	3.51
20/09/2024	543	32.06
21/09/2024	1119	1.51
22/09/2024	1340	0
23/09/2024	1340	3.5
24/09/2024	1205	1.01
25/09/2024	952	0
26/09/2024	710	0
27/09/2024	574	2.5
28/09/2024	493	0
29/09/2024	471	0
30/09/2024	443	0
1/10/2024	440	0
2/10/2024	406	20.54
3/10/2024	407	24.55
4/10/2024	761	0
5/10/2024	924	0
6/10/2024	924	30.56
7/10/2024	729	4.01
8/10/2024	809	0.97
9/10/2024	809	11.62
10/10/2024	1132	3.87
11/10/2024	1349	0.97
12/10/2024	1349	0
13/10/2024	1350	12.58
14/10/2024	1350	5.81
15/10/2024	1349	0.97
16/10/2024	1349	0
17/10/2024	1349	0
18/10/2024	1349	0
19/10/2024	1349	0
20/10/2024	1349	0
21/10/2024	1349	0
22/10/2024	1350	0
23/10/2024	1350	0
24/10/2024	1349	0
25/10/2024	1349	0
26/10/2024	1350	6.29
27/10/2024	1350	0.49
28/10/2024	1349	2.9
29/10/2024	1349	5.33
30/10/2024	1348	3.38

Date	Discharge Volume (m3)	Rainfall (mm)
31/10/2024	518	0.49
1/11/2024	2	0
2/11/2024	0	10.65
3/11/2024	0	0
4/11/2024	0	0
5/11/2024	0	0
6/11/2024	0	0
7/11/2024	187	0
8/11/2024	305	0
9/11/2024	344	0
10/11/2024	356	2.9
11/11/2024	359	9.28
12/11/2024	387	0.5
13/11/2024	387	0.5
14/11/2024	362	1
15/11/2024	343	54
16/11/2024	422	0.5
17/11/2024	611	0
18/11/2024	611	0
19/11/2024	551	0
20/11/2024	782	0.5
21/11/2024	782	4.5
22/11/2024	601	0
23/11/2024	586	0.5
24/11/2024	405	0
25/11/2024	548	0
26/11/2024	616	0
27/11/2024	616	0
28/11/2024	484	0.5
29/11/2024	471	0
30/11/2024	471	11.5
1/12/2024	472	2.5
2/12/2024	527	0
3/12/2024	527	0
4/12/2024	519	0
5/12/2024	488	0
6/12/2024	529	0
7/12/2024	529	0
8/12/2024	415	2
9/12/2024	439	8.5
10/12/2024	439	0.5
11/12/2024	427	0.5
12/12/2024	342	5

Date	Discharge Volume (m3)	Rainfall (mm)
13/12/2024	474	1.5
14/12/2024	497	0
15/12/2024	497	0
16/12/2024	425	5.03
17/12/2024	455	0
18/12/2024	455	0.51
19/12/2024	417	0
20/12/2024	387	0
21/12/2024	387	9.19
22/12/2024	416	0
23/12/2024	420	7.65
24/12/2024	420	0
25/12/2024	411	1.02
26/12/2024	413	6.64
27/12/2024	441	0
28/12/2024	441	0
29/12/2024	367	0
30/12/2024	362	0.51
31/12/2024	362	1.02
1/01/2025	393	0.51
2/01/2025	393	0
3/01/2025	368	4.08
4/01/2025	374	11.74
5/01/2025	499	5.1
6/01/2025	499	0
7/01/2025	475	0
8/01/2025	475	0
9/01/2025	385	0
10/01/2025	385	0
11/01/2025	346	0
12/01/2025	372	0
13/01/2025	372	0
14/01/2025	364	0
15/01/2025	283	0
16/01/2025	366	0
17/01/2025	366	0
18/01/2025	355	0
19/01/2025	355	0
20/01/2025	311	0.52
21/01/2025	311	6.23
22/01/2025	270	0
23/01/2025	365	0
24/01/2025	370	0

Date	Discharge Volume (m3)	Rainfall (mm)
25/01/2025	370	5.19
26/01/2025	361	19.21
27/01/2025	353	1.56
28/01/2025	365	0
29/01/2025	365	0
30/01/2025	395	0
31/01/2025	395	0
1/02/2025	353	0
2/02/2025	309	0
3/02/2025	341	0
4/02/2025	437	0
5/02/2025	518	0
6/02/2025	518	0
7/02/2025	466	0
8/02/2025	443	2.08
9/02/2025	421	0
10/02/2025	437	0
11/02/2025	437	0
12/02/2025	428	0
13/02/2025	418	0
14/02/2025	418	19.21
15/02/2025	401	0
16/02/2025	336	0
17/02/2025	401	3
18/02/2025	443	1
19/02/2025	443	0
20/02/2025	435	3
21/02/2025	397	0
22/02/2025	379	0
23/02/2025	341	0
24/02/2025	210	0
25/02/2025	320	0
26/02/2025	393	0
27/02/2025	393	0
28/02/2025	383	0
1/03/2025	142	0
2/03/2025	142	0
3/03/2025	136	0
4/03/2025	425	14
5/03/2025	744	0
6/03/2025	744	0
7/03/2025	698	0
8/03/2025	470	0

Date	Discharge Volume (m3)	Rainfall (mm)
9/03/2025	502	0
10/03/2025	502	0
11/03/2025	494	0
12/03/2025	477	1.5
13/03/2025	423	0
14/03/2025	380	0
15/03/2025	424	0
16/03/2025	424	0
17/03/2025	190	4.5
18/03/2025	231	3.5
19/03/2025	410	12
20/03/2025	410	0
21/03/2025	482	0
22/03/2025	482	0
23/03/2025	332	0
24/03/2025	265	0
25/03/2025	230	0
26/03/2025	500	0
27/03/2025	559	0
28/03/2025	559	1
29/03/2025	515	0
30/03/2025	515	0
31/03/2025	472	0
1/04/2025	458	0
2/04/2025	447	0.52
3/04/2025	439	15.16
4/04/2025	466	64.84
5/04/2025	758	0
6/04/2025	758	2.09
7/04/2025	708	2.1
8/04/2025	600	9.41
9/04/2025	600	0.52
10/04/2025	596	0
11/04/2025	596	0
12/04/2025	443	0
13/04/2025	443	0
14/04/2025	394	0
15/04/2025	394	0
16/04/2025	386	0.51
17/04/2025	367	5.67
18/04/2025	382	2.56
19/04/2025	425	106.57
20/04/2025	457	21.62

Date	Discharge Volume (m3)	Rainfall (mm)
21/04/2025	546	0.52
22/04/2025	764	2.57
23/04/2025	809	0.52
24/04/2025	809	0
25/04/2025	460	0
26/04/2025	460	0
27/04/2025	506	11.32
28/04/2025	695	8.24
29/04/2025	1018	2.06
30/04/2025	1044	6.69
1/05/2025	1044	13.90
2/05/2025	978	5.15
3/05/2025	639	0
4/05/2025	427	0
5/05/2025	431	0
6/05/2025	442	0
7/05/2025	585	0
8/05/2025	588	3.60
9/05/2025	588	49.42
10/05/2025	474	0
11/05/2025	575	0
12/05/2025	575	0
13/05/2025	564	1.03
14/05/2025	685	0.51
15/05/2025	685	0
16/05/2025	618	0
17/05/2025	379	0.52
18/05/2025	605	6.18
19/05/2025	673	0
20/05/2025	673	0
21/05/2025	536	0
22/05/2025	562	0
23/05/2025	562	0.51
24/05/2025	561	0.52
25/05/2025	590	0.51
26/05/2025	590	26.52
27/05/2025	585	4.37
28/05/2025	447	5.66
29/05/2025	726	5.15
30/05/2025	726	2.06
31/05/2025	709	1.03
1/06/2025	486	0
2/06/2025	240	2.57

Date	Discharge Volume (m3)	Rainfall (mm)
3/06/2025	315	0.52
4/06/2025	406	28.82
5/06/2025	676	1.03
6/06/2025	676	24.20
7/06/2025	672	8.23
8/06/2025	1130	9.95
9/06/2025	1130	11.68
10/06/2025	1116	45.01
11/06/2025	1074	0
12/06/2025	1211	30
13/06/2025	1324	10.5
14/06/2025	1324	20.5
15/06/2025	1323	0
16/06/2025	1346	0
17/06/2025	1346	0
18/06/2025	906	0
19/06/2025	682	13.5
20/06/2025	757	3
21/06/2025	757	0.5
22/06/2025	782	0.5
23/06/2025	822	0.5
24/06/2025	885	0
25/06/2025	885	0
26/06/2025	760	0.5
27/06/2025	640	38.5
28/06/2025	659	15.50
29/06/2025	951	5.50
30/06/2025	951	1

Appendix B2. Effluent Quality Parameters

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

Date	cBOD5 (mg/L)	TSS (mg/L)	NHx-N (mg/L)	TIN (mg/L)	TN (mg/L)	TP (mg/L)	F. coliforms (cfu/100mL)	DO (mg/L)	pH (SU)	Temperature (°C)
01/07/2024								2.84	6.2	14.9
10/07/2024	1.1	8.2	5.46	10	12	0.088	1.60			
24/07/2024	1.3	2.8	1.72	13	15	0.046	1.60			
31/07/2024						0.045				
01/08/2024								6.81	7.5	16.8

Date	cBOD5 (mg/L)	TSS (mg/L)	NHx-N (mg/L)	TIN (mg/L)	TN (mg/L)	TP (mg/L)	F. coliforms (cfu/100mL)	DO (mg/L)	pH (SU)	Temperature (°C)
06/08/2024								3.58	6.8	16.1
12/08/2024								7.04	6.9	14.2
14/08/2024	1	1.6	11.2	18	21	0.072	1.60			
26/08/2024								4.71	7	13.6
28/08/2024	1.1	1.8	9.2	19	20	0.048	1.60			
02/09/2024								5.47	6.2	21.9
11/09/2024	0.6	1	8.6	17	18	0.064	1.60			
17/09/2024								4.01	6.9	17.1
25/09/2024	2.8	1	18	28	29	0.038	1.70			
25/09/2024								3.98	6.9	18.3
02/10/2024	0.9	2.2	4.8	22	22		1.60			
02/10/2024								4.6	7	15.6
09/10/2024	2.4	1.8	15	24	23	0.048	1.60			
14/10/2024								6.38	6.5	17.8
23/10/2024	1	6.4	11	19	26	0.058	1.60			
04/11/2024								5.82	5.8	19.1
13/11/2024	1.1	2.4	12	20	19	0.109	1.70			
18/11/2024								3.4	6.7	20.3
27/11/2024	1.9	1	9.4	15	17	0.418	1.60			
05/12/2024								3.32	7	21
09/12/2024								5.73	7.6	23.2
11/12/2024	1.9	1	32	34	40	1.94	1.60			
12/12/2024						0.168				
18/12/2024	0.6	2.8	11	12	12	0.07	1.60			
24/12/2024	4.8		6.2	6.3	16					
08/01/2025	1	1.6	0.28	6.2	12	0.092	1.60			
17/01/2025								6.23	7.2	23.8
22/01/2025								7.12	7.6	23.2
22/01/2025	0.7	6.4	0.58	5.6	7.2	0.086	1.60			
12/02/2025	0.5	1	0.24	7.3	8.9	0.17	1.60			
20/02/2025								3.4	6.7	23.4
26/02/2025	1.9	1	0.097	9.5	10	0.372	1.60			
07/03/2025								2.59	7	19.5
12/03/2025	2.7	3.2	0.22	3.9	5.1	0.092	1.60			
14/03/2025								6.43	7	23.7
21/03/2025								6.82	7.2	23.3
26/03/2025	0.6	1	0.095	4.8	7	0.12	1.60			
28/03/2025								6.7	7	22.4
04/04/2025								5.9	7	23.5
09/04/2025	0.5	4.2	0.034	9.1	11	3.68	1.60			
18/04/2025								6.05	7	22.5

Date	cBOD5 (mg/L)	TSS (mg/L)	NHx-N (mg/L)	TIN (mg/L)	TN (mg/L)	TP (mg/L)	F. coliforms (cfu/100mL)	DO (mg/L)	pH (SU)	Temperature (°C)
23/04/2025	5.4	1	0.19	6.7	7.8	0.058	1.60			
02/05/2025								3.56	7	22.4
14/05/2025	2.1	1	0.067	12	12	0.063	1.70			
28/05/2025	0.5	1	0.044	13	12	0.05	1.60			
06/06/2025								8.91	7	17.2
07/06/2025	6.1	65.7	0.12	11	16		1.60			
08/06/2025	5.3	27.4	0.085	11	13		1.60			
10/06/2025	7.9	48.2	0.14	12	19		120			
11/06/2025	4	19	0.092	9.1	12	0.034	1.60			
12/06/2025	6	40.8	0.086	8.2	13		25			
13/06/2025								7.4	6.8	15.9
14/06/2025								8.53	7.1	15.8
14/06/2025	8.7	81.6	0.18	7.9	15		660			
15/06/2025	9	44.4	0.12	9	12		94			
15/06/2025								8.47	7.1	15.3
16/06/2025	0.5	1	0.1	8.7	9.8		1.60			
18/06/2025								9.88	7	13.6
23/06/2025								9.83	7.2	14.5
25/06/2025	0.8	2.8	0.099	9.9	10	0.063	1.60			
27/06/2025								8.83	7	13.8

Appendix C. Data Source

Table C-1: Download location of data and data ID/tags used in this report

Category	Parameter	Source platform	Tag/ID or Form
Effluent volume	Daily effluent discharge (outfall)	Pi	DTCBO_52_FT_1001_FM_VOL_DAY
Environmental – External	Rainfall	Auckland Council Environmental Data Portal	Location – <i>Waitangi @ Diver Road</i>
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