Pukekohe Wastewater Treatment Plant
2024-2025 Annual Report

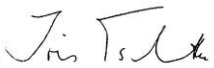
Final - September 2025

Watercare

QUALITY INFORMATION

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

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 reissue	AUTH137406.01.02 issued, consolidating discharges to land, water and air (odour). Replaced previous consents (37953 & 37993).	28/03/2018	AUTH137406.01.02	Established unified conditions for flows, loads, air quality and reporting.
Riparian planting plan	Riparian Planting Plan developed with Te Taniwha o Waikato to meet Condition 13, covering at least 1 ha of planting along Parker Lane Stream. Planting began after plan finalisation, aligned with Matariki planting season.	Nov 2019 (plan issued); planting commenced winter 2020	Conditions 11–14	Plan sets species, zones, densities, and maintenance. Annual maintenance and replacement planting required; updates reported through Annual Report and CLG.
Management plan updates	Requirement to prepare and maintain an Operations & Management Plan, Odour Management Plan, Pest Management Plan, and Avian Botulism Management Plan.	2018 onwards: **First review due:** March 2023 (5 years after commencement). **Next review due:** March 2028.	Conditions 8–16, 37–39	Last management plans reviewed and prepared for the WWTP in 2023
Community engagement	Establishment of a Community Liaison Group and a Te Taniwha o Waikato Liaison Group within 6 months of commencement.	2018	Conditions 5–7B	Annual meetings: groups to receive Annual Report, OMP, Riparian and Pest Plans, complaints register.
Reporting requirements	Annual Report due 30 September each year, covering monitoring results, compliance commentary, and remedial actions.	Ongoing	Condition 17	Annual reporting to WRC, CLG, and Te Taniwha o Waikato Liaison Group.
Review provisions	Formal review of consent conditions by WRC possible every 5 years after commencement (5th, 10th, 15th, etc.).	2023, 2028, …	Condition 18	WRC may amend monitoring requirements, address effects, or adjust conditions.
Monitoring and Technology Review	Comprehensive Monitoring and Technology Review Report required at 5th, 10th, 20th, and 30th anniversaries.	2023 (5th anniversary), 2028 (10th anniversary) 2038 (20th anniversary, 2048 (30th anniversary)	Condition 21–22	Must assess monitoring adequacy, technology advances, and Best Practicable Option (BPO). 2023 report completed by Stantec[1].
Cultural Impact Assessment	Updated Cultural Impact Assessment required at 10th, 20th and 30th anniversaries unless iwi advise otherwise.	2023 (5th anniversary), 2028 (10th anniversary) 2038 (20th anniversary, 2048 (30th anniversary)	Condition 19	Ensures cultural effects are reviewed regularly in partnership with Te Taniwha o Waikato.

[1] The 2023 MTR concluded that the current treatment configuration and operational practices remain the Best Practicable Option (BPO) for the site. No additional process changes were required, although incremental optimisation opportunities were identified (e.g., fine-tuning wetland management and routine asset checks). These recommendations have been adopted into operational practice, and no formal amendments to the consent conditions were sought.

EXECUTIVE SUMMARY

This report provides an overview of the operational performance and compliance status of the Pukekohe Wastewater Treatment Plant (WWTP) for the period from 1 July 2024 to 30 June 2025 against the provisions of consent AUTH137406.01.02. Operated by Watercare Services Limited (Watercare), the plant treats wastewater from the Pukekohe, Tuakau, Pōkeno, Patumahoe and Paerata areas and discharges treated effluent in compliance with resource consents.

Key findings during the reporting period include:

- **Effluent volumes and quality:** The plant successfully met the consented limits for effluent discharge volumes, with an average daily discharge of 11,457 m^3/day, well below the consented maximum of 104,800 m^3/day. Effluent quality met all consent conditions, with parameters such as biochemical oxygen demand ($cBOD_5$), total suspended solids (TSS), ammoniacal nitrogen (NH_4-N), total nitrogen (TN), total phosphorus (TP), and *Escherichia coli* all within permitted limits. *E. coli* concentrations were consistently at or near the detection limit (1.6 cfu/100 mL), confirming good membrane performance and reliable UV disinfection.
- **Nutrient loads:** Median TN loads were around 6–13% of the seasonal consent limits, closely matching the proportion of flow to the consented maximum (≈11%). This shows nitrogen performance is well aligned with plant throughput. By contrast, median TP loads represented 14–55% of seasonal limits, with the higher summer proportion suggesting potential for further optimisation of phosphorus removal.
- **Air quality and odour control:** Routine odour checks identified no offensive odours beyond the site boundary, and no odour complaints were reported during 2024–2025.
- **Complaints and incidents:** One complaint was received during the reporting period, initially thought to relate to the WWTP but confirmed as a network air release valve issue. It was redirected to the appropriate team and resolved. No WWTP-related odour or noise complaints were recorded.
- **Future developments:** No major changes to this plant are planned for 2025-2026.

Overall, the Pukekohe WWTP performed well and within its consented parameters for 2024–2025, with nutrient loads demonstrating strong nitrogen removal performance and opportunities for further optimisation of phosphorus management.

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LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviation	Description
ASR	Activated Sludge Reactors
BPO	Best Practicable Option
$cBOD_5$	5-day carbonaceous biochemical oxygen demand
CLG	Community Liaison Group
DO	Dissolved oxygen
E. coli	*Escherichia coli*
IANZ	International Accreditation New Zealand (advice note reference)
MBR	Membrane Bioreactor
MTR	Monitoring and Technology Review
NH_4-N	Ammoniacal nitrogen (mg/L), reported in the consent as NH_3-N
NHx	Ammonia and ammonium, reported in milligrams nitrogen (consent term)
OMP	Operations Management Plan
PI	Plant Information system (data platform)
TP	Total phosphorus
TN	Total nitrogen
TSS	Total suspended solids
TTOW	Te Taniwha o Waikato
UV	Ultraviolet
Watercare	Watercare Services Limited
WWTP	Wastewater Treatment Plant

1 INTRODUCTION

1.1 Background

This annual report presents the results for the Pukekohe WWTP resource consent compliance from 1 July 2024 to 30 June 2025. The report includes:

- Description of the WWTP
- Relevant consents and management plans
- Plant performance
- Summary of compliance.

1.2 Consent and plans

The discharge consent that currently applies to the Pukekohe WWTP is AUTH137406.01.02 (Discharge to land, air, and water). Waikato Regional Council issued it in 2017 and it will expire in 2052.

This report also includes commentary on AUTH136310.01.01 (branch sewer pipe bridges) and AUTH139710.01.01 (vehicle bridge).

The consent requires management plans, listed in Table 1-1. Watercare has circulated all plans, as relevant, to the Community Liaison Group, Te Taniwha o Waikato, and Waikato Regional Council.

As agreed with Waikato Regional Council, the main Operations Management Plan (OMP) was submitted in July 2023 after final commissioning of the plant upgrades.

Table 1-1 Pukekohe WWTP Management Plans

Management Plan	Detail
Site-specific plans	Plans include the pest management plan, the avian botulism management plan, and the odour management plan.
Riparian planting plan	Watercare prepared this Plan with Te Taniwha o Waikato. Planting occurred in September 2020 and maintenance is ongoing.
Operations Management Plan	Prepared in June 2023, after the plant upgrade was completed and commissioned. It integrates operational practice, the environmental monitoring programme and reporting of results.

2 TREATMENT PLANT

2.1 Background

Watercare operates the Pukekohe WWTP at 241 Parker Lane, Pukekohe. This WWTP discharges treated wastewater via artificial wetlands (wetlands) to the Parker Lane Stream that discharges into the Waikato River downstream of Tuakau.

The discharge consent for the WWTP requires an annual performance report. The report includes monitoring results, plant performance and an assessment of compliance issues (if relevant).

This annual report presents the results for the Pukekohe WWTP resource consent compliance from 1 July 2024 to 30 June 2025.

2.2 Design

The Pukekohe WWTP system consists of the following unit processes:

- Primary screens, grit removal and secondary screens
- Activated Sludge Reactors (ASR)
- Membrane Bioreactor (MBR)
- Ultraviolet (UV) disinfection
- Wetlands (no further treatment)
- Biofilter (odour treatment)
- Sludge oxidation pond

The treatment plant also has a septage disposal facility that accepts up to 30 m^3 of domestic wastewater/septage (weekdays only).

Watercare discharges the treated wastewater to Parker Lane Stream and ultimately to the Waikato River.

3 COMPLIANCE

3.1 Introduction

Compliance assessments presented in this report were undertaken using plant monitoring data downloaded from Watercare's PI system and the Auckland Council Environmental Data Portal. Daily discharge volumes and effluent quality results ($cBOD_5$, TSS, NH_4-N, TN, TP, and E. coli) were extracted using the specific data tags listed in Appendix C (Table C-1). Compliance with consented limits was checked against these datasets, with calculations based on daily flows and laboratory-analysed grab samples.

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.

3.2 AUTH136310.01.01

Condition 14 of AUTH136310.01.01 requires Watercare to inspect the pipe bridges at least once per year and after significant rain events to confirm the integrity of the structures and if there is any undue erosion. As shown in Figure 3-1 (Parker Lane pipe bridge) and Figure 3-2 (pipe bridge at treatment plant), the pipe bridges are intact and there is no notable downstream erosion.

3.3 AUTH139710.01.01

Condition 15 of AUTH139710.01.01, for a vehicle access bridge, requires Watercare to maintain the channel free of obstructions. As shown in the photos below (Figure 3-3), there are no obstructions in the channel below the bridge.

Figure 3-1 Photos of the Parker Lane pipe bridge.

Figure 3-2 Photos of the treatment plant entrance pipe bridge.

Figure 3-3 The channel under the vehicle bridge

3.4 Effluent volumes

The consent (AUTH137406.01.02) authorises up to 104,800 m³/day of treated wastewater to Parker Lane Stream. Figure 3-4 shows the effluent discharge volumes from the wetland to the stream alongside rainfall totals for the period 1 July 2024 to 30 June 2025. Condition 30 of the consent also requires Watercare to monitor flows from the WWTP to the wetland; these are presented in Figure 3-5.

Discharge volumes remained well below the consented limit of 104,800 m³/day throughout the reporting year. The maximum daily discharge recorded was 25,469 m³/day, less than one-quarter of the authorised limit. Annual discharge totalled 4,181,804 m³, with a mean of 11,457 m³/day (median 11,118 m³/day). These values are slightly higher than those of the previous year (2023–2024: total 3,901,339 m³; mean 10,659 m³/day), continuing a gradual upward trend observed since 2021–2022 (Table 3-2).

Rainfall for the reporting period totalled 1,367 mm, with rain recorded on 187 days. The maximum daily rainfall was 63 mm, and there were 16 heavy rain days (>25 mm). This represents a wetter year compared with 2023–2024 (total rainfall 1,158 mm; maximum daily 53 mm; 11 heavy rain days). Peaks in discharge volumes aligned with these wetter periods, particularly in late October 2024, April 2025, and June 2025, but remained well within the consented limit.

Flows from the plant to the constructed wetland (Figure 3-5) showed the same rainfall-driven variability, with sharp peaks during wet-weather events (August, October, and December 2024; May–June 2025). Outside of storm events, baseline flows to the wetland generally ranged between 10,000–15,000 m³/day, consistent with previous years.

Overall, the results confirm that discharge volumes remained compliant with consent requirements across the year. No exceedances of the authorised maximum occurred, and observed variability was attributable to rainfall-driven inflows rather than operational issues.

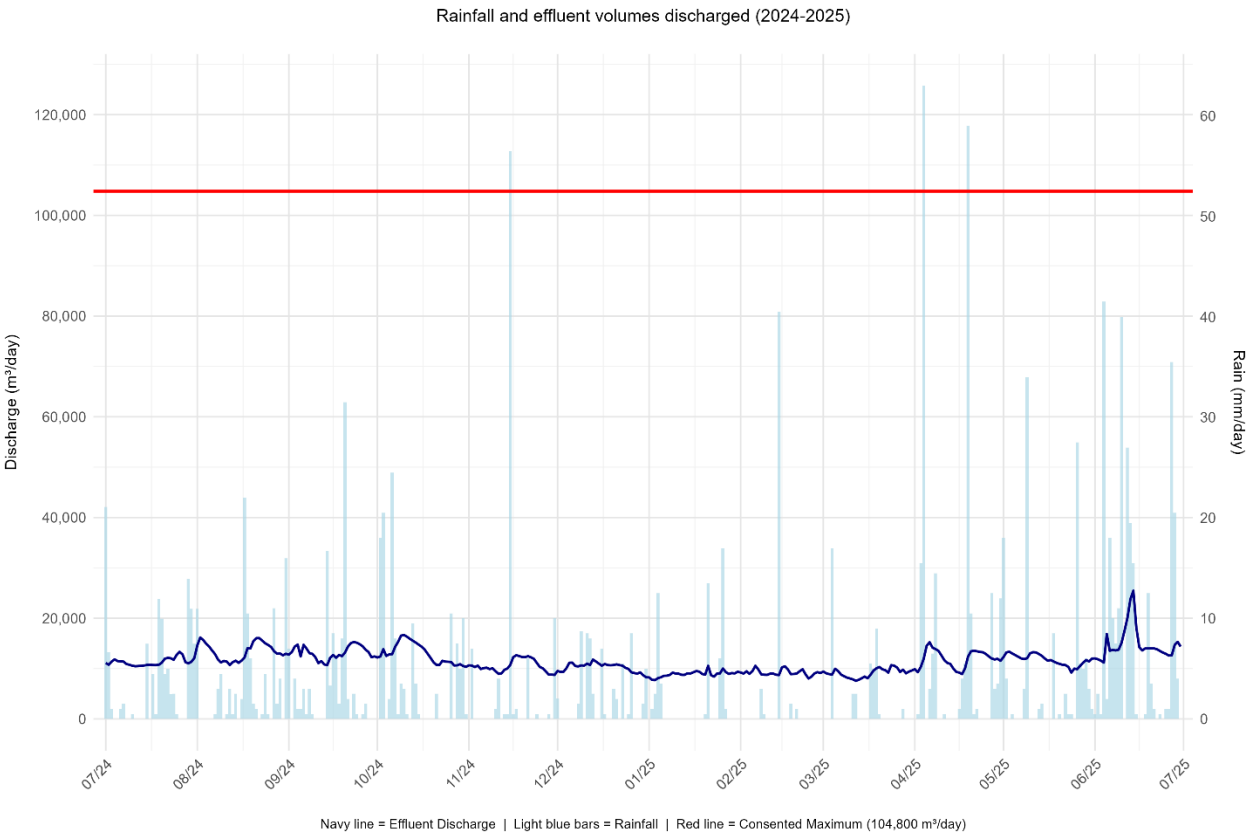

Figure 3-4: Rainfall and treated wastewater volumes discharged from the wetland to Parker Lane Stream (2024-2025)

Table 3-2 Summary of annual discharge volumes and rainfall (2022–2025)

	Discharge (m³)				Rainfall (mm)					
Year	Total	Daily Mean	Daily median	Daily max	Total	Mean Daily	Max Daily	Wet Days (≥0.1 mm)	Heavy Rain Days (>25 mm)	Compliance
2024–25	4,181,804	11,457	11,118	25,469	1,367	3.74	63	187	16	Compliant
2022–23	3,901,339	10,659	10,891	19,313	1,158	3.16	53	181	11	Compliant
2021–22	3,674,017	10,066	12,181	22,104	1,968	5.39	237	215	20	Compliant

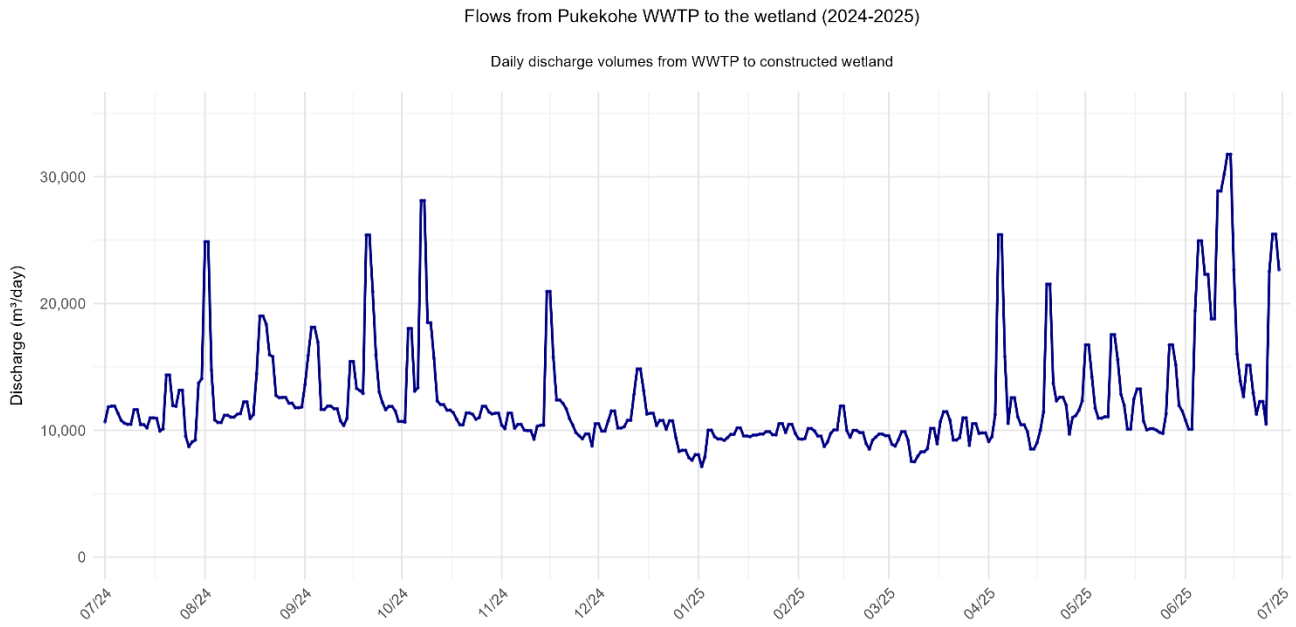

Figure 3-5 Flows from the WWTP to the wetland (2024-2025).

3.5 Effluent quality

3.5.1 Monitoring overview

Effluent quality is monitored at two compliance locations: (i) the discharge point of the UV disinfection unit ("post-UV") where concentrations are assessed against median and 90th percentile limits; and (ii) the constructed wetland outlet, where seasonal median loads of nutrients (Total Nitrogen, TN; and Total Phosphorus, TP) are compared with consent limits. Results are reported quarterly to Waikato Regional Council and are summarised here for the reporting period 1 July 2024 – 30 June 2025, with multi-year context provided from 2022 onwards. Full datasets are included in Appendix B, as well as their respective sources (Appendix C).

3.5.2 Compliance summary (2024–2025)

Table 3-3 summarises treated wastewater results relative to consent limits.

- All concentration parameters ($cBOD_5$, TSS, NH_4-N, *E. coli*) were compliant with median and 90th percentile limits.
- Nutrient loads (TN and TP) were well below seasonal median consent limits in both reporting seasons (Dec–May and Jun–Nov).
- Occasional short-term peaks were observed (e.g., TN up to 167 kg/day; TP up to 133 kg/day in June 2025), but these did not affect seasonal median compliance.

All parameters complied with consent conditions during 2024–2025.

3.5.3 Concentration patterns

Figure 3-6 illustrate time-series concentrations at the post-UV discharge point for the reporting period. The following main observations include:

- **$cBOD_5$ and TSS:** Values remained consistently low, with medians of 0.86 mg/L and 1.0 mg/L respectively, well below limits (median ≤5; 90th percentile ≤10).
- **NH_4-N:** Concentrations were very low (median 0.07 mg/L). One isolated spike (6.9 mg/L in June 2025) occurred but did not affect overall compliance.
- ***E. coli*:** Results were consistently at or near the analytical detection limit (median 1.6 cfu/100 mL), indicating good membrane performance and robust UV disinfection performance.

3.5.4 Nutrient loads (2024-2025)

Figure 3-7 shows weekly TN and TP loads for the reporting year compared against consent limits.

- **TN:** Median seasonal loads were 11.7 kg/day (Dec–May) and 10.8 kg/day (Jun–Nov), compared with limits of 88 and 185 kg/day, respectively.
- **TP:** Median seasonal loads were 12.1 kg/day (Dec–May) and 11.7 kg/day (Jun–Nov), compared with limits of 22 and 85 kg/day, respectively.
- The current daily median discharge volume is about 11% of the consented maximum. Median total nitrogen loads are roughly 13% and 6% of the respective seasonal limits, indicating nitrogen removal performance is consistent with plant throughput relative to flow. In contrast, median total phosphorus loads are around 55% and 14% of the seasonal limits, with the higher summer proportion suggesting potential to refine operations to improve phosphate removal.

Loads were typically <20 kg/day for TN and <10 kg/day for TP, with only short-lived peaks observed during high-flow periods.

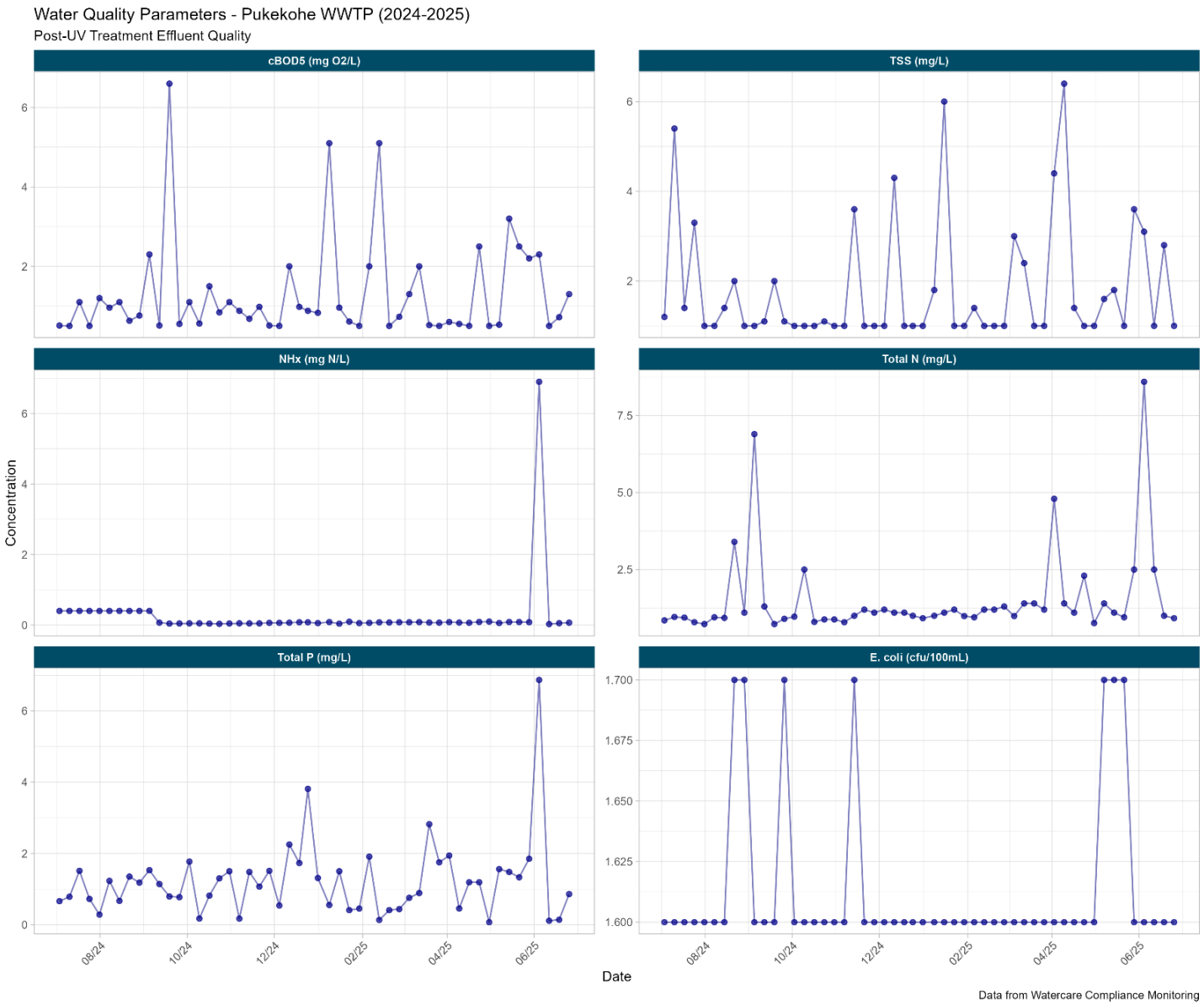

Figure 3-6 Post-UV effluent concentrations main compliance parameters (2024–2025).

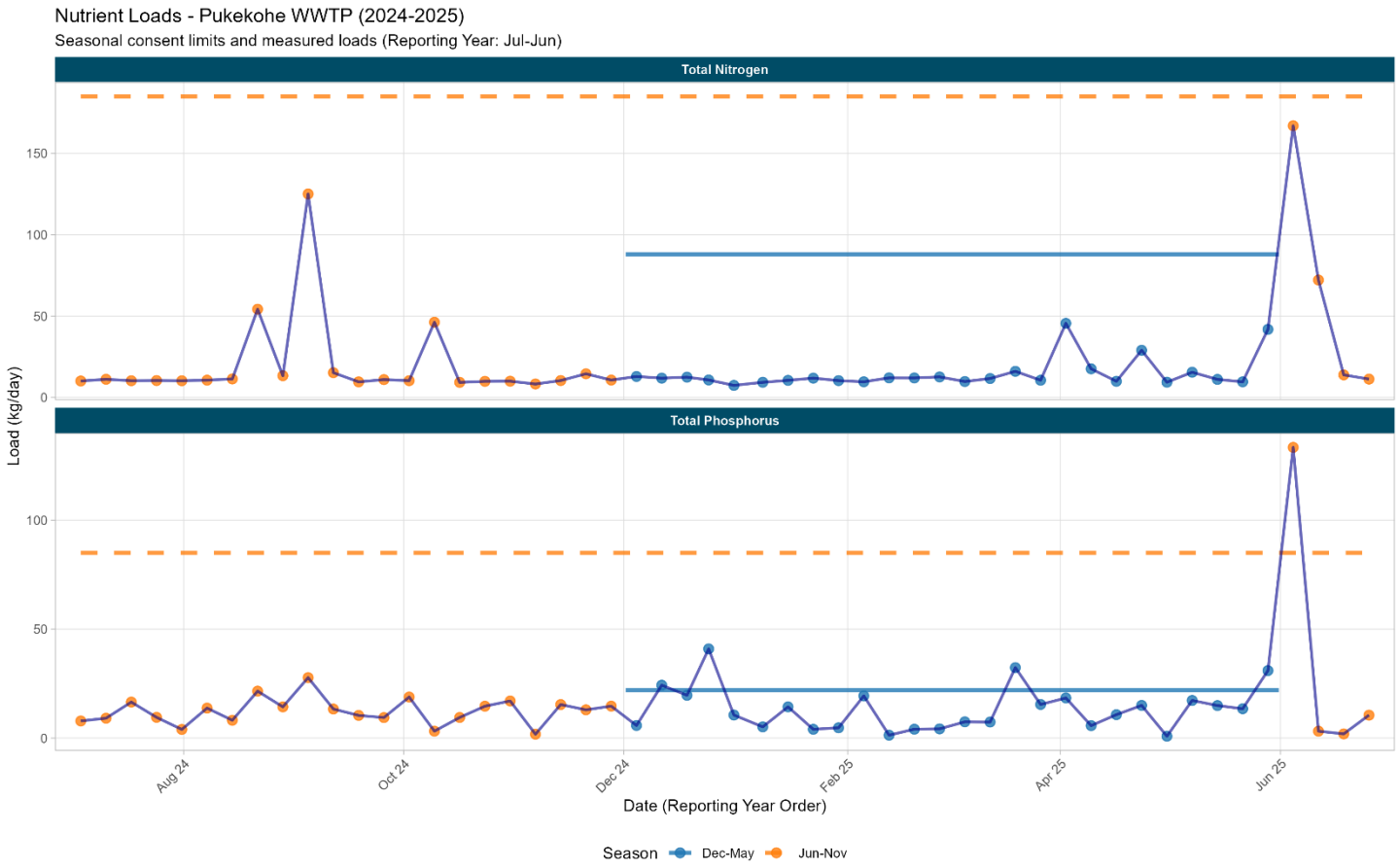

Figure 3-7 Total Nitrogen (TN) and Total Phosphorus (TP) loads compared with seasonal consent limits at Pukekohe WWTP (2024–2025).

Table 3-3 Effluent compliance results for Pukekohe WWTP (1 July 2024 – 30 June 2025). Yellow indicates the consent limits and green indicates compliance

Parameter	Units	n	Minimum	Average	Maximum	Consented Maximum	Median	Consented Median	90th Percentile	Consented 90th Percentile	Compliant
Discharge Volume	m^3/day	365	7,571	11,457	25,469	104,800	11,118	–	14,320	–	Yes
$cBOD_5$	mg O_2/L	52	0.5	1.31	6.6	–	0.86	≤ 5	2.48	≤ 10	Yes
TSS	mg/L	52	1.0	1.82	6.4	–	1.00	≤ 5	3.60	≤ 10	Yes
NH_4-N	mg N/L	52	0.028	0.26	6.9	–	0.072	≤ 1	0.40	≤ 2.3	Yes
Total N (Dec–May)	kg/day*	26	7.43	14.67	45.56	–	11.75	≤ 88	–	–	Yes
Total N (Jun–Nov)	kg/day*	26	8.27	26.80	167.03	–	10.83	≤ 185	–	–	Yes
Total P (Dec–May)	kg/day*	26	0.85	13.40	40.95	–	12.11	≤ 22	–	–	Yes
Total P (Jun–Nov)	kg/day*	26	1.78	16.26	133.43	–	11.75	≤ 85	–	–	Yes
Escherichia coli	cfu/100 mL	52	1.6	1.61	1.7	–	1.6	≤ 50	1.7		Yes

**Notes: Loads are calculated from grab sample concentrations and daily flows; medians for TN and TP are assessed against seasonal consent limits.*

3.5.5 Multiyear analyses (2022-2025)

Supplementary analyses were carried out using data from the past three years (2022–2025) to explore patterns in nutrient loads and effluent quality beyond the annual compliance period. Daily TN and TP loads were derived by multiplying measured concentrations (mg/L) by the corresponding discharge volumes (m^3/day). Variation in TN and TP loads between months, seasons, and years was tested using non-parametric Kruskal–Wallis tests, with the confidence threshold set at $p < 0.05$. Post-hoc pairwise comparisons were undertaken where overall differences were significant.

Figures 3-8 and 3-9 show monthly distributions and seasonal means of TN and TP loads. Both figures indicate greater variability in wetter months, with higher winter means particularly for TN, but not statistically significant seasonal or monthly differences were detected ($p > 0.12$). Importantly, monthly and seasonal medians remained well below consent limits in all cases.

Across the reporting years 2022–2025, statistical testing confirmed significant inter-annual differences in TN ($p < 0.001$) and TP ($p = 0.0002$) loads. The highest annual loads occurred in 2022–2023, while the lowest were recorded in 2023–2024, with 2024–2025 intermediate. Rainfall and effluent volumes also varied between years (Section 3.4). The largest single load events (e.g., TN ~167 kg/d and TP ~133 kg/d in June 2025) coincided with high flows, and other comparable high TN events (>150 kg/d) occurred during peak rainfall in August and September 2022. In contrast, effluent concentrations of $cBOD_5$, TSS, NH_4-N, TN, TP, and *E. coli* remained low and stable throughout the period (Figure 3-7). Taken together, these results suggest that differences in annual loads are most plausibly linked to rainfall-driven flow variability rather than treatment performance. All consent conditions were consistently met.

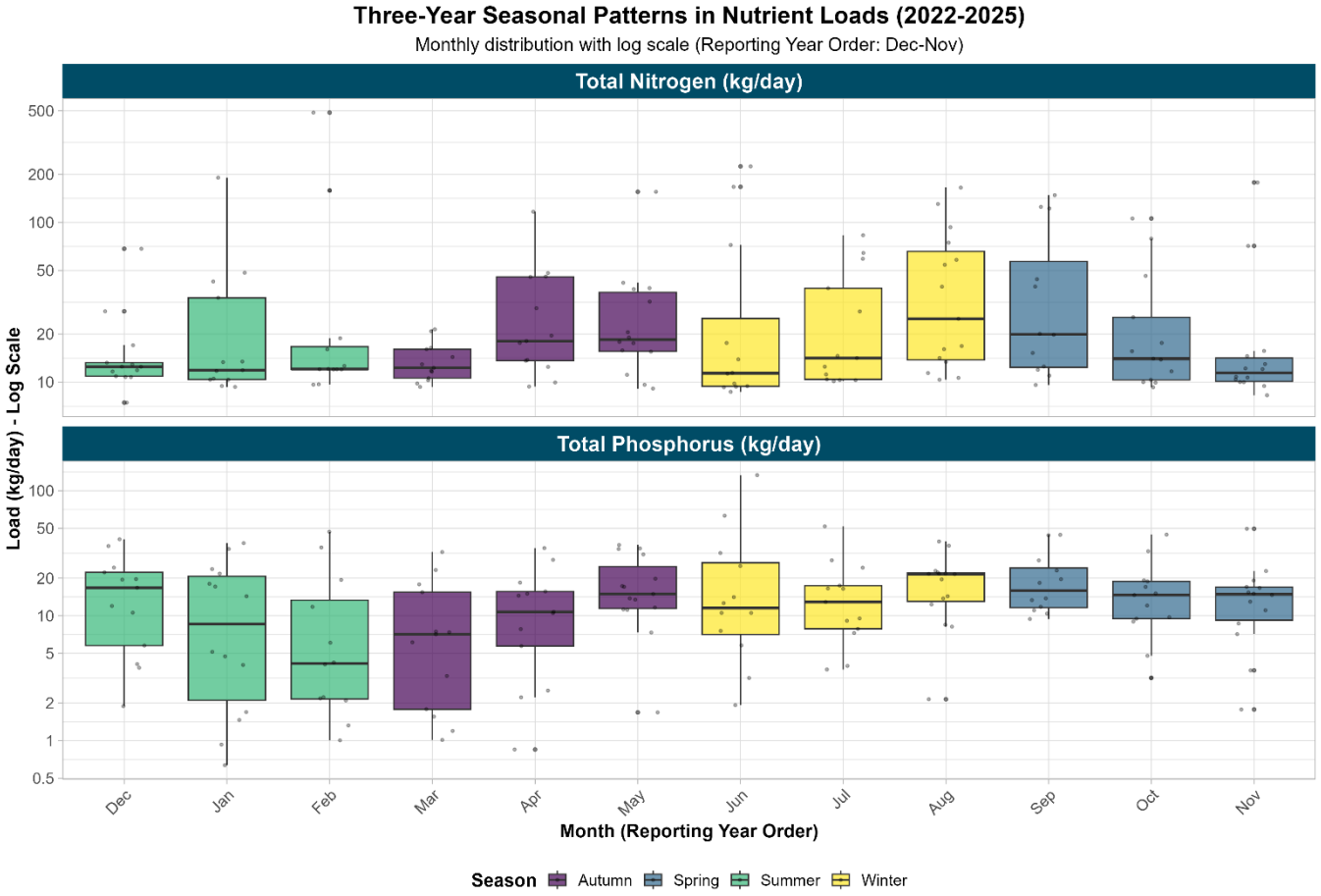

Figure 3-8 Boxplots showing monthly and seasonal distribution of Total Nitrogen (TN) and Total Phosphorus (TP) loads at Pukekohe WWTP (2022–2025).

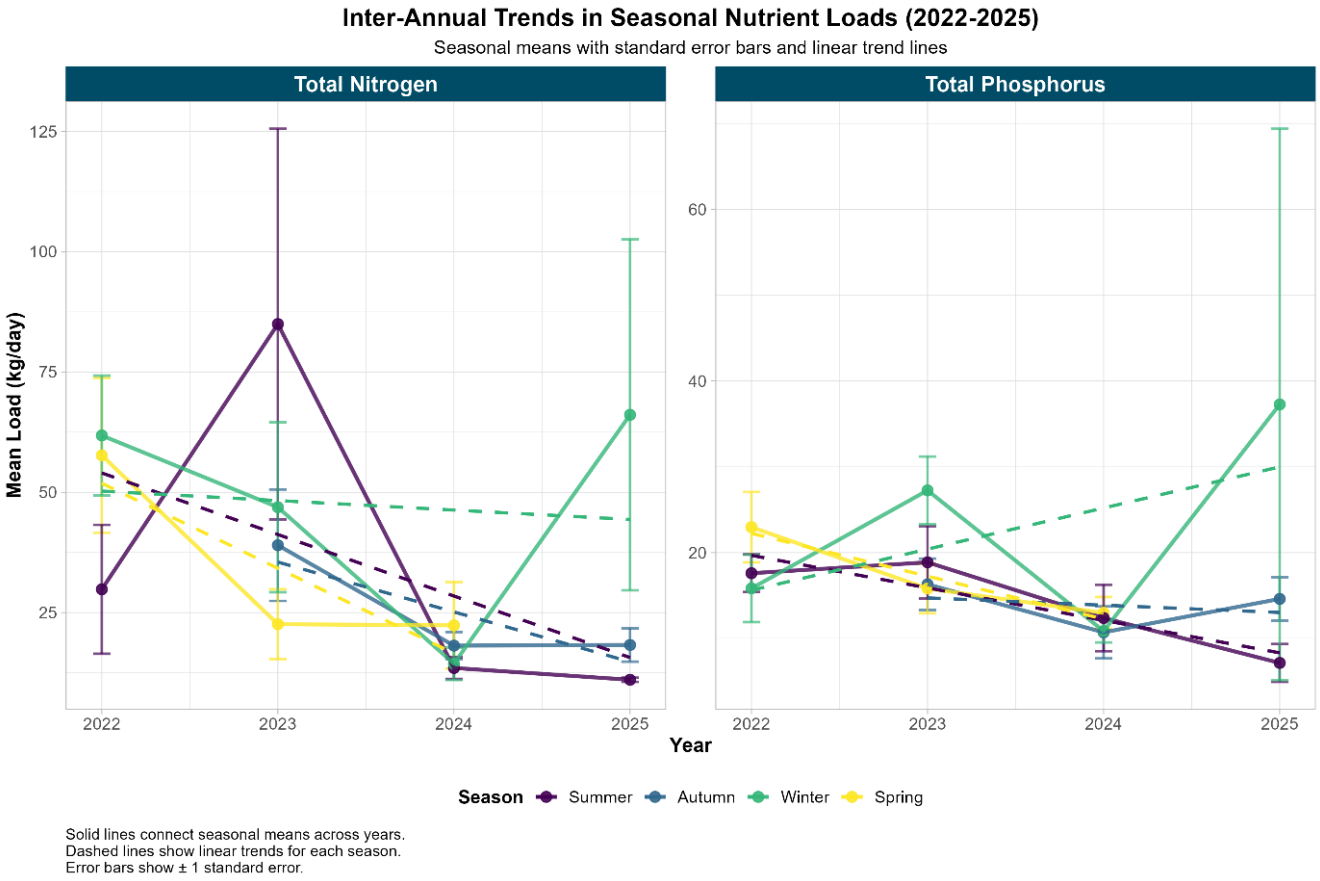

Figure 3-9 Inter-annual trends in seasonal mean nutrient loads (TN and TP) at Pukekohe WWTP (2022–2025). *Points show seasonal means, with dashed lines indicating linear trends and shaded areas confidence intervals. Winter means were higher, consistent with wetter conditions, but seasonal medians were low, and differences were not statistically significant.*

Figure 3-10 presents three-year trends (2022–2025) in median effluent concentrations and nutrient loads for key parameters at Pukekohe WWTP. Annual medians are shown with linear trend lines and confidence intervals. The results indicate consistent or improving performance for most parameters. Median $cBOD_5$ concentrations declined steadily, suggesting effective organic matter removal. NH_4-N concentrations also decreased, with values in 2025 near zero, supporting strong nitrification. Total nitrogen loads followed a downward trend across the three-year period, despite gradually increasing effluent flows (Section 3.4). E. coli concentrations remained consistently at or near the detection limit (1.6 cfu/100 mL), well within consent requirements, reflecting reliable UV disinfection. Total phosphorus loads dipped in 2024 before rising slightly in 2025, though overall values remained low compared with consent limits. TSS fluctuated year-to-year but showed no upward trend.

Overall, the three-year analysis indicates that Pukekohe WWTP continues to perform reliably within its consented parameters. Trends suggest incremental improvement in organic and nitrogen removal efficiency, while phosphorus and solids remain well controlled. Variability in annual nutrient loads is best explained by rainfall-driven inflows rather than treatment limitations.

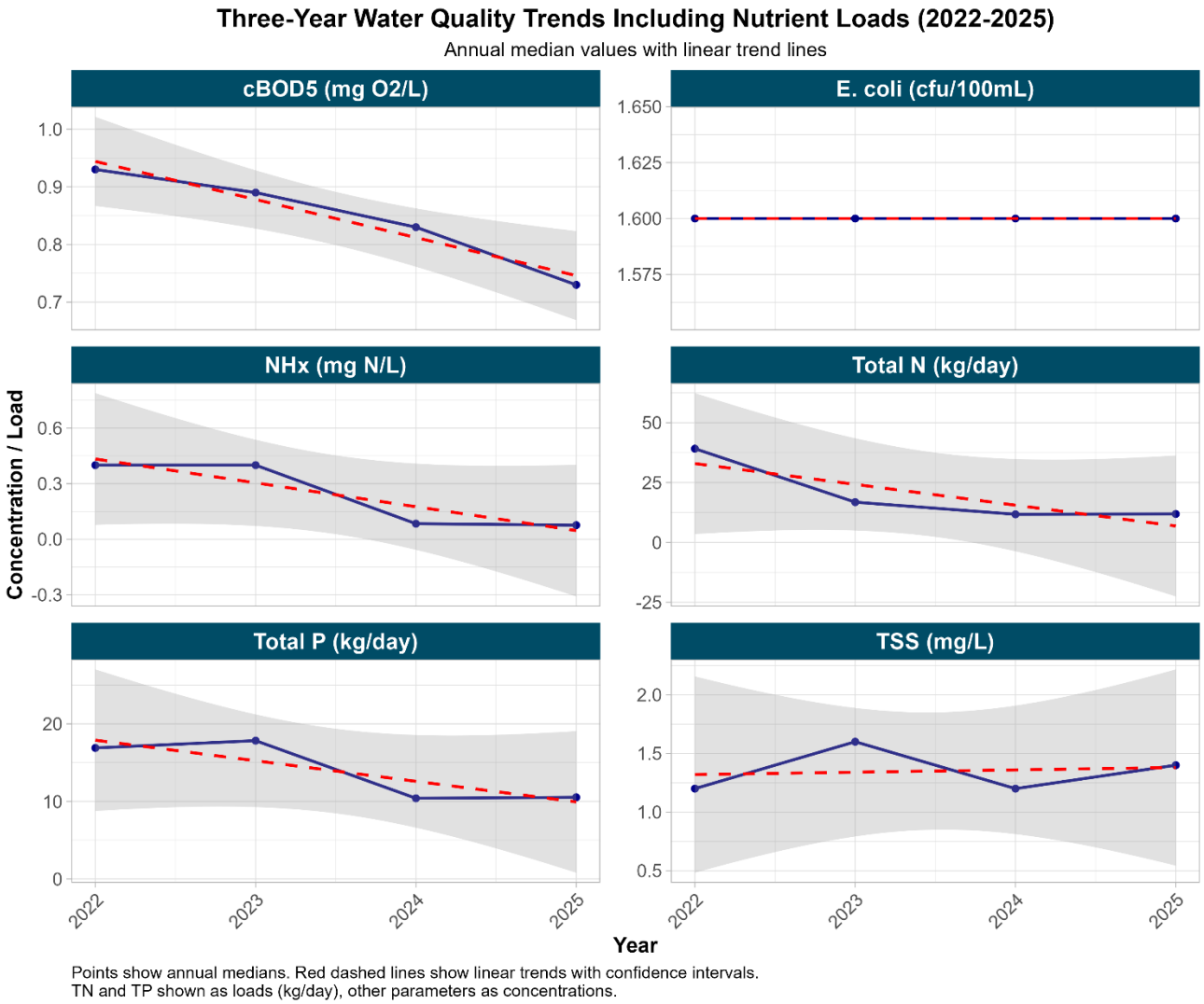

Figure 3-10 Three-year trends in treated wastewater quality parameters at Pukekohe WWTP (2022–2025). *Grey shaded areas indicate the 95% confidence intervals around the fitted trend lines, illustrating the level of uncertainty in the statistical model.*

3.6 Air quality

The site conducts a daily odour walkover on weekdays and maintains weekly logs. There were no offensive odours noted at the site boundary between July 2024 and June 2025 and no odour complaints related to the Pukekohe WWTP were recorded.

3.7 Complaints and incidents

One complaint was received during the 2024–2025 reporting period. On 10 July 2025, a resident of Parker Lane (Dean Perkins) reported odour and intermittent overflows from an air release valve located opposite his property, which he initially associated with the Pukekohe WWTP.

Subsequent investigation confirmed that the source of the issue was the wider wastewater network infrastructure (air release valve) and not the WWTP operations. The complaint was therefore redirected to Watercare's Networks team, who inspected and repaired the valve within the following days. The complainant was kept informed of the findings and resolution.

No other odour, noise, or nuisance complaints were recorded in the 2024–2025 period.

While the complaint was initially raised as a WWTP issue, investigation confirmed it related to the wastewater network. The incident did not reflect WWTP performance or consent compliance.

3.8 Operational issues

The Pukekohe WWTP had no significant operational issues between July 2024 and June 2025.

3.9 Summary of compliance

Appendix B lists a condition-by-condition assessment of compliance for the Pukekohe WWTP. The WWTP was fully compliant with all performance standards and consent limits, and therefore overall compliance is assessed as Category 1.

Appendix A. Assessment of Compliance

Table 3-4 Compliance assessment for AUTH137406.01.01

Condition Number	Consent Condition	Compliance Rating	Comments
01	The activities authorised shall be designed, upgraded, operated and maintained in general accordance with: (a) The document titled " Application for Resource Consent: Pukekohe Wastewater Consents Project – Section 3: Description of the Existing Pukekohe Wastewater Scheme" dated September 2016 and recorded as document number 9202644 on the Waikato Regional Council's document recording system (b) The conditions below, which shall prevail should any inconsistency occur between the conditions and the documents described at (a).	1	
02	The consent holder shall be responsible for all sub-contracted operations related to the exercise of this consent and must ensure sub-contractors are made aware of the conditions of this consent.	1	
03	The consent holder shall pay to the Waikato Regional Council any administrative charge fixed in accordance with Section 36 of the Resource Management Act 1991, or any charge prescribed in accordance with regulations made under Section 360 of the Resource Management Act.	1	
04	Within 12 months of the commencement of this consent, and thereafter on an annual basis for the following three years the consent holder shall provide a report to the Waikato Regional Council, the Te Taniwha o Waikato Liaison Group and the Community Liaison Group, detailing progress to date and forward planning for investigations, design, procurement procedure, construction, and commissioning of the wastewater treatment plant upgrade. The requirement to supply this report to these parties may cease either temporarily or permanently with the written approval of the Waikato Regional Council.	1	
05	Within six months of the commencement of this consent, the consent holder shall establish and retain for the duration of this consent a Community Liaison Group. The consent holder shall provide reasonable organisation and administrative support to facilitate the development and ongoing role of the Liaison Group. Membership of the Liaison Group shall be determined by the consent holder in consultation with the submitters who expressed a desire to be heard in relation to the consent process. The consent holder shall invite others to participate in the Community Liaison Group by: Please see the consent document for further details.	1	The first Community Liaison Group meeting occurred in March 2018. The last Community Liaison Group meeting was in June 2023. An invitation was extended for a meeting on the March 2025.The community did not attend, so it was adjourned.
06	The Liaison Group shall establish its own meeting protocols but shall be invited to meet at least annually to exercise the functions set out within this condition. The functions of the Liaison Group shall include, but not be limited to, the following matters: Please see the consent document for further details.	1	Refer above

Condition Number	Consent Condition	Compliance Rating	Comments
07	The consent holder shall provide minutes of each Liaison Group meeting to the Waikato Regional Council and the members of the Liaison Group within four weeks of each meeting which will include but not be limited to: (a) A record of the discussions at the meeting; (b) A record of any suggestions/issues provided or raised by the members of the Liaison Group including: i. What actions are proposed by the consent holder to respond to suggestions made by the Liaison Group; and ii. Where no actions are proposed to respond to suggestions, the reasons why not.	1	WRC included in the invite and circulation lists
07A	Within six months of the commencement of this consent, the consent holder shall establish and retain for the duration of this consent a Te Taniwha o Waikato Liaison Group. The consent holder shall provide reasonable organisation and administrative support to facilitate the development and ongoing role of the Liaison Group. The Consent Holder shall invite Te Taniwha o Waikato to: (a) Participate within the Te Taniwha o Waikato Liaison Group; (b) Establish its own meeting protocols; and (c) Meet at least annually to exercise the functions set out within condition 7B.	1	Meetings are arranged directly with TTOW as required. The last formal meeting was held in July 2023. The minutes can be provided to WRC upon request. Next meeting is scheduled for 7 October 2025
07B	The consent holder shall request that the Te Taniwha o Waikato Liaison Group: Please see the consent document for further details.	1	
07C	The consent holder shall provide minutes of each Taniwha o Waikato Liaison Group meeting under condition 7A to the Waikato Regional Council and the members of the Taniwha o Waikato Liaison Group within four weeks of each meeting, which will include but not be limited to: (a) A record of the discussions at the meeting; (b) A record of any suggestions/issues provided or raised by the members of the Taniwha o Waikato Liaison Group including: i. What actions are proposed by the consent holder to respond to suggestions made by the Taniwha o Waikato Liaison Group; and ii. Where no actions are proposed to respond to suggestions, the reasons why not.	1	Per above

Condition Number	Consent Condition	Compliance Rating	Comments
08	The consent holder shall prepare an Operations and Management Plan (OMP). The objective of the OMP is to provide a framework for the operation, upgrade and management of the wastewater treatment and discharge systems to ensure compliance with the condition s of consent. This OMP shall be lodged with Waikato Regional Council and provided to the Te Taniwha o Waikato Liaison Group and the Community Liaison Group within six months of commencement of these consents and shall be reviewed and updated every three years and as required as a result of any changes to the wastewater treatment plant upgrade operation or management.	1	The OMP was lodged with WRC in July 2023 and provided to TTOW and the CLG.
09	As a minimum the OMP shall include: Please see the consent document for further details.	1	
10	Any improvement or review of the OMP shall be consistent with the objective of the OMP.	1	
11	The consent holder shall undertake a minimum of one hectare of riparian planting in the areas identified on the Proposed Zone of Riparian Planting plan appended to these conditions.	1	Planting occurred in September 2020. Maintenance is ongoing.
12	The Riparian Planting required in accordance with condition 11 shall be: Please see the consent document for further details.	1	
13	Within 12 months of the commencement of this consent, the consent holder shall provide to the Waikato Regional Council a Riparian Planting and Management Plan. The objective of the Riparian Planting Management Plan is to provide a framework that outlines how conditions 11 and 12 shall be achieved. The plan shall be reviewed and updated every five years and as required as a result of any changes to the wastewater treatment plant upgrade, operation, or management.	1	Compliant
14	Prior to submission to the Waikato Regional Council the Riparian Planting and Management Plan shall be provided to the Te Taniwha o Waikato Liaison Group and Community Liaison Group for comment. After receiving comments from the Te Taniwha o Waikato Liaison Group and Community Liaison Group (or in the case that no comments being received within 30 working days), the plan shall be submitted to the Waikato Regional Council for approval in a certifying capacity. As a minimum, the plan shall include: Please see the consent document for further details.	1	Watercare submitted the Plan to the CLG and WRC in October 2019.
15	Within 12 months of the commencement of this consent, the consent holder shall provide a Pest Management Plan to the Waikato Regional Council. The plan shall be reviewed and updated every five years and as required due to any changes to the wastewater treatment plant upgrade, operation, infrastructure, or management. The objective of the Plan is to provide a framework for the management of pests (animal and plant) within the boundaries of the WWTP.	1	

Condition Number	Consent Condition	Compliance Rating	Comments
16	The plan shall be provided to the Community Liaison Group, with a request for comments to be provided within 30 working days. After receiving comments from Te Taniwha o Waikato Liaison Group and the Community Liaison Group (or in the case that no comments are forthcoming within 30 working days), the plan shall be submitted to the Waikato Regional Council for approval in a certifying capacity. The certified plan shall be implemented from the date of commencement of this consent until the consent's expiry. As a minimum, the plan shall include the following: Please see the consent document and the amended consent document for further details.	1	Watercare sent the Plan to community group members for comment on in December 2018.
17	The consent holder shall provide to the Waikato Regional Council, the Te Taniwha o Waikato Liaison Group and Community Liaison Group a written report (the Annual Report) by 30 September each year, including as a minimum: Please see the consent document for further details.	1	This report
18	In the six-month period following the 5th,10th,15th,20th and 25th anniversaries of commencement of these consents, the Waikato Regional Council may following service of notice on the consent holder commence a review of this resource consent under section 128(1) of the Resource Management Act 1991 for the following purposes: Please see the consent document and the amended conditions for further details.	N/A	
19	By the 10th, 20th and 30th anniversaries of the commencement of this consent the consent holder shall request (in writing) of Te Taniwha o Waikato that an updated Cultural Impact Assessment be developed on behalf of Te Taniwha o Waikato unless prior written confirmation is provided on behalf of Te Taniwha o Waikato that an updated Cultural Impact Assessment is unnecessary. Any updated Cultural Impact Assessment shall be provided to the Waikato Regional Council within 30 days of receipt.	N/A	
20	The consent holder shall maintain a Complaints Register for any complaints made about the treatment and discharge operations received by the consent holder. The Register shall record: Please see the consent document and the amended conditions for further details.	1	Compliant
21	The consent holder shall submit to the Waikato Regional Council a Monitoring and Technology Review Report by the 5th, 10th, 20thand 30th anniversaries of commencement of this consent. The Review Report shall be provided to the Te Taniwha o Waikato Liaison Group and the Community Liaison Group, with a request for comments to be provided within 60 working days. After receiving comments from the Te Taniwha o Waikato Liaison Group and the Community Liaison Group (or in the case that no comments are forthcoming after 60 working days), the plan shall be submitted to the Waikato Regional Council for certification it has been produced in accordance with the requirements of these conditions.	1	The report completed by Stantec was circulated to the CLG and Te Taniwha o Waikato in October 2022 and subsequently issued to WRC in February 2023.

Condition Number	Consent Condition	Compliance Rating	Comments
22	The Monitoring and Technology Review report shall include, but is not limited to, the following: (a) An assessment of ongoing compliance with the requirements of this resource consent particularly in relation to any reported non -compliance with consent conditions; Please see the consent document for further details.	1	
23	There shall be no overflow from ponds 1, 2 or 3 into the constructed wetland or off the Pukekohe WWTP site from the ponds.	1	
24	The consent holder shall manage and maintain the integrity of the sludge storage area, wetlands and other structures that form any part of the wastewater treatment process so as to minimise the volume of seepage from such structures as far as practicable.	1	
25	No physical works shall be undertaken which are likely to significantly increase the amount of seepage above that which existed at the commencement of these consents.	1	
26	The consent holder shall maintain all existing peripheral drains within the site to ensure that any seepage into the drains is pumped back into the treatment system.	1	
27	The maximum daily discharge volume to the Parker Lane Stream, shall not exceed 104,800 cubic metres of treated wastewater.	1	There were no exceedances during the reporting year 2024-2025.
28	Up to four years from the date of commencement of this resource consent (Stage 1 discharge) the consent holder shall ensure that the treated wastewater leaving the treatment plant following UV treatment does not exceed the following limits: Please see the consent document for further details.	N/A	
29	From commencement of the Stage 2 discharge and for the remaining duration of this resource consent (Stage 2 discharge), the consent holder shall ensure that the quality of the treated wastewater discharge at the discharge point does not exceed the following limits: Please see the consent document for further details.	1	All effluent quality parameters were compliant with the consent standards
30	The consent holder shall continuously monitor the flow rate of the treated wastewater leaving the WWTP and shall record the total daily discharge volume into the wetland.	1	The discharge effluent volumes have been monitored and recorded.
31	The consent holder shall continuously monitor the flow rate of the treated wastewater leaving the wetland and shall record the total daily discharge volume leaving the wetland. The requirement to undertake this monitoring may cease either temporarily or permanently with the written approval of the Waikato Regional Council.	1	

Condition Number	Consent Condition	Compliance Rating	Comments
32	The consent holder shall take grab samples of the treated wastewater on a fortnightly basis from the discharge leaving the constructed wetland and measure for all parameters as detailed within conditions 28 and 29. The requirement to undertake this sampling may cease either temporarily or permanently with the written approval of the Waikato Regional Council. Advice Note: All wastewater quality analyses shall be undertaken by an IANZ accredited or equivalent laboratory. All methods used shall be appropriate for the wastewater analyses undertaken	1	Sampling typically occurs weekly (i.e., higher frequency than required). All available results are included in this report (Appendix B).
33	The consent holder shall forward the results of the monitoring undertaken via conditions 27, 28, 29, and 32 to the Waikato Regional Council, via electronic means, on a three-monthly basis.	1	
34	The consent holder shall notify the Waikato Regional Council within 24 hours (where practicable) of the consent holder becoming aware of the limits specified in Conditions 27, 28, and 29 of this resource consent being exceeded, or any accidental discharge, plant breakdown or other circumstance which is likely to result in the limits of this consent being exceeded. The consent holder shall, within 10 working days of the incident occurring, provide a written report to the Waikato Regional Council, identifying the breach, possible causes and any remedial actions and steps to ensure future compliance.	1	
35	The consent holder shall take grab samples of the treated wastewater on a fortnightly basis from the treatment plant following UV treatment, for the purpose of determining compliance with conditions 28 and 29. Advice Note: All wastewater quality analyses shall be undertaken by an IANZ accredited or equivalent laboratory. All methods used shall be appropriate for the wastewater analyses undertaken.	1	Sampling typically occurs weekly (i.e., higher frequency than required). All available results are included in this report and used for determining compliance.
36	The operation, management and maintenance of the Pukekohe WWTP shall not result in noxious, dangerous, offensive, or objectionable odour to the extent that it causes an adverse effect at or beyond the boundary of the site, in the opinion of a Waikato Regional Council enforcement officer.	1	

Condition Number	Consent Condition	Compliance Rating	Comments
37	The consent holder shall prepare an Odour Management Plan. The objective of the Odour Management Plan is to provide a framework for the operation, maintenance and management of the wastewater treatment and discharge systems to ensure compliance with Condition 36. The Odour Management Plan shall be provided to the Te Taniwha o Waikato Liaison Group and the Community Liaison Group, with a request for comments to be provided within 30 working days. After receiving comments from the Te Taniwha o Waikato Liaison Group and the Community Liaison Group (or in the case that no comments are forthcoming after 30 working days), the plan shall be submitted to the Waikato Regional Council for certification it has been produced in accordance with the requirements of these conditions. As a minimum, the Odour Management Plan shall include: Please see the consent document for further details.	1	Odour, Pest, and Avian Botulism Management Plans were finalised and sent to community group members for comment in Dec 2018. The plans are finalised and forwarded to the Waikato Regional Council.
38	The Odour Management Plan shall be reviewed and updated every five years and as required as a result of any significant changes in plant operation, maintenance, or management.	1	The updated Odour Management Plan was submitted to WRC in July 2023.
39	Any change in the Odour Management Plan shall be in accordance with the objective as set out in Condition 37.	1	
40	An electronic copy of the Odour Management Plan shall be provided to Waikato Regional Council within 10 working days of a request to do so.	1	

Appendix B. Effluent Quality Data

Appendix B1. Flows and Rainfall

Table B1. Treated wastewater flows and rainfall at Pukekohe WWTP (1 July 2024 – 30 June 2025). *This table presents daily records of treated wastewater volume to the wetland, wetland discharges (gravity, pumped, and total), and rainfall at the Whangamaire Culvert weather station.*

Date	Treated wastewater Volume to Wetland (m3)	Wetland Discharge - Gravity (m3)	Wetland Discharge - Pumped (m3)	Wetland Discharge - Total (m3)	Rainfall (mm)
1/07/2024	10675.6	10994.5	107.2	11101.8	21.1
2/07/2024	11849.3	10740.5	14.8	10755.2	6.64
3/07/2024	11907	11390.8	1.2	11392	1
4/07/2024	11907	11832.8	0	11832.8	0
5/07/2024	11354.7	11488	6.5	11494.5	0
6/07/2024	10780.4	11307	116.5	11423.5	0.99
7/07/2024	10562.4	11207.5	186	11393.5	1.49
8/07/2024	10474.1	10881.2	19.5	10900.8	0
9/07/2024	10474.1	10697.8	62.5	10760.2	0
10/07/2024	11630.7	10544.2	15.2	10559.5	0.5
11/07/2024	11630.7	10457.5	4.2	10461.8	0
12/07/2024	10449.7	10485.2	11.8	10497	0
13/07/2024	10449.7	10531.5	15.8	10547.2	0
14/07/2024	10190.9	10506	100.8	10606.8	0
15/07/2024	10982.9	10619.5	104	10723.5	7.47
16/07/2024	10982.9	10632.8	103	10735.8	0
17/07/2024	10945.7	10701.5	0	10701.5	4.48
18/07/2024	9939.5	10671	16.8	10687.8	0.49
19/07/2024	10113.3	10750.8	11.2	10762	11.95
20/07/2024	14366.7	11173.2	2.2	11175.5	9.96
21/07/2024	14366.7	11895.8	56.8	11952.5	4.48
22/07/2024	11947	12105.2	22.2	12127.5	4.98
23/07/2024	11889.5	12041.2	13	12054.2	2.48
24/07/2024	13162	11722.5	16	11738.5	2.49
25/07/2024	13162	12644.2	76.5	12720.8	0.5
26/07/2024	9531.8	13294.8	27	13321.8	0
27/07/2024	8706.7	12572.5	241.2	12813.8	0
28/07/2024	9085.8	11232.5	28.8	11261.2	0
29/07/2024	9235.2	10957.8	75	11032.8	13.94
30/07/2024	13719.5	11312.8	33.8	11346.5	10.95
31/07/2024	14079	12071.5	16	12087.5	7.47
1/08/2024	24883.6	14569.5	16.8	14586.2	10.95

Date	Treated wastewater Volume to Wetland (m3)	Wetland Discharge - Gravity (m3)	Wetland Discharge - Pumped (m3)	Wetland Discharge - Total (m3)	Rainfall (mm)
2/08/2024	24883.6	16121.2	49.2	16170.5	0
3/08/2024	14738	15671	1.5	15672.5	0
4/08/2024	10819.3	14911.8	33	14944.8	0
5/08/2024	10612.6	14169.2	207.8	14377	0
6/08/2024	10612.6	13517	84	13601	0
7/08/2024	11186.4	12848	26.8	12874.8	0.5
8/08/2024	11186.4	11710.5	102.2	11812.8	2.98
9/08/2024	11038.8	11114.5	90.5	11205	4.48
10/08/2024	11044	11309.5	207.5	11517	0
11/08/2024	11267.7	11215.2	172.8	11388	0.5
12/08/2024	11314.2	10674.2	15	10689.2	2.99
13/08/2024	12246.1	11258.8	2.5	11261.2	0.5
14/08/2024	12246.1	11391.5	168.5	11560	2.5
15/08/2024	10920.9	11108.8	35.2	11144	0
16/08/2024	11247.7	11383.5	197.5	11581	2
17/08/2024	14452.5	12181.8	6.8	12188.5	22
18/08/2024	19018.2	14014.2	16.5	14030.8	10.5
19/08/2024	19018.2	13967.8	38.2	14006	6
20/08/2024	18356.1	15316.2	138.8	15455	1.5
21/08/2024	15957.8	15879.8	158.2	16038	1
22/08/2024	15815.5	15960	87.2	16047.2	0
23/08/2024	12749.4	15457	81.8	15538.8	0.5
24/08/2024	12574.6	15025.5	3	15028.5	4.5
25/08/2024	12593.6	14609.8	67.5	14677.2	0.5
26/08/2024	12593.6	14080.5	203	14283.5	0
27/08/2024	12141.7	13405	40.8	13445.8	11
28/08/2024	12141.7	12950.5	8	12958.5	1.5
29/08/2024	11779.1	12853.5	139	12992.5	4
30/08/2024	11779.1	12561	76.8	12637.8	0
31/08/2024	11836.4	12820.2	114	12934.2	16
1/09/2024	13600.7	12714.2	50.2	12764.5	7
2/09/2024	15923.2	13217.2	35.2	13252.5	0
3/09/2024	18133	14283.5	79.8	14363.2	4
4/09/2024	18133	14744.5	14.2	14758.8	1
5/09/2024	16956.6	12385.2	27.5	12412.8	1
6/09/2024	11640.4	14604.5	116.2	14720.8	3
7/09/2024	11640.4	13962.5	1.8	13964.2	0.5
8/09/2024	11906	12892.2	155.8	13048	3
9/09/2024	11906	12825.8	89	12914.8	0.5
10/09/2024	11702.7	12093.8	148.2	12242	0
11/09/2024	11702.7	11022.5	54.8	11077.2	0

Date	Treated wastewater Volume to Wetland (m3)	Wetland Discharge - Gravity (m3)	Wetland Discharge - Pumped (m3)	Wetland Discharge - Total (m3)	Rainfall (mm)
12/09/2024	10746.5	11325	160.2	11485.2	0
13/09/2024	10372	10622.8	196.8	10819.5	0
14/09/2024	10936	10557.2	131.5	10688.8	16.71
15/09/2024	15432.9	12090.2	47.5	12137.8	3.29
16/09/2024	15432.9	12672	15.5	12687.5	8.5
17/09/2024	13305.9	12145.8	2.5	12148.2	6
18/09/2024	13139.1	12650.5	52.8	12703.2	1.5
19/09/2024	12906.1	12325.5	140.5	12466	8
20/09/2024	25414.6	12605.2	538	13143.2	31.5
21/09/2024	25414.6	13806	538	14344	2
22/09/2024	20943.7	15046.2	0	15046.2	0
23/09/2024	15946.9	15280.2	0	15280.2	2.5
24/09/2024	13031.9	15138	0	15138	0.5
25/09/2024	12195.9	14837.8	0	14837.8	0
26/09/2024	11621.2	14428	0	14428	0.5
27/09/2024	11889.7	13761.8	0	13761.8	1.5
28/09/2024	11889.7	13279	0	13279	0
29/09/2024	11527.5	12248	0	12248	0
30/09/2024	10702.5	12418.2	0	12418.2	0
1/10/2024	10702.5	12195	0	12195	0
2/10/2024	10645	12393.2	0	12393.2	18
3/10/2024	18040.8	13843.2	0	13843.2	20.5
4/10/2024	18040.8	12509.8	0	12509.8	0
5/10/2024	13084.5	12822.5	0	12822.5	2
6/10/2024	13364.7	12866.2	0	12866.2	24.5
7/10/2024	28128.6	14322	0	14322	8
8/10/2024	28128.6	15301.5	0	15301.5	0.5
9/10/2024	18498.2	16545.5	0	16545.5	3.5
10/10/2024	18486.3	16670.5	0	16670.5	3
11/10/2024	15680.9	16337.2	0	16337.2	0.5
12/10/2024	12322.6	15896.5	0	15896.5	0
13/10/2024	12031.9	15524.5	0	15524.5	9.5
14/10/2024	12031.9	15159	0	15159	3.5
15/10/2024	11594.7	14735.2	0	14735.2	0.5
16/10/2024	11594.7	14332.8	0	14332.8	0
17/10/2024	11386.5	13768.5	0	13768.5	0
18/10/2024	10878.3	12951.2	0	12951.2	0
19/10/2024	10437.1	12119.8	0	12119.8	0
20/10/2024	10437.1	11246.8	0	11246.8	0
21/10/2024	11369.4	10719	0	10719	2.5
22/10/2024	11369.4	10712.2	0	10712.2	0

Date	Treated wastewater Volume to Wetland (m3)	Wetland Discharge - Gravity (m3)	Wetland Discharge - Pumped (m3)	Wetland Discharge - Total (m3)	Rainfall (mm)
23/10/2024	11258.9	11538	0	11538	0
24/10/2024	10868.8	11386.2	0	11386.2	0
25/10/2024	11002	11345.2	0	11345.2	0
26/10/2024	11896.4	11285	0	11285	10.5
27/10/2024	11896.4	10607.5	0	10607.5	0
28/10/2024	11454.5	10638.2	0	10638.2	7.5
29/10/2024	11295.9	10870.5	0	10870.5	5
30/10/2024	11355	10516.5	0	10516.5	10
31/10/2024	11355	10342.5	0	10342.5	0.5
1/11/2024	10407.2	10647.5	0	10647.5	0
2/11/2024	10124.4	10591.2	0	10591.2	7
3/11/2024	11358.9	10294.5	0	10294.5	0
4/11/2024	11358.9	10588.2	0	10588.2	0
5/11/2024	10160.2	9904	0	9904	0
6/11/2024	10463.6	10098	0	10098	0
7/11/2024	10463.6	10164	0	10164	0
8/11/2024	10010.7	9897.2	0	9897.2	0
9/11/2024	9972.8	10054.2	0	10054.2	0
10/11/2024	9972.8	9484.5	0	9484.5	1
11/11/2024	9297.1	8950.8	0	8950.8	4
12/11/2024	10322.1	9035	0	9035	0
13/11/2024	10400.1	9751.2	0	9751.2	0.5
14/11/2024	10400.1	10004	0	10004	0.5
15/11/2024	20957.2	10730.5	0	10730.5	56.5
16/11/2024	20957.2	12258.8	0	12258.8	0.5
17/11/2024	15770.8	12651.2	0	12651.2	1
18/11/2024	12388	12487.2	0	12487.2	0
19/11/2024	12388	12291	0	12291	0
20/11/2024	12116.2	12263.2	0	12263.2	0
21/11/2024	11699.1	12462.2	0	12462.2	6
22/11/2024	10929.1	12232	0	12232	0
23/11/2024	10424.9	11931.8	0	11931.8	0
24/11/2024	9814.6	11097.8	0	11097.8	0.5
25/11/2024	9579.4	10323.2	0	10323.2	0
26/11/2024	9332.4	10050.2	0	10050.2	0
27/11/2024	9713.1	9449.8	0	9449.8	0
28/11/2024	9713.1	8804.8	0	8804.8	0.5
29/11/2024	8759.8	8792.2	0	8792.2	0
30/11/2024	10521.5	8738	0	8738	10
1/12/2024	10521.5	9531.5	0	9531.5	2.05
2/12/2024	9944.7	9326.2	0	9326.2	0

Date	Treated wastewater Volume to Wetland (m3)	Wetland Discharge - Gravity (m3)	Wetland Discharge - Pumped (m3)	Wetland Discharge - Total (m3)	Rainfall (mm)
3/12/2024	9944.7	9346.2	0	9346.2	0
4/12/2024	10739	10072.2	0	10072.2	0
5/12/2024	11524.6	11155.8	0	11155.8	0
6/12/2024	11524.6	11175.5	0	11175.5	0
7/12/2024	10177.5	10503.5	0	10503.5	0
8/12/2024	10177.5	10432.8	0	10432.8	1.54
9/12/2024	10291.3	10630.2	0	10630.2	8.72
10/12/2024	10790.6	10586.8	0	10586.8	0
11/12/2024	10790.6	10980.5	0	10980.5	8.5
12/12/2024	12832.5	10705.5	0	10705.5	8
13/12/2024	14845.2	11787	0	11787	2.5
14/12/2024	14845.2	11405.5	0	11405.5	0
15/12/2024	13146	10977.8	0	10977.8	0
16/12/2024	11274.8	10568	0	10568	7
17/12/2024	11349.4	10906.5	0	10906.5	0.5
18/12/2024	11349.4	10699.2	0	10699.2	0
19/12/2024	10376.4	10648.2	0	10648.2	0
20/12/2024	10780.5	10706	0	10706	3
21/12/2024	10780.5	10840.8	0	10840.8	2
22/12/2024	10078.7	10685.2	0	10685.2	0
23/12/2024	10748.7	10571.5	0	10571.5	5.5
24/12/2024	10748.7	10149.8	0	10149.8	0
25/12/2024	9419.9	9934	0	9934	0.5
26/12/2024	8330.1	9255.5	0	9255.5	8.5
27/12/2024	8424.8	9106.2	0	9106.2	0
28/12/2024	8424.8	8996.2	0	8996.2	0
29/12/2024	7845.5	9236.2	0	9236.2	0
30/12/2024	7637.1	8678	0	8678	1.5
31/12/2024	8077.6	8264.5	0	8264.5	5
1/01/2025	8077.6	8254	0	8254	0
2/01/2025	7133.9	7747	0	7747	1
3/01/2025	7889.8	7708.8	0	7708.8	2.5
4/01/2025	10012.5	8094.5	0	8094.5	12.5
5/01/2025	10012.5	8269.5	0	8269.5	3.5
6/01/2025	9499.5	8557.5	0	8557.5	0
7/01/2025	9322.1	8581.2	0	8581.2	0
8/01/2025	9322.1	8744.2	0	8744.2	0
9/01/2025	9203.9	9190	0	9190	0
10/01/2025	9418.9	9002.5	0	9002.5	0
11/01/2025	9677.3	8979.5	0.2	8979.8	0
12/01/2025	9677.3	8754	0.2	8754.2	0

Date	Treated wastewater Volume to Wetland (m3)	Wetland Discharge - Gravity (m3)	Wetland Discharge - Pumped (m3)	Wetland Discharge - Total (m3)	Rainfall (mm)
13/01/2025	10189.1	8744.5	0	8744.5	0
14/01/2025	10189.1	9054.8	0	9054.8	0
15/01/2025	9554.4	9012.8	0	9012.8	0
16/01/2025	9554.4	9265	0	9265	0
17/01/2025	9493.2	9505.8	0	9505.8	0
18/01/2025	9624.5	9390.5	0	9390.5	0
19/01/2025	9624.5	8916.2	0	8916.2	0
20/01/2025	9706.3	8792.5	0	8792.5	0.5
21/01/2025	9706.3	10539.5	0	10539.5	13.5
22/01/2025	9897.7	8678	0	8678	0
23/01/2025	9897.7	8397.2	0	8397.2	0
24/01/2025	9652.2	9007	0	9007	0
25/01/2025	9636	9030	0	9030	6
26/01/2025	10531	10008.5	0	10008.5	17
27/01/2025	10531	9292.2	0	9292.2	1
28/01/2025	9822.5	8934.8	0	8934.8	0
29/01/2025	10466.7	9104.2	0	9104.2	0
30/01/2025	10466.7	9043.5	0	9043.5	0
31/01/2025	9765.1	9362.5	0	9362.5	0
1/02/2025	9340.4	9221	0	9221	0
2/02/2025	9295.1	9002.2	0	9002.2	0
3/02/2025	9346.9	9462	0	9462	0
4/02/2025	10144.7	8951	0	8951	0
5/02/2025	10144.7	9485.5	0	9485.5	0
6/02/2025	9942	10555.5	0	10555.5	0
7/02/2025	9547	9809	0	9809	0
8/02/2025	9547	8842.8	0	8842.8	3
9/02/2025	8716.3	8765.5	0	8765.5	0.5
10/02/2025	9077.3	8749.2	0	8749.2	0
11/02/2025	9756	8985.2	0	8985.2	0
12/02/2025	10034.6	9000.8	0	9000.8	0
13/02/2025	10034.6	8768.5	0	8768.5	0
14/02/2025	11912.3	8718.5	0	8718.5	40.5
15/02/2025	11912.3	10230	0	10230	0
16/02/2025	9981.4	10449.8	0	10449.8	0
17/02/2025	9455.1	9830.5	0	9830.5	0
18/02/2025	9997.3	8885.5	0	8885.5	1.5
19/02/2025	9997.3	8924	0	8924	0
20/02/2025	9818.1	9009.8	0	9009.8	1
21/02/2025	9818.1	9471	0	9471	0
22/02/2025	8941.4	9870.8	0	9870.8	0

Date	Treated wastewater Volume to Wetland (m3)	Wetland Discharge - Gravity (m3)	Wetland Discharge - Pumped (m3)	Wetland Discharge - Total (m3)	Rainfall (mm)
23/02/2025	8511.5	8836.8	0	8836.8	0
24/02/2025	9231.2	8021	0	8021	0
25/02/2025	9470	8388.5	0	8388.5	0
26/02/2025	9706.4	9027	0	9027	0
27/02/2025	9706.4	9296	0	9296	0
28/02/2025	9573.7	9103.5	0	9103.5	0
1/03/2025	9573.7	9411.2	0	9411.2	0
2/03/2025	8895.1	9054.8	0	9054.8	0
3/03/2025	8752	8893.8	0	8893.8	0
4/03/2025	9263.2	8813.2	0	8813.2	17
5/03/2025	9896	9960.5	0	9960.5	0
6/03/2025	9896	9513.8	0	9513.8	0
7/03/2025	9207.3	8801	0	8801	0
8/03/2025	7546.1	8492.5	0	8492.5	0
9/03/2025	7522.9	8203.8	0	8203.8	0
10/03/2025	7952.6	8040.2	0	8040.2	0
11/03/2025	8304.9	7855.5	0	7855.5	2.5
12/03/2025	8304.9	7570.5	0	7570.5	2.5
13/03/2025	8546.4	7764	0	7764	0
14/03/2025	10152.3	8078.8	0	8078.8	0
15/03/2025	10152.3	8412.2	0	8412.2	0
16/03/2025	8933.5	8060.8	0	8060.8	0
17/03/2025	10684	8776.2	0	8776.2	5.5
18/03/2025	11471.3	9609.2	0	9609.2	5
19/03/2025	11471.3	10055.2	0	10055.2	9
20/03/2025	10790.2	10311.8	0	10311.8	0.5
21/03/2025	9233.7	9856.8	0	9856.8	0
22/03/2025	9233.7	9677.2	0	9677.2	0
23/03/2025	9424.8	9188.8	0	9188.8	0
24/03/2025	10983.7	10689.8	0	10689.8	0
25/03/2025	10983.7	10572.5	0	10572.5	0
26/03/2025	8818.5	10191.8	0	10191.8	0
27/03/2025	10526.5	9329.2	0	9329.2	0
28/03/2025	10526.5	9781.2	0	9781.2	1
29/03/2025	9752.3	9053.5	0	9053.5	0
30/03/2025	9795.9	9393.8	0	9393.8	0
31/03/2025	9795.9	9621.2	0	9621.2	0
1/04/2025	9110.6	9882.2	0	9882.2	0
2/04/2025	9492.2	9282	0	9282	0.5
3/04/2025	11246.4	10310	0	10310	15.5
4/04/2025	25436.5	11947	0	11947	63

Date	Treated wastewater Volume to Wetland (m3)	Wetland Discharge - Gravity (m3)	Wetland Discharge - Pumped (m3)	Wetland Discharge - Total (m3)	Rainfall (mm)
5/04/2025	25436.5	14532.2	0	14532.2	0
6/04/2025	15809.6	15230.2	0	15230.2	3
7/04/2025	10543.7	14146	0	14146	6.5
8/04/2025	12573	13869.2	0	13869.2	14.5
9/04/2025	12573	13521.8	0	13521.8	0
10/04/2025	11058.3	12607	0	12607	0
11/04/2025	10441	11652.8	0	11652.8	0.5
12/04/2025	10441	11117.5	0	11117.5	0
13/04/2025	9888.4	10923.8	0	10923.8	0
14/04/2025	8519.5	10034.5	0	10034.5	0
15/04/2025	8519.5	9346.8	0	9346.8	0
16/04/2025	9032.5	9201.8	0	9201.8	1
17/04/2025	10010.7	8902.2	0	8902.2	4
18/04/2025	11456.1	10053.8	0	10053.8	5.5
19/04/2025	21535.5	12355.8	0	12355.8	59
20/04/2025	21535.5	13430.2	0	13430.2	10.5
21/04/2025	13726	13540.8	0	13540.8	0.5
22/04/2025	12320	13440.5	0	13440.5	1
23/04/2025	12609.5	13291	0	13291	0
24/04/2025	12609.5	13244.5	0	13244.5	0
25/04/2025	12003.1	12920	0	12920	0
26/04/2025	9699.9	12433.5	0	12433.5	0
27/04/2025	11015.9	12006.2	0	12006.2	12.5
28/04/2025	11169.6	11809.8	0	11809.8	3
29/04/2025	11599.3	11933.2	0	11933.2	3.5
30/04/2025	12332.1	11540.2	0	11540.2	12
1/05/2025	16741.5	12266.5	0	12266.5	18
2/05/2025	16741.5	13207.2	0	13207.2	4
3/05/2025	14222.1	13341.2	0	13341.2	0
4/05/2025	11762.9	12991.8	0	12991.8	0.5
5/05/2025	10955.5	12674.2	0	12674.2	0
6/05/2025	10955.5	12349.5	0	12349.5	0
7/05/2025	11071.5	12013.5	0	12013.5	0
8/05/2025	11071.5	11878	0	11878	3
9/05/2025	17553.2	12035.8	0	12035.8	34
10/05/2025	17553.2	13009.5	0	13009.5	0
11/05/2025	15568.9	13255.5	0	13255.5	0
12/05/2025	12849	13214.8	0	13214.8	0
13/05/2025	11972.4	12892.2	0	12892.2	1
14/05/2025	10091.7	12538	0	12538	1.5
15/05/2025	10091.7	11993.8	0	11993.8	0

Date	Treated wastewater Volume to Wetland (m3)	Wetland Discharge - Gravity (m3)	Wetland Discharge - Pumped (m3)	Wetland Discharge - Total (m3)	Rainfall (mm)
16/05/2025	12474.1	11559.5	0	11559.5	0
17/05/2025	13261.6	11698.8	0	11698.8	0
18/05/2025	13261.6	11402.2	0	11402.2	8.5
19/05/2025	10734.2	11128	0	11128	0
20/05/2025	10025.3	10927.8	0	10927.8	0.5
21/05/2025	10122.4	10752.5	0	10752.5	0
22/05/2025	10122.4	10695.2	0	10695.2	2.5
23/05/2025	10010	10321.2	0	10321.2	0.5
24/05/2025	9832.8	9198	0	9198	0.5
25/05/2025	9752	9992.8	0	9992.8	0
26/05/2025	11321.5	9880.8	0	9880.8	27.5
27/05/2025	16743.6	10553.5	0	10553.5	5.5
28/05/2025	16743.6	11181.5	0	11181.5	5
29/05/2025	15145.4	11696.5	0	11696.5	6
30/05/2025	11956.3	11413.5	0	11413.5	3
31/05/2025	11524.7	11984.2	0	11984.2	1
1/06/2025	10800.2	12017.2	0	12017.2	0.5
2/06/2025	10084.8	11843.8	0	11843.8	2.5
3/06/2025	10084.8	11567.8	0	11567.8	0.5
4/06/2025	19422.4	11176.8	0	11176.8	41.5
5/06/2025	24953.9	16860.2	0	16860.2	2
6/06/2025	24953.9	13538	0	13538	18
7/06/2025	22308.7	13704	0	13704	10
8/06/2025	22308.7	13597.2	0	13597.2	7.5
9/06/2025	18789.6	13740.5	0	13740.5	11
10/06/2025	18789.6	15106.5	0	15106.5	40
11/06/2025	28882	17510.5	0	17510.5	0
12/06/2025	28882	20092.8	0	20092.8	27
13/06/2025	30193.5	23787.5	0	23787.5	19.5
14/06/2025	31779.5	25469.2	0	25469.2	15.5
15/06/2025	31779.5	18143.8	0	18143.8	0.5
16/06/2025	22656.1	14240	0	14240	0
17/06/2025	16005.6	13593.5	0	13593.5	0
18/06/2025	13874.3	13994.8	0	13994.8	0.5
19/06/2025	12653.7	13999.8	0	13999.8	12.5
20/06/2025	15137.2	14010.5	0	14010.5	3.5
21/06/2025	15137.2	14003.8	0	14003.8	1
22/06/2025	12942	13833.8	0	13833.8	0
23/06/2025	11269	13490.5	0	13490.5	0.5
24/06/2025	12272.9	13174	0	13174	0
25/06/2025	12272.9	12923.2	0	12923.2	1

Date	Treated wastewater Volume to Wetland (m3)	Wetland Discharge - Gravity (m3)	Wetland Discharge - Pumped (m3)	Wetland Discharge - Total (m3)	Rainfall (mm)
26/06/2025	10490.1	12578.2	0	12578.2	1
27/06/2025	22523.2	12630.5	0	12630.5	35.5
28/06/2025	25476.7	14703.8	0	14703.8	20.5
29/06/2025	25476.7	15301.8	0	15301.8	4
30/06/2025	22673.2	14368.2	0	14368.2	0

Appendix B2. Effluent Quality Parameters

Table B2. Treated wastewater quality results at Pukekohe WWTP (1 July 2024 – 30 June 2025).
This table presents monitoring results for $cBOD_5$, TSS, NH_4-N, Total Nitrogen, Total Phosphorus, and E. coli at the post-UV discharge point

Date	cBOD5 (mg/L)	TSS (mg/L)	NH4-N (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	E. coli (per 100mL)
3/07/2024	0.5	1.2	0.4	0.85	0.66	1.6
10/07/2024	0.5	5.4	0.4	0.96	0.784	1.6
17/07/2024	1.1	1.4	0.4	0.94	1.51	1.6
24/07/2024	0.5	3.3	0.4	0.79	0.723	1.6
31/07/2024	1.2	1	0.4	0.73	0.282	1.6
7/08/2024	1	1	0.4	0.95	1.23	1.6
14/08/2024	1.1	1.4	0.4	0.93	0.668	1.6
21/08/2024	0.6	2	0.4	3.4	1.35	1.6
28/08/2024	0.8	1	0.4	1.1	1.18	1.6
4/09/2024	2.3	1	0.4	6.9	1.53	1.6
11/09/2024	0.5	1.1	0.068	1.3	1.14	1.6
18/09/2024	6.6	2	0.042	0.73	0.792	1.7
25/09/2024	0.6	1.1	0.045	0.9	0.772	1.6
2/10/2024	1.1	1	0.048	0.97	1.77	1.6
9/10/2024	0.6	1	0.048	2.5	0.172	1.6
16/10/2024	1.5	1	0.041	0.8	0.816	1.6
23/10/2024	0.8	1.1	0.034	0.88	1.3	1.6
30/10/2024	1.1	1	0.044	0.88	1.5	1.6
6/11/2024	0.9	1	0.049	0.79	0.17	1.6
13/11/2024	0.7	3.6	0.047	1	1.48	1.6
20/11/2024	1	1	0.047	1.2	1.07	1.6
27/11/2024	0.5	1	0.062	1.1	1.51	1.6
4/12/2024	0.5	1	0.062	1.2	0.538	1.6
11/12/2024	2	4.3	0.067	1.1	2.25	1.6

18/12/2024	1	1	0.079	1.1	1.73	1.6
24/12/2024	0.9	1	0.078	1	3.81	1.6
31/12/2024	0.8	1	0.055	0.92	1.31	1.6
8/01/2025	5.1	1.8	0.085	1	0.552	1.6
15/01/2025	1	6	0.039	1.1	1.5	1.6
22/01/2025	0.6	1	0.094	1.2	0.408	1.6
29/01/2025	0.5	1	0.054	0.99	0.452	1.6
5/02/2025	2	1.4	0.062	0.95	1.91	1.6
12/02/2025	5.1	1	0.076	1.2	0.132	1.6
19/02/2025	0.5	1	0.073	1.2	0.408	1.6
26/02/2025	0.7	1	0.079	1.3	0.436	1.6
5/03/2025	1.3	3	0.079	0.99	0.754	1.6
12/03/2025	2	2.4	0.083	1.4	0.888	1.6
19/03/2025	0.5	1	0.071	1.4	2.82	1.6
26/03/2025	0.5	1	0.068	1.2	1.75	1.6
2/04/2025	0.6	4.4	0.083	4.8	1.94	1.6
9/04/2025	0.6	6.4	0.071	1.4	0.455	1.6
16/04/2025	0.5	1.4	0.065	1.1	1.19	1.6
23/04/2025	2.5	1	0.088	2.3	1.19	1.6
30/04/2025	0.5	1	0.098	0.76	0.069	1.7
7/05/2025	0.5	1.6	0.057	1.4	1.56	1.7
14/05/2025	3.2	1.8	0.087	1.1	1.48	1.7
21/05/2025	2.5	1	0.086	0.95	1.33	1.6
28/05/2025	2.2	3.6	0.081	2.5	1.85	1.6
4/06/2025	2.3	3.1	6.9	8.6	6.87	1.6
11/06/2025	0.5	1	0.028	2.5	0.11	1.6
18/06/2025	0.7	2.8	0.052	1	0.139	1.6
25/06/2025	1.3	1	0.067	0.92	0.858	1.6

Appendix C. Data Source

Table C-2: Download location and data tags of environmental monitoring data used in this report

Category	Parameter	Source platform	Tag/ID
Effluent volume	Effluent Volume (Discharge to wetland)	Pi	DTPUK_52_FT_3621_EFFVOLDAY$
Effluent volume	Daily wetland discharge (gravity)	Pi	DTPUK_55_FI_201_VOL
Effluent volume	Daily wetland discharge (pumped)	Pi	DTPUK_55_FI_101_VOL
Environmental-External	Rainfall	Auckland Council Environmental Data Portal	Location - Whangamaire @ Culvert
Effluent quality	$cBOD_5$	Pi	DTPUK_48_13_UVE_BOD
Effluent quality	TSS	Pi	DTPUK_48_13_UVE_TSS
Effluent quality	NHx	Pi	DTPUK_48_13_UVE_TNH3N
Effluent quality	TN	Pi	DTPUK_48_13_UVE_TN
Effluent quality	TP	Pi	DTPUK_48_13_UVE_TP
Effluent quality	E. Coli	Pi	DTPUK_48_13_UVE_ECOLMTEC