From: Allie Dunn
To: [redacted]
Subject: Response to request for information re Pahiatua Wastewater Treatment Plant Annual Reports and Wetland Design
Date: Monday, 9 February 2026 9:34:00 am
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Kia ora

I am writing in response to your official information request dated 1 January 2026 regarding the Annual Environmental Reports for the Pahiatua Wastewater Treatment Plant, as well as the design plan for the constructed wetland treatment system.

We have granted your request for the Annual Environmental Reports, with redactions applied to remove personal information. These redactions have been made to protect individual privacy, as permitted under section 7(2)(a) of the Local Government Official Information and Meetings Act 1987.

Due to the large file sizes, we are unable to provide the documents as email attachments. Instead, we will share them with you via a OneDrive folder, and will send the link to this folder in a separate email. The folder will contain the following documents:

- Annual Environmental Report – October 2023
- Monitoring Report – 1 July 2023 to 30 June 2024
- Annual Environmental Report – October 2024
- Annual Monitoring and Compliance Report – September 2025
- Environmental Monitoring Report – September 2025

However, we have decided to refuse your request for the Pahiatua Wastewater Treatment Plant Constructed Treatment Wetland Design.

This design is the intellectual property of the designers and was prepared exclusively for the Tararua District Council, with the understanding that it may be shared with the Manawatū-Whanganui Regional Council solely for the purpose of fulfilling its regulatory functions in relation to the consent for constructing the treatment wetlands.

Releasing this document would likely unreasonably prejudice the commercial position of the party who supplied the information. While we acknowledge the public interest in transparency—particularly in relation to monitoring and compliance information—we consider that any public interest in releasing the wetland design is outweighed by the need to protect information where disclosure would either (i) reveal a trade secret, or (ii) be likely to unreasonably prejudice the commercial position of the supplier of the information. This decision is made under section 7(2)(b)(i) and (ii) of the Local Government Official Information and Meetings Act 1987.

You have the right to seek an investigation and review of this decision by the Ombudsman. Information about how to make a complaint is available at www.ombudsman.parliament.nz or by calling freephone 0800 802 602.

Ngā mihi

Allie Dunn | Manager Democracy Services | Deputy Electoral Officer

Democracy Services | Tararua District Council

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From: [redacted]
Sent: Thursday, 1 January 2026 3:35 pm
To: Info - Tararua District Council <Info@TararuaDC.Govt.NZ>
Subject: LGOIMA request

Hi

Please provide the following :

1. The most recent 'Annual Environmental Report' and each prior report provided to MWRC's Regulatory Manger. [G15]

2. The 'construction design plan for the wetland treatment system' submitted to MWRC's Regulatory Manger. [DLW5]

regards

[redacted]

Traverse Environmental

Pahiatua Wastewater Treatment Plant

Discharge to Water Consent – ATH-199501433.02

Monitoring Report for 1 July 2023 to 30 June 2024

Prepared for Tararua District Council

October 2024

Pahiatua Wastewater Treatment Plant

Discharge to Water Consent – ATH-199501433.02

Monitoring Report for 1 July 2023 to 30 June 2024

Prepared for:	Tararua District Council
Prepared by:	[redacted]
Date of issue:	31 October 2024

Quality Assurance		
Reviewed by:	[redacted], Senior Freshwater Scientist	[redacted]
Approved for release by:	[redacted] Principal Scientist	[redacted]
Report status:	FINAL	

Recommended citation: Rados D. (2024) Pahiatua Wastewater Treatment Plant. Discharge to Water Consent – ATH-199501433.02. Monitoring Report for 1 July 2023 to 30 June 2024. 22 p.

Executive summary

Tararua District Council (TDC) operates the Pahiatua Wastewater Treatment Plant (WWTP), from which treated wastewater is discharged to the Mangatainoka River via Town Creek. A new set of consents was granted on 26 July 2021, regulating the upgrades and the operation of the WWTP system, as well as the discharges to air, water and land, subject to a suite of conditions. The discharge is to be relocated so that it enters the Mangatainoka River directly, further upstream than Town Creek, but this relocation has not yet occurred.

This report has been prepared to fulfil the annual reporting requirement under Condition W28. It summarises the findings derived from monitoring information specified in conditions W17, W18, W20, W21, W23 and W24 for the July 2023 to June 2024 reporting period. Condition W22 is also included for completeness.

Wastewater and river water samples were collected monthly and analysed for the constituents required by condition W17, except for:

- November 2023, when no effluent sample was collected,
- Horizontal visibility, which was measured with a SHMAK (clarity) tube, instead of black disc, and
- *E. coli* in February 2024 (samples were analysed by the lab outside the required timeframe, and consequently the results should be considered of lower quality).

Continuous dissolved oxygen monitoring required by condition W24 is not to be undertaken until the discharge relocation has occurred.

In-river dissolved aluminium concentrations did not indicate a significant change from upstream to downstream of the discharge. There were statistically significant differences in some other water quality constituents upstream and downstream of the discharge but median values at the downstream site met the relevant MWRC One Plan water quality targets.

Macroinvertebrates were not required to be sampled this year, as the discharge relocation has not yet been commissioned and macroinvertebrate monitoring was undertaken during the 2021–2022 monitoring period.

Periphyton could be monitored only six times within the reporting period due to high flows in the Mangatainoka River. On one occasion the flow exceeded 55 m^3/s and on five other occasions it remained below that threshold but was still above a safe flow for sampling. On the six monitoring occasions, periphyton community assemblages at Reach C (downstream site) generally had lower coverage by long filaments and thick algal mats compared to the two upstream sites (Reaches A and B). Periphyton biomass (as chlorophyll *a*) at Reach C also tended to be lower than at both upstream sites, and always lower than at least one of them. Ash-Free Dry Weight at Reach C was usually lower than at least one of the upstream sites, and only once higher than both.

Contents

1 Introduction

The Tararua District Council (TDC) owns and operates the Pahiatua Wastewater Treatment Plant (WWTP), on the outskirts of Pahiatua. Wastewater from the township is collected in three oxidation ponds and is currently discharged into Town Creek, which subsequently flows into the Mangatainoka River.

A new consent to change the discharge location from Town Creek to the Mangatainoka River (via wetland treatment) was granted in July 2021 for a period of 12 years. However, the consent allows continued discharge of wastewater to Town Creek for a period of three years from the granting of the consent (i.e. until June 2024), while the wetlands and new discharge location infrastructure are being built. For this reporting period (1 July 2023 to 30 June 2024), our assessment is focused on compliance with the conditions related to the Town Creek discharge.

1.1 Scope

This report has been prepared to fulfil annual reporting requirements outlined in Condition W28 of discharge permit ATH-199501433.02. It summarises the findings of monitoring conducted to fulfil conditions W17, W18, W20, W21, W23 and W24 for the July 2023 to June 2024 reporting period:

- Condition W17 requires effluent and in-river samples to be collected monthly and analysed for a series of constituents.
- Condition W18 regulates the response following an exceedance of the dissolved aluminium limit in the river, downstream from the discharge, and requires an investigation into the risk of toxic effects.
- Conditions W20, W21 and W22 regulate monitoring of macroinvertebrates.
- Condition W23 requires monthly monitoring of periphyton biomass and cover.
- Condition W24 requires continuous monitoring of in-river dissolved oxygen in the first year after the discharge relocation.

2 Assessment against monitoring requirements

A summary of the monitoring conducted to fulfil the monitoring conditions during this reporting period is given in Table 1.

Specific details of the monitoring and assessment of the results are provided in Sections 3 and 4.

Table 1: Summary of monitoring conducted to fulfil the monitoring conditions of the Discharge to Water consent ATH 2008008883.03 for the period 1 July 2023 to 30 June 2024.

Discharge to Water – ATH-2008008883.03		Notes
W17	Wastewater and river water monitoring frequency and constituents	Effluent and in-river samples were collected by MWRC monthly, except for: • the effluent sample in November 2023 and were analysed for all constituents in Table 2 of condition W17, except for: • Horizontal visibility, which was measured by MWRC with a clarity tube, instead of black disc, citing safe access or very low flows as the reasons. • *E. coli* on 13 February 2024, when the sample was not analysed by the ELS lab on time and was discarded. New samples were collected on 22 February but were analysed outside the required timeframe, with the results being considered of lower quality, and this non-compliance considered Force Majeure with both occasions being outside of the control of both MWRC and TDC (email by D. Bentley-Hewitt, 28/2/2024). Tabulated results can be found in the supplementary material folder, file SM1, submitted with this report.
W18	In-river dissolved aluminium assessment	In-river dissolved aluminium concentrations did not exceed the 0.055 g/m^3 limit on any occasion (median concentrations both upstream and downstream = 0.010 g/m^3). The Wilcoxon Signed Rank test did not indicate significant change from upstream to downstream ($p = 0.94$). Detailed results can be found in section 4.3Aluminium assessment.
W20, W21, W22	Macroinvertebrate monitoring	Macroinvertebrates were collected during the 2021 – 2022 monitoring period, and as the discharge relocation has not yet been commissioned no further macroinvertebrate sampling was required, as per condition W21. Nevertheless, TDC contracted Traverse to collect and process macroinvertebrates from all three sites, to establish a baseline record of the macroinvertebrate communities across the three reaches. The relevant data and assessments can be found in Appendix A.
W23	Periphyton monitoring	Periphyton was monitored monthly throughout the monitoring period at all three Mangatainoka River reaches. Samples were not collected during July 2023 due to flows in the Mangatainoka exceeding 55 m^3/s. Periphyton for that month was assumed to have a biomass less than 120 mg/m^2.

		During the August to October and December 2023 and June 2024 sampling occasions flow in the Mangatainoka River was below 55 m^3/s, but still too high to safely undertake sampling. These months were excluded from all periphyton assessments. Assessment included and reported on percentage cover of visible riverbed by sewage fungus, filamentous algae (>2 cm long), diatom/cyanobacteria mats (>3 mm thick), diatom mats (<3 mm thick), and riverbed that was clean. Samples were also analysed for chlorophyll *a* and Ash-Free-Dry-Weight (AFDW). Detailed results and analysis can be found in section 4.4.
W24	Continuous DO monitoring	The relocation of the discharge has not yet been commissioned; thus, this condition is not applicable for this monitoring period.
W28	Reporting condition	The present report satisfies reporting under this condition.

3 Monitoring details

3.1 Sites monitored

As the new discharge has not yet been commissioned, only two sites (Reach B and Reach C) are required to be monitored for water quality, as per condition W17 (Figure 1). Reach B is located upstream of the Town Creek discharge to the Mangatainoka River, while Reach C is located 200 m downstream of the Town Creek confluence with the Mangatainoka River. TDC contracted Horizons to undertake this monitoring.

Periphyton monitoring was undertaken at Reach A (located upstream of Reach B and the Town Creek discharge), Reach B and Reach C, as per condition W23 (Plates 1-3).

According to condition W21, macroinvertebrates were not required to be sampled in the 2023–2024 monitoring period because the discharge has not yet been relocated. Nevertheless, TDC contracted Traverse Environmental to collect and process macroinvertebrates from all three sites. This initiative aims to establish a baseline record of the macroinvertebrate communities across the three reaches. The relevant data and assessments can be found in Appendix A.

Table 2: Sites on the Mangatainoka River sampled for water quality and ecology (periphyton and macroinvertebrates) for the monitoring period July 2023 – June 2024.

Location	Parameters sampled	Latitude (NZTM)	Longitude (NZTM)
Reach A – Future Upstream	Periphyton	5519574.460	1840550.517
Reach B – Future Downstream – Current Upstream	Water quality and ecology	5519998.593	1841118.012
Reach C – Current Downstream	Water quality and ecology	5519857.522	1841405.019

Figure 1: Location of sites sampled on the Mangatainoka River for water quality and ecology (macroinvertebrates and periphyton), indicated by yellow dots, the WWTP (red placemark) and current (Town Creek) and future discharge points (orange placemarks).

Plate 1: Reach A, upstream from the future discharge location (25 March 2024).

Plate 2: Reach B, downstream from the future discharge location, upstream from the current discharge location (25 March 2024).

Plate 3: Reach C, downstream from the current discharge location (25 March 2024).

3.2 Timing of monitoring

River water samples were collected by Horizons monthly between July 2023 and June 2024 and analysed for all constituents required by condition W17, including aluminium (as the flocculent used in the Pahiatua WWTP is alum (PACL – Poly Aluminium Chloride), which contains aluminium), except for November 2023, when no effluent sample was collected.

The laboratory did not test the samples collected on 13 February 2024 for *E. coli* within the prescribed timeframe and the samples were subsequently discarded. Additional samples collected by Horizons staff on 22 February 2024 were also analysed outside the required timeframe, and Horizons noted that the test results should be considered of lower quality. Horizons acknowledged that these events constituted Force Majeure and were outside of the consent holder's control (email from D. Bentley-Hewitt, dated 26 February 2024).

As the discharge relocation has not yet occurred, the requirement by condition W24 for a one-off continuous dissolved oxygen monitoring programme at Reaches A and B is not yet applicable.

Periphyton was monitored monthly during the reporting period, as per condition W23. For consistency, the week in the middle of each month was selected for monitoring. If the flow of the Mangatainoka River rendered monitoring unsafe and/or unfeasible, the maximum instantaneous flow in the Mangatainoka River at Pahiatua Town Bridge in the preceding five days was assessed:

- if it exceeded 55 m^3/s, the occasion was included for compliance purposes and periphyton was assumed to have a biomass less than 120 mg/m^2.
- if it was below 55 m^3/s, monitoring was to be undertaken within seven days, with the same flow criteria.

During the 2023 – 2024 period:

- monitoring was undertaken in November 2023 and from January to May 2024 (Table 3) on the scheduled sampling occasions.
- in July 2023 flows exceeded 55 m^3/s on the scheduled sampling occasion and within a week from that date, and the periphyton biomass was assumed to be below 120 mg/m^2.
- from August to October 2023 and in December 2023 and June 2024 periphyton could not be assessed due to high flows (which remained below 55 m^3/s) on the scheduled dates and within a week from those dates, and so those dates were not taken into consideration during analysis of results.
- In March 2023, periphyton was monitored twice, on 12 and 25 March. The first occasion followed the approach that has been agreed with Horizons, of monitoring on approximately the same time each month, to control for low flow bias. The second occasion coincided with macroinvertebrate sampling, and is the one used in the compliance analysis in this report (and in the annual environmental report required by condition G11 of the APP-1993001253.02 and APP-2017201372.00 consent).

Table 3: Periphyton monitoring occasions for the reporting period July 2023 – June 2024, with the average flow (m^3/s) on the day and the maximum instantaneous flow (m^3/s) in the preceding five days.

First attempt at monitoring			Repeat monitoring (where required)			
Date	Maximum instantaneous flow on scheduled sampling day	Maximum instantaneous flow in the preceding five days	Repeat monitoring Date	Mean flow on scheduled sampling day	Maximum instantaneous flow in the preceding five days	Monitoring completed?
11/07/2023	35.7	87.07	18/07/2023	18.41	69.10	No, assumed compliant
11/08/2023	27.0	31.19	17/08/2023	35.68	45.59	No
13/09/2023	8.57	10.23	20/09/2023	12.82	52.22	No
13/10/2023	9.78	16.46	20/10/2023	13.77	31.29	No
16/11/2023	4.10	4.86	-	-	-	Yes
8/12/2023	8.26	12.88	15/12/2023	6.52	39.84	No
12/01/2024	2.29	3.73	-	-	-	Yes
13/02/2024	1.79	3.09	-	-	-	Yes
*12/03/2024	3.48	14.39	-	-	-	Yes
25/03/2024	1.52	1.89	-	-	-	Yes
17/04/2024	4.38	18.48	-	-	-	Yes
16/05/2024	1.82	1.84	-	-	-	Yes
18/06/2024	9.59	24.38	25/06/2024	8.53	8.75	No

* This monitoring occasion was not included in compliance analysis.

3.3 Constituents monitored

All constituents required by condition W17 were analysed for in the effluent and in-river samples, except for horizontal visibility using a black disc. A SHMAK (clarity) tube was used instead.

3.4 Periphyton monitoring

Periphyton was monitored by Traverse Environmental as per condition W23. At each sampling site:

- Periphyton cover was visually assessed following the protocols in "A periphyton monitoring plan for the Manawatu-Wanganui Region" (Kilroy et al. 2008), as per condition W23d. An underwater viewer was used to estimate the percent cover of the different algal types along five equidistant points across each of four cross-sectional transects of the river, encompassing run habitat, and resulting in a total of 20 measurements.
- A periphyton biomass sample (later to be analysed for chlorophyll *a* and Ash-Free Dry Weight – AFDW) was taken at the same time, sites and transects as the visual monitoring, following the protocols of Biggs and Kilroy (2000) in the "Stream Periphyton Monitoring Manual" (Method QM-1b), as per condition W23e. Rock scrapings were collected and pooled from 10 stones at each site; samples were then frozen and sent to the Cawthron Institute for analysis.

4 Monitoring results

The dataset contained a small proportion of "censored" data (e.g. "less than detection limit"). To conduct statistical analysis, such censored data were replaced by numerical values. The "less than" values were replaced by half of the detection limit, which is consistent with the recommendations of Scarsbrook and McBride (2007). Where values were greater than the quantification limit, the quantification limit was used.

4.1 Effluent quality data summary

Treated effluent quality data from the Pahiatua WWTP prior to entering the Mangatainoka River are summarised in Table 4. Raw data are provided in a spreadsheet in the supplementary material folder, as supplementary material 1 (SM1).

Table 4: Summary statistics for treated effluent from the Pahiatua WWTP prior to discharge into the Mangatainoka River, for the period 1 July 2023 to 30 June 2024.

Statistic	$sCBOD_5$ (g/m^3)	Ammoniacal-N (g/m^3)	Nitrite-N (g/m^3)	Nitrate-N (g/m^3)	TN (g/m^3)	TSS (g/m^3)	POM (g/m^3)	DRP (g/m^3)	TP (g/m^3)	*E. coli* (MPN/100ml)	Aluminium (g/m^3)
Mean	0.6	7.341	0.325	0.897	11.275	20.4	19.3	0.028	0.275	2	0.100
Min	0.5	0.288	0.050	0.074	6.350	4.0	4.0	0.003	0.100	2	0.055
Median	0.5	5.560	0.133	0.309	9.150	18.0	15.0	0.013	0.251	2	0.077
95th %ile	1.0	15.100	1.130	2.985	18.050	45.5	44.5	0.086	0.545	2	0.179
Max	1.5	15.400	1.670	3.730	18.600	65.0	63.0	0.116	0.647	2	0.187
Std Dev.	0.3	5.630	0.478	1.133	4.523	16.5	16	0.034	0.159	0	0.043
95% C.I.	0.2	3.327	0.283	0.669	2.673	9.8	9.5	0.020	0.094	-	0.025
No. of samples	11	11	11	11	11	11	11	11	11	11	11

4.2 Surface water quality data summary

Monthly water quality data for the Mangatainoka River, upstream (U/S – Reach B) and downstream (D/S – Reach C) of the Pahiatua WWTP discharge are summarised in Table 5. Raw data are provided in a spreadsheet in the supplementary material folder, as supplementary material 1 (SM1).

Results of Wilcoxon Signed Rank tests performed on the 12 upstream and downstream water quality datasets indicated statistically significant differences ($p < 0.05$) between the median values of some constituents (Table 5). Median dissolved oxygen concentration and pH were lower downstream of the discharge, while the median of some of the nitrogen and phosphorus constituents, as well as conductivity were higher. Despite this, with the exception of one occasion when the pH was marginally outside of the MWRC One Plan target range of 7–8.5 (6.9 on 12 March 2024) and one occasion when the difference in visual clarity (measured with a clarity tube instead of black disc) was marginally greater than the One Plan target of 30% (31% on 15 August 2023), all downstream results – including all median values – met the One Plan targets for the Lower Mangatainoka (Mana_8c) water management sub-area.

Table 5: Summary statistics for water quality in the Mangatainoka River, upstream (U/S – Reach B) and downstream (D/S – Reach C) of the Pahiatua WWTP, for the period 1 July 2023 to 30 June 2024, along with p-values from Wilcoxon Signed Rank tests between measurements from the two sites. p-values<0.05 are high-lighted red.

Statistic	$sCBOD_5$ (g/m³)		DO (g/m³)		DO%		Ammoniacal-N (g/m³)		Nitrite-N (g/m³)		Nitrate-N (g/m³)		TN (g/m³)		TSS (g/m³)	
	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S
Mean	0.6	0.6	10.9	10.3	107.0	100.4	0.009	0.013	0.003	0.004	0.638	0.690	0.768	0.828	< 3	< 3
Min	0.5	0.5	9.4	9.1	95.4	93.9	0.001	0.001	0.001	0.002	0.370	0.405	0.470	0.520	< 3	< 3
Median	0.5	0.5	10.8	10.4	104.4	99.4	0.009	0.011	0.004	0.004	0.582	0.693	0.675	0.775	< 3	< 3
95th %ile	1.2	1.2	12.4	11.2	128.3	108.2	0.019	0.027	0.004	0.005	0.942	0.981	1.102	1.140	< 3	< 3
Max	2.0	1.5	13.5	11.4	143.3	110.3	0.023	0.031	0.005	0.005	0.955	1.020	1.140	1.140	< 3	< 3
Std Dev.	0.4	0.3	1.0	0.7	12.5	5.2	0.007	0.008	0.001	0.001	0.194	0.194	0.205	0.193	-	-
95% C.I.	0.2	0.2	0.6	0.4	7.1	2.9	0.004	0.005	0.001	0.001	0.110	0.110	0.116	0.109	-	-
No. of samples	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Wilcoxon	0.8		0.003		0.003		0.1		0.019		0.003		0.005		-	

Statistic	Visual clarity (m)		POM		DRP		TP		*E. coli*		pH		Conductivity		Temperature		Aluminium	
	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S
Mean	0.88	0.88	< 3	< 3	0.005	0.007	0.011	0.014	160	159	7.7	7.5	114	123	14.3	14.2	0.013	0.013
Min	0.70	0.68	< 3	< 3	0.002	0.002	0.007	0.010	69	54	7.1	6.9	95	98	9.7	9.7	0.003	0.004
Median	0.95	0.95	< 3	< 3	0.005	0.007	0.010	0.014	140	145	7.7	7.5	116	122	14.8	14.7	0.010	0.010
95th %ile	0.95	0.95	< 3	< 3	0.009	0.013	0.016	0.018	285	257	8.0	7.8	135	158	18.5	18.2	0.033	0.030
Max	0.95	0.95	< 3	< 3	0.012	0.014	0.017	0.018	395	260	8.1	7.8	136	158	18.8	18.6	0.041	0.034
Std Dev.	0.11	0.11	-	-	0.003	0.004	0.003	0.003	85	80	0.3	0.3	15	22	3.3	3.2	0.012	0.010
95% C.I.	0.06	0.06	-	-	0.001	0.002	0.002	0.002	48	45	0.2	0.2	9	12	1.8	1.7	0.007	0.006
No. of samples	12	12	12	12	12	12	12	12	12	12	12	12	12	12	13	13	12	12
Wilcoxon	0.6		-		0.07		0.014		0.9		0.003		0.003		0.0.7		0.9	

4.3 Aluminium assessment

Aluminium concentrations did not exceed 0.055 g/m^3 on any monitoring occasion (Figure 2). Median concentrations, both upstream and downstream, were 0.010 g/m^3. The Wilcoxon Signed Rank test did not indicate a significant change from upstream to downstream (p-value = 0.94).

Overall, the discharge does not appear to have caused an increase in aluminium concentration in the Mangatainoka River during the 2023–2024 monitoring period.

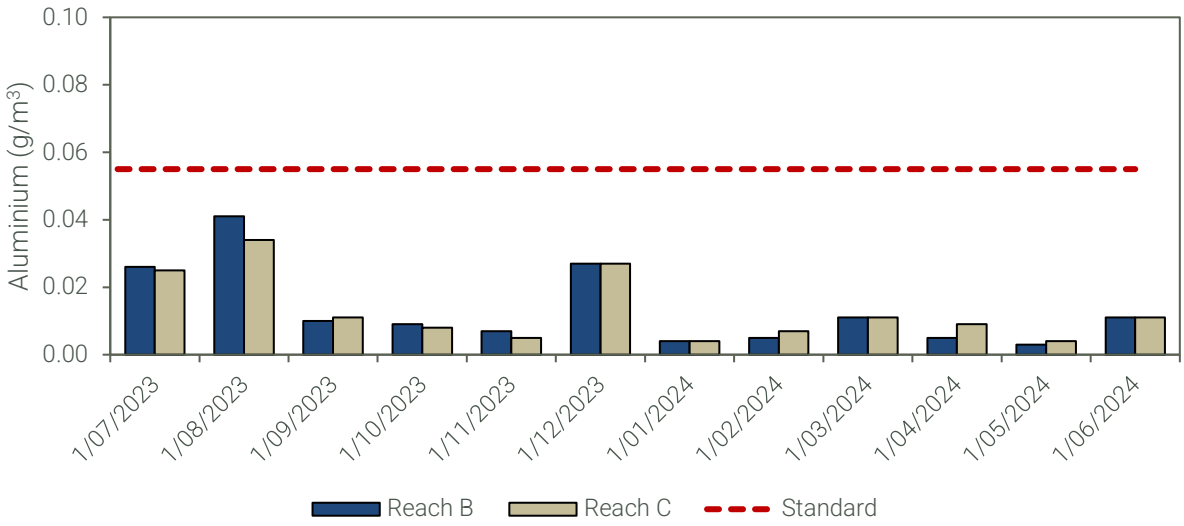

Figure 2: Dissolved aluminium concentration in the Mangatainoka River, upstream (Reach B) and downstream (Reach C) from the Pahiatua WWTP discharge, for the monitoring period July 2023 – June 2024.

4.4 Periphyton communities

The relative abundances of the different periphyton types covering the riverbed as percentage coverage are given in Table 6 and graphically presented in Figure 3.

The periphyton community covering the riverbed showed a gradient across the three sites, with Reach C (downstream from the discharge) generally covered by higher percentages of thin algal films (diatoms <0.3 cm thick) and substrate clean of any form of periphyton, and lower percentages of thick algal mats and/or long filamentous algae, compared to the other two sites (Figure 3).

Table 6: Relative abundance of periphyton communities assessed at the three Mangatainoka River monitoring sites, upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP Town Creek discharge, for the July 2023 to June 2024 reporting period.

Date	Reach	Bacterial and/or fungal growths visible to the naked eye	Filamentous algae > 2 cm long	Diatoms or cyanobacteria mats > 0.3 cm thick	Diatoms < 0.3 cm thick	Clean substrate
18/07/2023	A, B, C	Monitoring not undertaken – assumed compliance				
11/08/2023	A, B, C	Monitoring not undertaken – excluded from analysis				
13/09/2023	A, B, C	Monitoring not undertaken – excluded from analysis				
13/10/2023	A, B, C	Monitoring not undertaken – excluded from analysis				
16/11/2023	A	0	25%	20%	42%	4%
	B	0	14%	21%	50%	7%
	C	0	13%	7%	56%	14%
15/12/2023	A, B, C	Monitoring not undertaken – excluded from analysis				
12/01/2024	A	0	24%	38%	32%	1%
	B	0	24%	23%	44%	4%
	C	0	10%	17%	69%	2%
13/02/2024	A	0	42%	9%	44%	1%
	B	0	61%	1%	33%	3%
	C	0	29%	0%	64%	3%
12/03/2024	A	0	6%	3%	75%	10%
	B	0	22%	1%	49%	18%
	C	0	0%	2%	56%	31%
25/03/2024	A	0	7%	5%	70%	9%
	B	0	11%	0%	60%	14%
	C	0	8%	4%	66%	11%
17/04/2024	A	0	22%	5%	53%	6%
	B	0	17%	1%	56%	10%
	C	0	8%	1%	60%	14%
16/05/2024	A	0	64%	6%	19%	1%
	B	0	40%	0%	38%	5%
	C	0	23%	0%	58%	10%
25/06/2024	A, B, C	Monitoring not undertaken – excluded from analysis				

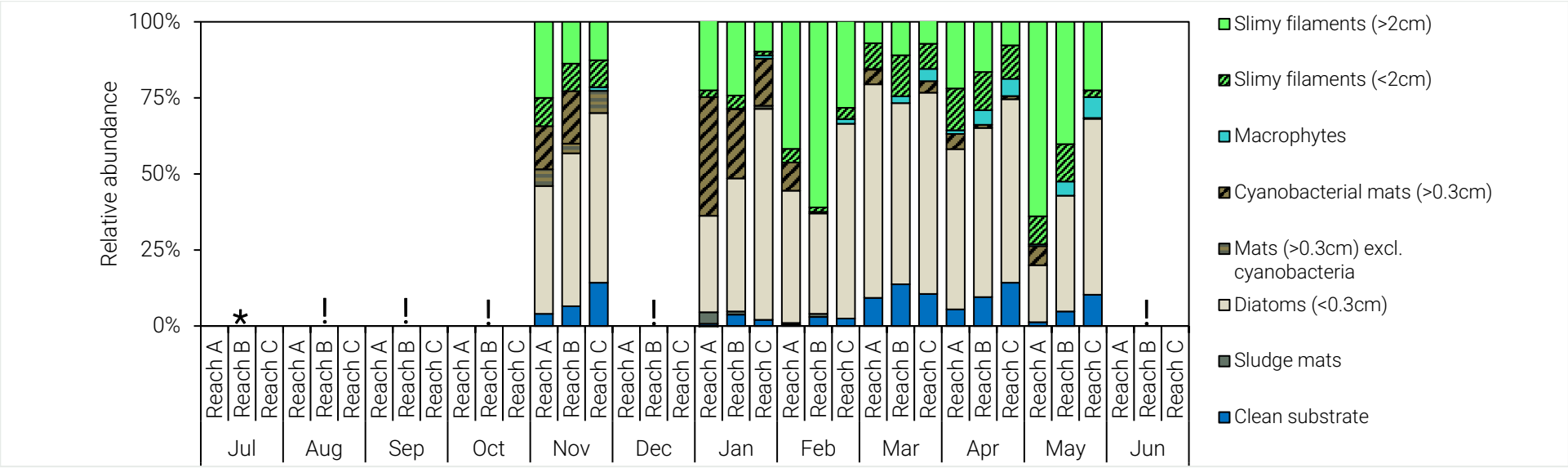

Figure 3: Relative abundance of the different periphyton types in the Mangatainoka River upstream (Reach A and Reach B) and downstream (Reach C) of the Pahiatua WWTP Town Creek discharge, for the monitoring period July 2023 – June 2024. Asterisks denote occasions when sampling could not be undertaken due to high flows over 55 m^3/s in the Mangatainoka River, and exclamation marks denote occasions when sampling could not be undertaken due to high flows below 55 m^3/s.

4.4.1 Periphyton biomass

Periphyton biomass as chlorophyll *a*, on the occasions when sampling was feasible, ranged between 43 and 158 mg/m^2 in Reach A (upstream), 45 and 132 mg/m^2 in Reach B (upstream) and 28 and 143 mg/m^2 in Reach C (downstream). Concentrations at Reach C were always exceeded by concentrations at either or both Reaches A and B (Figure 4).

Periphyton biomass as Ash-Free Dry Weight, on the occasions when sampling was feasible, ranged between 7 and 19 g/m^2 in Reach A (upstream), 6 and 19 g/m^2 in Reach B (upstream), and 6 and 18 g/m^2 in Reach C (downstream). Concentrations in Reach C exceeded concentrations in both other monitoring reaches only once, on 25 March 2024 (Reach A = 7.13 g/m^2, Reach B = 8.15 g/m^2, Reach C = 10.2 g/m^2) (Figure 4).

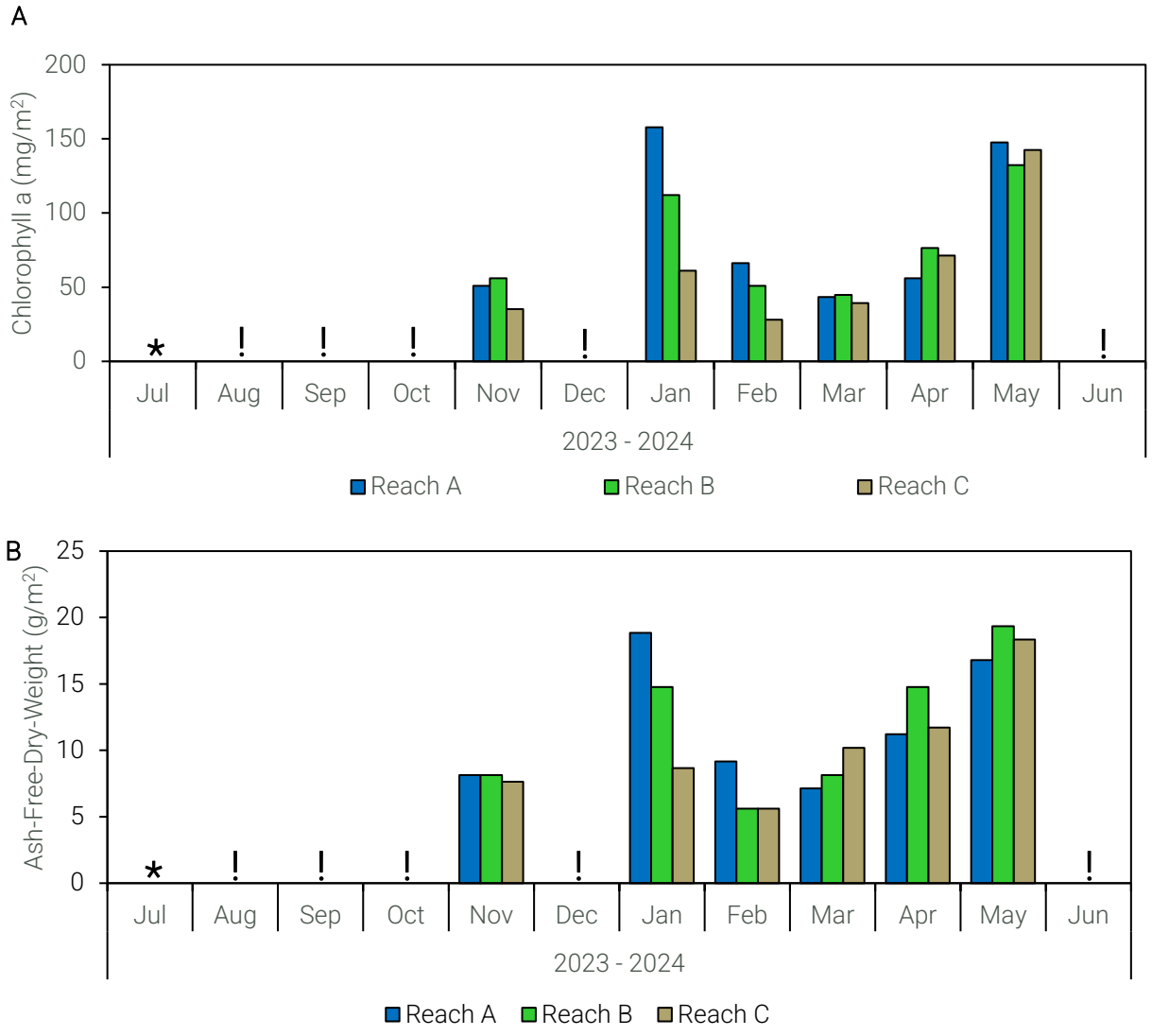

Figure 4: Concentrations of A) Chlorophyll *a* and B) Ash-Free Dry Weight in the Mangatainoka River upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP Town Creek discharge from July 2023 to June 2024. Asterisks denote occasions when sampling could not be undertaken due to high flows over 55 m^3/s in the Mangatainoka River, and exclamation marks denote occasions when sampling could not be undertaken due to high flows below 55 m^3/s.

5 Summary

Over the July 2023 to June 2024 reporting period, wastewater and river water samples were collected monthly and analysed for the constituents required by condition W17, except for:

- November 2023, when no effluent sample was collected,
- Horizontal visibility, which was measured with a SHMAK (clarity) tube, instead of black disc,
- *E. coli* in February 2024, at which time the samples were analysed by the lab outside the required timeframe, and consequently the results should be considered of lower quality.

Continuous dissolved oxygen monitoring required by condition W24 is not to be undertaken until the discharge relocation has occurred, and macroinvertebrates were not required to be sampled this year.

In-river dissolved aluminium concentrations did not indicate a significant change from upstream to downstream of the discharge.

Periphyton could be monitored only six times within this reporting period due to high river flows in the Mangatainoka River. On those six occasions, periphyton community assemblages at Reach C (downstream site) had generally lower coverage by long filaments and thick algal mats than the two upstream sites (Reaches A and B). Chlorophyll *a* at Reach C also tended to be lower than at both upstream sites, and always lower than at least one of them. Ash-Free Dry Weight at Reach C was usually lower than at least one of the upstream sites, and only once higher than both.

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Stark J.D., Boothroyd I.K.G., Harding J.S., Scarsbrook,M.R. 2001. Protocols for sampling wadeable streams. Ministry for the Environment.

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Appendix A Macroinvertebrate sampling

Macroinvertebrates were collected during the 2021–2022 monitoring period, and as the discharge relocation has not yet been commissioned, no further macroinvertebrate sampling was required, as per condition W21. Nevertheless, TDC contracted Traverse to collect and process macroinvertebrates from all three sites, to establish a baseline record of the macroinvertebrate communities across the three reaches.

A.1 Sites monitored

Macroinvertebrates were collected by Traverse at the same sites where periphyton is being monitored, as identified in section 3.1 of this report. Rapid Habitat Assessments and physicochemical measurements were also made at each site, and the results can be found in Table A4 and Table A5.

A.2 Timing of monitoring

Macroinvertebrates were sampled on 25 March 2024, after 20 days since the last significant flood event (5 March 2024, 56.8 m^3/s), and after 15 days with low flows below 4.45 m^3/s (Figure A1).

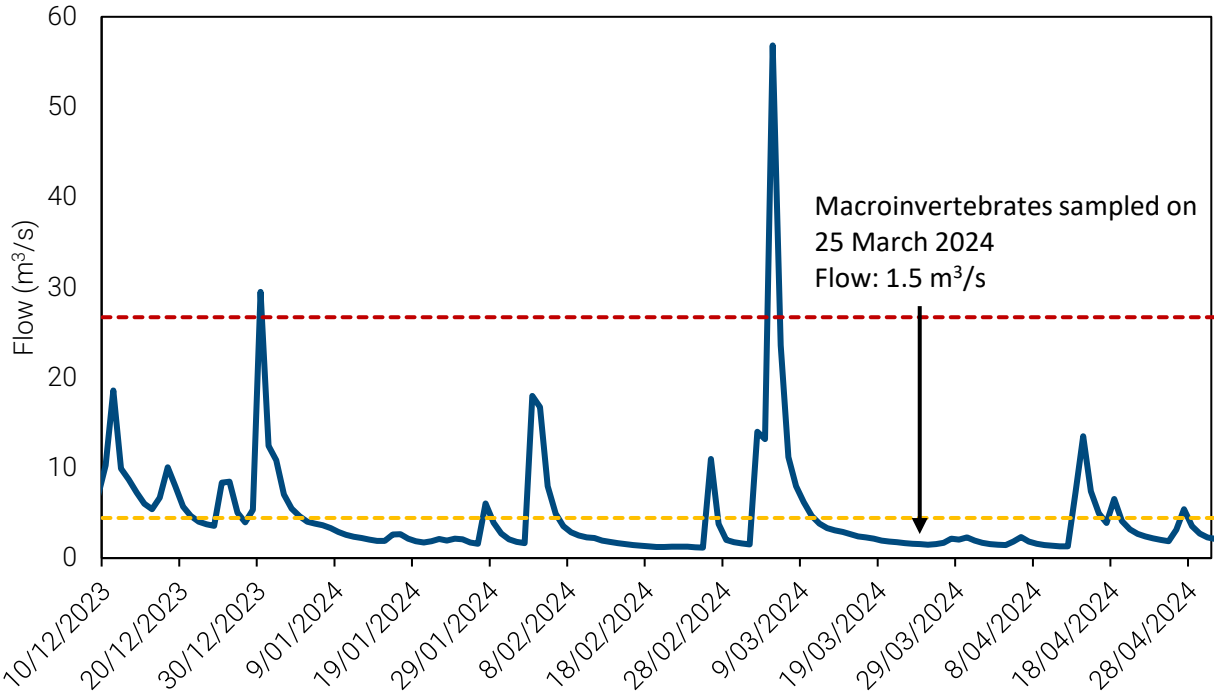

Figure A1: Flow in the Mangatainoka River, at Pahiatua Town Bridge flow monitoring station (data source: Horizons Environmental Data)

A.3 Macroinvertebrate monitoring protocols

Macroinvertebrate sampling and identification was carried out following Protocols C3 (Hard-bottom, Quantitative), P3 (Full count with subsampling option) and QC3 (Quality control for full count with subsampling option) from the Ministry for the Environment's "Protocols for sampling macroinvertebrates in wadeable streams" (Stark et al. 2001). Five replicate 0.1 m^2 Surber samples were taken at random within a 20 m section of riffle habitat at each sampling site (as per condition W22a).

Macroinvertebrate taxa were fully counted within each replicate sample, to the taxonomic resolution level specified for use of the Macroinvertebrate Community Index (as per condition 22b).

Macroinvertebrate indices were calculated to assess relationships between macroinvertebrate communities and water quality at each study site.

- Number of taxa is the number of different kinds of organisms (taxa) in a sample (average) or at a site (total).
- The Macroinvertebrate Community Index (MCI) (Stark 1985) considers the presence of macroinvertebrates based on an assigned score which is dependent on their tolerance to pollution (1= highly tolerant, 10 = highly sensitive).
- The Quantitative Macroinvertebrate Community Index (QMCI) is similar to the MCI, but also takes into account the number of individuals of each species collected.
- Ephemeroptera, Plecoptera and Trichoptera (mayflies, stoneflies and caddisflies) (EPT) consist of insects which are generally sensitive to pollution. The percentage of EPT taxa is the proportion of all taxa collected that belong to one of these groups.
- The percentage of EPT individuals measures the proportion of the individual macroinvertebrates collected that are mayflies, stoneflies and caddisflies.

Values for the macroinvertebrate indices discussed above and associated water quality categories are given in Table A1, and are extracted from and defined in Stark & Maxted (2007).

Table A1: Interpretation of MCI and QMCI values based on the quality classification proposed by Stark and Maxted (2007).

Interpretation	MCI	QMCI
Excellent / Clean water	> 120	> 6
Good / Mild pollution	100-119	5-6
Fair / Moderate pollution	80-100	4-5
Poor / Severe pollution	< 80	< 4

Statistical differences between sites were assessed performing analysis of variance (ANOVA), followed by pairwise comparisons with the Tukey's Honestly Significant Difference test (Tukey's HSD), in Excel using the Real Statistics Resource Pack input (Release 9.1.1). Differences in QMCI were also assessed with Equivalence Testing at the 20% intervals. Values at $p < 0.05$ indicate a statistically significant change.

A.4 Macroinvertebrate monitoring results

Macroinvertebrate communities

The macroinvertebrate taxa collected at each site are presented in Table A3 and the relative abundances of the main groups of macroinvertebrates are shown in Figure A2.

The macroinvertebrate community structure at Reach A was equally dominated by caddisflies (36% - mostly of the *Aoteapsyche* genus) and chironomids (36% - mostly of the Tanytarsini subtribe), while at Reach B, apart from caddisflies (36%) and chironomids (28%), elmid beetles were also well established (33%). At Reach C, however, the dominant group was *Potamopyrgus* snails (41%), followed by chironomids (23%) and beetles (21%). Snails were also present in Reach A (17%) and caddisflies in Reach C (11%).

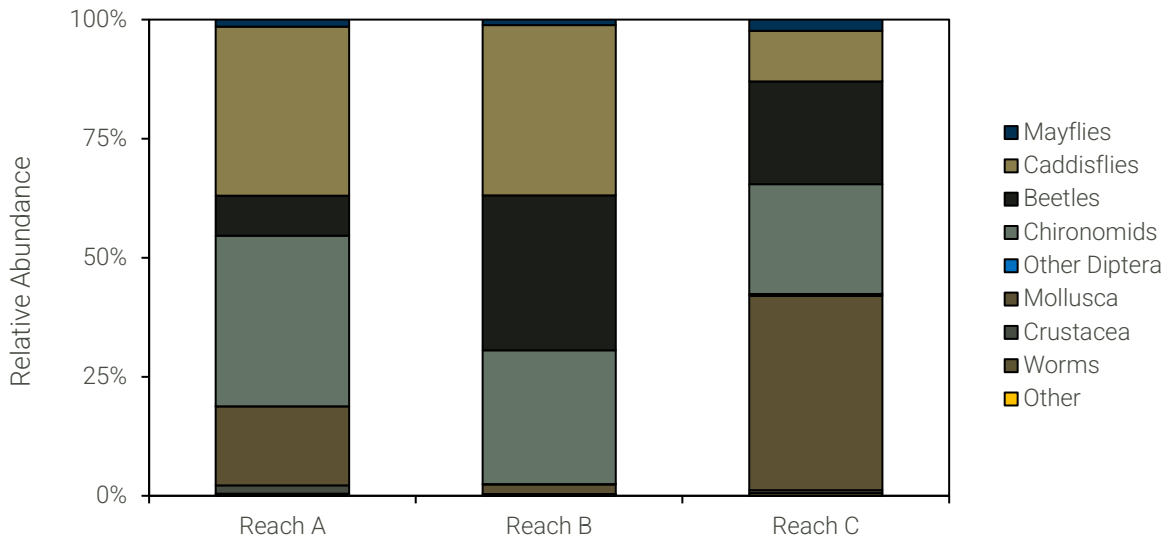

Figure A2: Relative abundance of the main taxonomic groups collected in March 2024 at sites sampled on the Mangatainoka River, upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP discharge to Town Creek.

Biotic indices

Biotic indices for the three monitoring sites are shown in Figure A3 and Table A2. Monitoring results showed that:

- MCI scores indicated fair water quality at Reaches A and C, and good quality at Reach B.
- QMCI scores indicated fair water quality at Reaches B and C, and poor quality at Reach A.
  Also, the QMCI did not decrease from upstream to downstream, for any pair of sites.
- The only significant differences were found between the EPT taxa percentages at Reaches B and C.

Table A2: Macroinvertebrate metrics from samples collected in March 2024, at sites on the Mangatainoka River, upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP Town Creek discharge, along with ANOVA and pairwise Tukey HSD p-values, where ANOVA indicated significant difference. p-values ≤ 0.05 indicate a statistically significant difference.

	Reach A	Reach B	Reach C	ANOVA p-value	Tukey HSD Reach A-B	Tukey HSD Reach A-C	Tukey HSD Reach B-C
Number of taxa (average)	20	19	19	0.83	-	-	-
Number of taxa (total)	30	27	29	-	-	-	-
% EPT (taxa)	40.6	50.0	36.9	**0.009**	0.05	0.56	**0.008**
% EPT (individuals)	29.1	41.6	15.9	0.24	-	-	-
MCI	95.7	104.3	94.6	0.06	-	-	-
QMCI	3.8	4.3	4.5	0.18	-	-	-

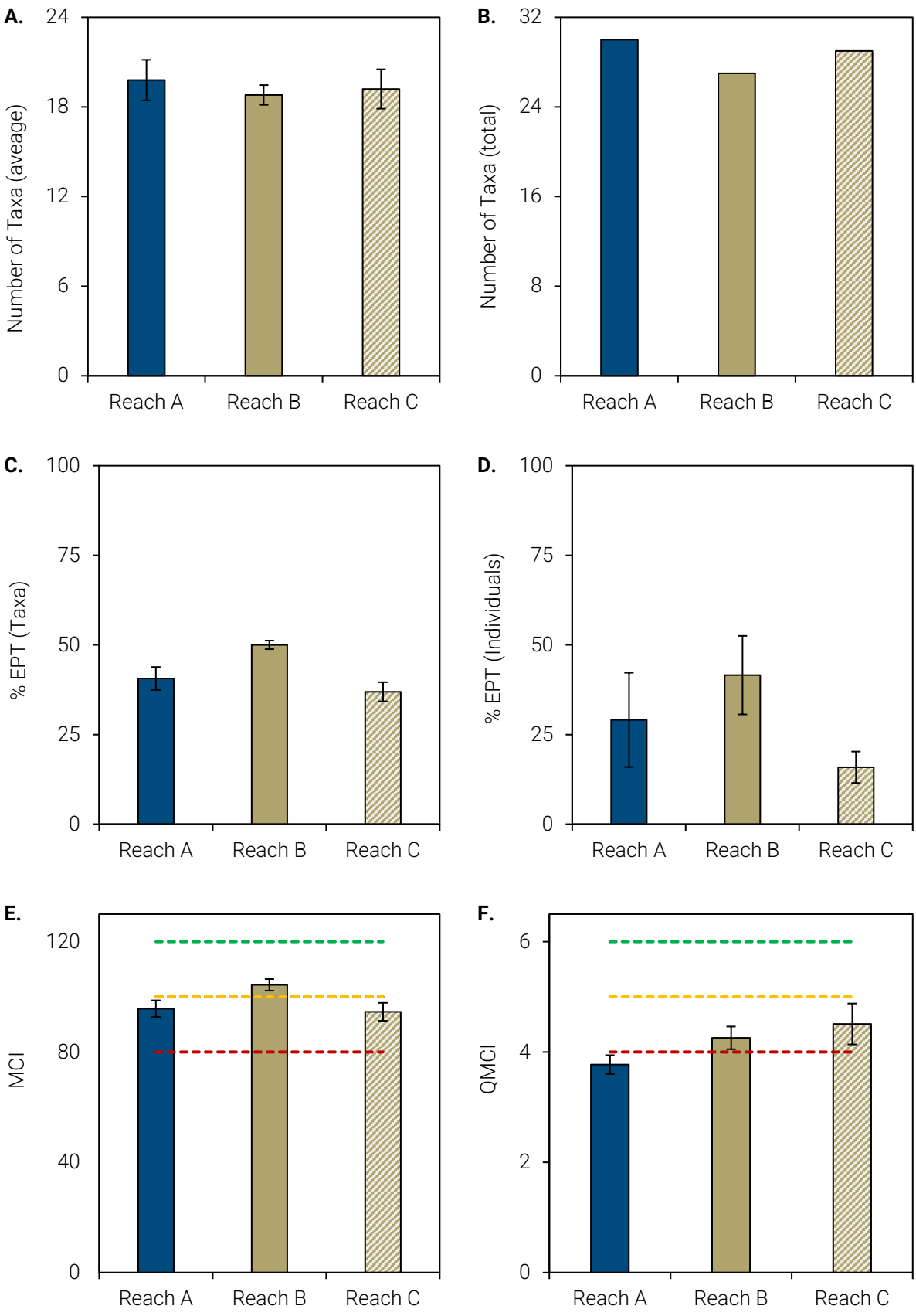

Figure A3: Mean (±SE) A. Average number of taxa, B. Total number of taxa, C. % EPT (taxa), D. % EPT (individuals), E. MCI and F. QMCI for the sites sampled in March 2024, on the Mangatainoka River, upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP Town Creek discharge. Stark & Maxted (2007) thresholds are represented by red, yellow and green dashed lines. The One Plan MCI target for the Mana_8c sub-catchment zone coincides with the green dashed line (120).

Table A3: Mean density of invertebrates collected in 5 Surber samples (0.1 m^2) at sites sampled on the Mangatainoka River, upstream (Reaches A and B) and downstream (Reach C) of the discharge from the Pahiatua WWTP, in March 2024.

Taxa	MCI score	Reach A	Reach B	Reach C
Mayflies				
Austroclima sp.	9	1	9	1
Coloburiscus sp.	9	1	2	1
Deleatidium sp.	8	28	6	35
Mauiulus sp.	5	1	4	0
Neozeplebia sp.	7	0.2	0	0
Zephlebia sp.	7	0	3	0.2
Caddisflies				
Aoteapsyche sp.	4	656	737	146
Costachorema sp.	7	0.2	0.4	1
Hydrobiosis sp.	5	20	20	12
Neurochorema sp.	6	5	1	2
Olinga sp.	9	0.4	0.2	1
Plectrocnemia sp.	8	0.2	0	0
Psilochorema sp.	8	0.4	1	1
Pycnocentria sp.	7	2	1	1
Pycnocentrodes sp.	5	22	4	2
Oxyethira sp.	2	1	1	1
Beetles				
Elmidae	6	168	696	338
Chironomidae				
Chironomus sp.	1	10	10	14
Maoridiamesa sp.	3	24	4	20
Orthocladiinae	2	88	60	33
Polypedilum sp.	3	0	0	0.2
Tanytarsini	3	591	526	295
Other Diptera				
Aphrophila sp.	5	1	1	6
Austrosimulium sp.	3	0	0	0.2
Muscidae	3	0	0	0.2
Paralimnophila sp.	6	0	0.2	0
Crustacea				
Amphipoda	5	34	5	10
Ostracoda	3	0.2	0	0
Mollusca				
Ferrissia sp.	3	0.4	0	0
Physa sp.	3	11	3	2
Potamopyrgus sp.	4	319	41	638
Sphaeriidae	3	0	0	0.2
Worms				
Flatworms	3	3	2	3
Hirudinea	3	0.4	0	0
Oligochaetes	1	6	1	5
Other				
Archichauliodes diversus	7	7	8	22

A.5 Rapid Habitat Assessment results

Table A4: Habitat Quality Scores based on the Rapid Habitat Assessments undertaken on 25 March 2024, at sites upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP discharge to Town Creek.

Habitat Parameter	Reach A	Reach B	Reach C
Deposited Sediment	5	7	7
Invertebrate habitat diversity	10	10	10
Invertebrate habitat abundance	2	2	1.5
Fish cover diversity	7	7	7
Fish cover abundance	5.5	5	4.5
Hydraulic heterogeneity	10	5	5
Bank erosion	9	9	8.5
Bank vegetation	4	4.5	5
Riparian width	6.5	8	9
Riparian shade	3	4	3
Total Score	**62**	**61.5**	**60.5**

Table A5: Environmental characteristics of sites sampled on 25 March 2024, upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP discharge to Town Creek.

Physicochemical parameter	Reach A	Reach B	Reach C
pH	7.0	7.4	7.3
Conductivity (µS)	129	130	151
Salinity (ppm S)	62.7	63.6	92.3
TDS (ppm)	91.6	92.3	107
Water temperature (°C)	16.2	17.4	16.8
Mean width (m)	11	22	12
Mean depth (cm)	52	19	33
Mean water velocity (m/s)	0.91	0.68	0.55

Tararua District Council

Pahiatua Wastewater Treatment Plant

DISCHARGE PERMIT APP-1993001253.02 & APP-2017201372.00

ATH-2016200772.00

ATH-199501433.02

ATH-2016200747.00 & ATH-2017201544.00

ATH-2017201543.00

Annual environmental report

PREPARED ON

31 October 2023

Report Information

Report Status	FINAL
Author	[redacted]
Review By	[redacted]
Approved By	[redacted]
Date	31/10/2023

EXECUTIVE SUMMARY

1. Tararua District Council (TDC) operates the Pahiatua Wastewater Treatment Plant (WWTP). A new set of Consents was granted on 26 July 2021, regulating the upgrades and the operation of the WWTP system, as well as the discharges to air, water and land, subject to a suite of conditions. All consents were granted for 12 years (i.e. July 2033), except for the earthworks consent which was granted until 30 November 2025.
2. This report has been prepared to meet the annual reporting requirements as stipulated in condition G11. Alongside this report, are supplementary materials: supplementary material 1 (SM1) containing the full dataset, and supplementary material 2 (SM2) comprising the current Operations Management Plan (OMP). These additional documents are provided in accordance with the requisites of condition G11.
3. Under discharge to water condition W28, an additional report in required. This report assesses and evaluates the monitoring data specified in conditions W17, W18, W20, W21, W23 and W24. It is important to note that this report, as per condition W28, is appended to the report as stipulated by condition G11.
4. The compliance status of the Pahiatua WWTP with relevant consent conditions is outlined in Tables 1 to 5. Analysis results used to assess compliance, and any commentary on non-compliant conditions, additional to Tables 1 – 5 are given in Appendix A of this report.
5. Non-compliance was noted for conditions:
    - G2: the 12-month rolling median of total daily discharge volumes exceeded the limit of 1200 m^3/d every day during the reporting period.
    - G10: the investigation regarding recreational use has not been concluded.
    - W17: Samples collected in July and August 2022 were not analysed for aluminium.
    - DL1: The permeability investigation plan was submitted on 13 September 2023, the extended due date required by MWRC was 31 July 2023.
    - DL2: The permeability investigation report has not yet been submitted (the investigation is ongoing).
    - DL3 – The bores have not yet been installed.
    - DL4 – Groundwater sampling has not yet commenced.
    - DL6 – The wetland design has not yet been submitted to MWRC.
6. Monitoring results for compliance with conditions W8 (d, g, h, j) and W18 could not yet be assessed, due to insufficient number of samples and /or measured concentrations being below detection limits that were higher than those required by the conditions.

Table of Contents

List of Figures

List of Tables

1 Context

1.1 Introduction

The Tararua District Council (TDC) owns and operates the Pahiatua Wastewater Treatment Plant (WWTP), located on the outskirts of Pahiatua. Wastewater from the township is collected in three oxidation ponds and is currently discharged into Town Creek, which subsequently flows into the Mangatainoka River.

A new consent to change the discharge location from Town Creek to the Mangatainoka River (via wetland treatment) was granted in July 2021 for a period of 12 years. However, the consent allows continued discharge of wastewater to Town Creek for a period of three years (from the granting of the consent), while the wetlands and new discharge location infrastructure are being built. For this reporting period, our assessment is focused on compliance with the conditions related to the Town Creek discharge.

Consents APP-1993001253.02 & APP-2017201372.00 (General Conditions), ATH-2016200772.00 (Discharge to Air), ATH-199501433.02 (Discharge to Water), ATH-2016200747.00 & ATH-2017201544.00 (Discharge to Land – Pond and Wetland Seepage) and ATH-2017201543.00 (Earthworks) regulate the construction, function and discharges of the Pahiatua WWTP, subject to a suite of conditions.

1.2 Aim and scope

This report fulfils the annual reporting requirements under condition G11, necessitating the following by October 15th (MWRC compliance officer extended the submission deadline until October 31st – email dated 13 October 2023).

- A summary of analyses and records collected in accordance with conditions of these consents;
- An assessment of compliance against conditions of these consents;
- A comment on any non-compliance and any additional monitoring or remedial action undertaken or planned;
- A record of any complaints that are received relating to the operation of the Pahiatua WWTP and wetland treatment system;
- A copy of the full quality assured data set for the period; and
- A copy of the current OMP and the register of certified changes to the OMP.

Additionally, a separate report is required under discharge to water condition W28, summarizing and assessing monitoring information as specified in conditions W17, W18, W20, W21, W23, and W24. This report, as mandated by condition G11, is provided as Appendix B to this report).

2 Pahiatua WWTP compliance with consent conditions

Tables 1 to 5 summarise compliance with relevant consent conditions for the July 2022 to June 2023 period. Appendix A provides details of analyses undertaken to assess compliance.

Table 1: Summary of compliance with general conditions of consents APP-1993001253.02 & APP-2017201372.00 for the period July 2022 – June 2023.

General Conditions – APP-1993001253.02 & APP-2017201372.00		Compliance	Notes
Descriptive specification			
G1	The activity authorised by these consents shall be undertaken in general accordance with the application and Assessment of Environmental Effects received on 1 April 2015 and supplementary documents received: a. On 11 December 2015, being a response to the s92 further information request of June 2015; b. On 12 April 2017, being a response to the s92 further information request of November 2016; c. Further information received on 28 April 2017 included in the s41B hearing report; d. The revised wetland location plan tabled at the hearing on 23-25 May 2017; e. Information filed with the Environment Court detailing the wetland treatment system; and f. Further information provided through the Environment Court appeal process. Where the application is inconsistent with the requirements of the conditions, the conditions will prevail.	Compliant	Consent is generally being carried out as per the Conditions.
G2	The wastewater discharge authorised by these consents shall be limited to: a. A 12 month rolling median daily (midnight to midnight) discharge volume no greater than 1,200 m^3/day; b. A 12 month 95th rolling percentile daily (midnight to midnight) discharge volume no greater than 2,000 m3 /day, at approximate map reference NZTopo50 BM35:409-193 (Town Creek) until the discharge point is relocated to approximate map reference NZTopo50 BM35:407-194 (Mangatainoka River) pursuant to condition G9B. ADVICE NOTE: For the purposes of compliance, 12 month rolling refers to any continuous 12 month period. The median (or 95th percentile) statistic will then be calculated on the 365 individual daily discharge volumes for that period. That is then compared to the discharge threshold to see if it is exceeded.	Non-compliance	For the 2022 – 2023 monitoring period: - the 12-month rolling median of total daily discharge volumes exceeded 1200 m^3/day every day of the reporting period, ranging between 1204 and 1519 m^3/day. - the 12-month rolling 95th percentile of total daily discharge volumes did not exceed 2000 m^3/day on any occasion, and ranged between 1721 and 1784 m^3/day. Plotted records can be found in Appendix A, Figure A-1. Note, the last two years of discharge volumes were assessed so that rolling medians could be derived.

General Conditions – APP-1993001253.02 & APP-2017201372.00		Compliance	Notes
G2A	The Consent Holder shall adopt the BPO when selecting new key elements of the overall wastewater treatment and wetland treatment systems. ADVICE NOTE: This condition only applies at the time of design decisions and then only to key elements such as the wetland treatment system, any new clarifier system and elements of a similar fundamental importance in meeting treated wastewater quality limits.	Compliant	TDC has been adopting BPO for the new key elements of the treatment systems.
Management and Operation			
G3	Within one month of commencement of these consents, the Consent Holder shall prepare a plan detailing the final plant Structured Optimisation Programme (SOP) for the Pahiatua Wastewater Treatment Plant and submit it to Manawatū-Whanganui Regional Council's (MWRC) Regulatory Manager. The SOP plan shall specify a suitably qualified operations technician who will implement the structured optimisation programme. The SOP plan shall describe the measures and steps required to optimise the treatment plant components so that the treatment plant is able to meet the conditions of this consent and shall specify a stepwise optimisation process of the Chemical dosing system, lamella clarifier operation (or alternative), micro-filter operation and UV disinfection, which shall be implemented as part of the optimisation programme and within the timeframes stipulated in the plan. The Treatment Plant will be optimised in accordance with the SOP within 12 months of commencement of these consents. For any additional upgrades, not listed above, the SOP shall be updated within one month of installation of new equipment and optimisation will be achieved within 18 months	Compliant	The SOP was not submitted to MWRC by 26 August 2021. MWRC required submission by 31 July 2023. The last update to the SOP by WSP was December 2021 (supplementary material folder, file SM3). Following on from the 2021 SOP, WSP produced the Tararua WWTP Strategy on 28 June 2022. The efficacy of the lamellar clarifier as part of the process has been questioned and a decision was made to include an upgrade of the DAF at the Pahiatua site. There is funding available for this task, however, a final engineering design to include the DAF is required and this will likely determine final funding required for the project. It is anticipated that further funding will likely be required - and this will be referred back to TDC to proceed with the upgrade.
G4	WWTP Operations and Management Plan Within six months of commencement of these consents, the Consent Holder shall prepare, and forward to MWRC's Regulatory Manager or their agent, an Operation and Management Plan (OMP). The OMP must be prepared by a by a suitably qualified expert acceptable to the Consent Authority . The OMP shall include but not be limited to: a. Specification of the treated wastewater quality to be met by these conditions; b. A description of the entire treatment system facility including a description of each of the respective system components and the type of flocculent to be used, if any, c. Plans of the treatment facility, including a revised Plan ATH-199501433.02 A showing final discharge and monitoring locations and the corresponding map references, d. A description of routine inspection and maintenance procedures to be undertaken with respect to the treatment plant and discharge components, including dates and times or approximate frequencies when inspections and maintenance are to be undertaken,	Compliant	The OMP was not submitted to MWRC by 26 January 2022 and not by the time the Annual Compliance Audit Report was written by MWRC for the 2021 – 2022 period. MWRC required submission by a second deadline, 31 July 2023, and TDC submitted the OMP in time.

General Conditions – APP-1993001253.02 & APP-2017201372.00		Compliance	Notes
	e. Records of the commissioning and optimisation programme (in accordance with condition G3), f. Procedures for recording routine maintenance and all repairs that are undertaken g. A description of monitoring, including methodology, locations and frequency, and record keeping of that monitoring, including a map showing details of monitoring locations, h. Details of the roles of personnel or organisations responsible for undertaking monitoring, including their contact details, i. Procedures for reporting for compliance purposes, including the dates when particular reports are to be completed, when they are to be provided to other parties and who those parties are, j. A description of procedures for reporting non-compliances to MWRC, k. Procedures for reviewing and updating the Operations and Management Plan, l. An Odour Operation and Management Plan (OOMP) prepared in accordance with condition A1, m. Procedures and actions to be taken when monitored parameters exceed relevant trigger levels specified in these conditions. This includes actions to be taken when DO levels reduce below those specified in condition A6 of the discharge to air consent, and when water level alarms specified in condition G12 are triggered, and n. An emergency response plan. ADVICE NOTE: Operational Management Plan (OMP) means at any time, the latest version of the OMP prepared under condition G4, including any changes or updates to the OMP made by the Consent holder, including under conditions G7A.		
G4A	Clauses (f), (k), and (l) of condition G4 must be technically certified by the MWRC's Regulatory Manager or their agent. The Consent Holder may, on an interim basis, implement those parts of the OMP if the Consent holder is not advised within 20 working days of MWRC's acknowledgement of receipt of the OMP that amendments are required, pursuant to conditions G5 or G7A.	Compliant	TDC submitted the OMP to MWRC on 31 July 2023. No further amendments were required by MWRC.
G4AA	The MWRC may appoint its own suitably qualified expert to undertake a peer review of the OMP, including any amendments, at any time. Should MWRC consider that amendments to the OMP are required, as a result of the peer review, then: a. in respect of amendments to the parts of the OMP covered by clauses (f), (k) and (l), MWRC will raise these amendments with the Consent Holder immediately so that the amendments may feed into the certification process under conditions G4A or G7A; or b. in respect of amendments to the remaining parts of the OMP, MWRC may discuss these with TDC for TDC's consideration.	N/A	No amendments were required by MWRC.

General Conditions – APP-1993001253.02 & APP-2017201372.00		Compliance	Notes
	ADVICE NOTE: Any peer review shall be undertaken by a suitably experienced wastewater treatment plant operator. The intent of the review is to assess issues and develop specific measures to correct them.		
G5	If MWRC's Regulatory Manager advises the Consent Holder that clauses (f), (k) and (l) do not achieve technical certification, the Consent Holder shall amend those parts of the OMP and re-submit the OMP to the Regulatory Manager within 20 working days of being advised of the reasons why technical certification was withheld.	N/A	Clauses (f), (k) and (l) were technically certified. No amendments were required by MWRC.
G6	The Consent Holder shall undertake all activities authorised by these consents in accordance with the OMP (certified as required by the conditions of these consents) and any amendments to the OMP in accordance with these conditions.	Compliant	The OMP was certified and no amendments were required by MWRC.
G7	The Consent Holder shall ensure that a copy of the OMP, including any amendments, is kept onsite. The OMP and any copy kept on-site shall be amended within 5 working days of any changes being made to the design, operation or management of the treatment system addressed by the OMP, with the exception of elements covered by clauses (f), (k) and (l) of condition G4 which require technical certification under condition G7A. Subject to condition G7A below, any amendments to the OMP shall be forwarded to MWRC within two weeks of an amendment to the OMP.	Compliant	A copy of the most recent OMP is kept on-site. No additional amendments are required.
G7A	Any amendments to the OMP that relate to clauses (f), (k) and (l) of condition G4 must be certified by the MWRC's Regulatory Manager or their agent, before the amendments are implemented. ADVICE NOTE: If, within 20 working days of acknowledgement of receipt of the amended OMP, the Consent Holder is not advised to the contrary by the Regulatory Manager or their agent, the Consent Holder may operate in accordance with the amendment on an interim basis.	N/A	No additional amendments are required.
G7B	A sludge management and disposal system must be installed and operated to ensure solids build-up in the main treatment plant does not compromise treatment plant performance. This system must be reflected, as necessary, in the Odour Operation and Management Plan (OOMP) required under condition A1.	Minor non-compliance	A sludge management and disposal system was installed and is operating in the treatment plant for managing sludge from the clarifier automatically. The sludge is processed through a wave press and sent away off site for disposal. This is not described in the OOMP, but in the OMP. Pond 1 was last desludged in May 2022, having approximately 2800 m^3 of sludge removed.
G8	Within one month of commencement of these consents, the Consent Holder shall install and thereafter maintain signage advising river users that treated wastewater is being discharged. Prior to the relocation of the discharge point in accordance with condition G9B, signage shall be installed at the following locations: a. At the current discharge location into Town Creek; b. At the confluence of Town Creek and the Mangatainoka River; c. 500m downstream of the confluence of Town Creek and the Mangatainoka River	Compliant	TDC has installed signage at the appropriate locations. MWRC in the 2021-2022 annual audit report required photographic evidence of the on-site signage to be submitted with future reports. See Appendix A, Figure A-2.

General Conditions – APP-1993001253.02 & APP-2017201372.00		Compliance	Notes
	Following the relocation of the discharge in accordance with condition G9B, the signage above may be removed, and the Consent Holder shall install and thereafter maintain signage at the following locations: d. Approximately 300m upstream of the discharge location; e. Approximately 500m downstream of the discharge location.		
G9	The Consent Holder shall commence an investigation into alternative methods and treatment and discharge (Alternatives Investigation) on or before five years from the expiry of these consents (discharge permits). The Alternatives Investigation shall be undertaken in consultation with the relevant iwi authorities. The findings of the Alternatives Investigation shall be provided to the relevant iwi authorities, the Tararua District Wastewater Forum (TDWF), and the Regulatory Manager of MWRC.	N/A	These consents will expire 12 years after commencement, i.e., 26 July 2033. Consequently, the required investigation will not be due before 2028.
G9AA	On or before three years from the expiry of these consents (discharge permits), the Consent Holder shall submit to the MWRC's Regulatory Manager, a Future Directions Report confirming the best practicable option for future management and treatment of wastewater discharged from the Pahiatua wastewater treatment plant and the proposed pathway for implementing the option. The Future Directions Report shall: a. be informed by the Alternatives Investigation undertaken in accordance with G9; b. specify a date by which a new application shall be lodged; c. be prepared in consultation with the relevant iwi authorities; and d. be provided to the relevant iwi authorities and the TDWF within two months of its completion. ADVICE NOTE: The intention of the Future Directions Report is to provide a pathway for implementing a long-term (35-year) solution for the treatment and management of wastewater discharged from the Pahiatua wastewater treatment plant.	N/A	As these consents will expire in 26 July 2033, the Future Directions Report will not be due before 2030.
G9B	Within three years following commencement of these consents: a. the wetland treatment system authorised by ATH-2017201543.00 shall be installed and operational; and b. treated wastewater shall flow through the wetland treatment system authorised by ATH-2017201543.00 and be discharged at the proposed discharge point and no longer into Town Creek.	N/A	The wetland treatment system is not operational yet. These consents commenced on 26 July 2021, consequently the due date for this condition is 26 July 2024.
G9C	Any consent(s) required for the outfall structure that will enable the treated wastewater to be discharged at the Mangatainoka River discharge point shall be sought within 3 months of commencement of these consents.	N/A	No additional consents are required for the outfall structure.
G10	Within six months of commencement of this consent, and at least three weeks prior to the first scheduled annual meeting of the TDWF following the completion of the report, the Consent Holder shall undertake a recreational use investigation of the reach of the Mangatainoka River from 500m upstream to 1000m downstream of the proposed discharge point referred to in condition G9B, and provide a report documenting the investigation to	Minor non-compliance	The due date for this condition was 26 January 2022. As the first TDWF meeting was held on 14 December 2021, this condition required the investigation to be

General Conditions – APP-1993001253.02 & APP-2017201372.00		Compliance	Notes
	MWRC's Regulatory Manager and the TDWF. The investigation and subsequent report shall include but not be limited to the following: a. Identification of all public access points to the Mangatainoka River b. Identification of recreation activities that are undertaken, including existing use patterns and preferences, and any barriers to use.		undertaken by the earlier date of 30 November 2021. MWRC, in their 2021-2022 report, required an update on the status of the investigation to be provided by 31 July 2023. A Statement of Work (SoW) was signed by WSP consultants and TDC on 16/08/2023 with regards to the former carrying out a Recreational Use Investigation for the Pahiatua WWTP (see supplementary material SM4). The preliminary timeline set in the SoW anticipates up to 12 weeks for the completion of the survey.
G10A	By 31 October in the years 2021, 2023 and 2025 the Consent Holder shall provide to MWRC's Regulatory Manager details of inflow and infiltration investigations undertaken in the previous two financial years. Details of any forward works programme for repairs or upgrades to the Council network must be included. Any such works must be undertaken in general accordance with the principles of the Infiltration and Inflow Control Manual, Water New Zealand, 2015 (or relevant updates). ADVICE NOTE: Extracts from appropriate Asset Management documents may be used to help form the basis of information to demonstrate compliance with this condition	Not assessed	The report required in 2021 was provided to MWRC on 5 November 2021. It did not include details on forward works or repair/upgrade works. The report required in 2023 has not been submitted yet.
G11	By 15 October of each year, the Consent Holder shall provide to MWRC's Regulatory Manager and the members of the TDWF, an Annual Environmental Report for the 12 month period ending 30 June of that year. The report shall include but not be limited to: a. A summary of analyses and records collected in accordance with conditions of these consents; b. An assessment of compliance against conditions of these consents; c. A comment on any non-compliance and any additional monitoring or remedial action undertaken or planned; d. A record of any complaints that are received relating to the operation of the Pahiatua WWTP and wetland treatment system; e. A copy of the full quality assured data set for the period; and f. A copy of the current OMP and the register of certified changes to the OMP. ADVICE NOTE: For remedial actions to be undertaken an overview on timing of actions, including reference to appropriate Asset Management Plans is required. This report shall be provided to members of the TDWF not less than 10 working days prior to any TWDF meeting.	Low-risk non-compliance	The present report was submitted on 31 October 2023, MWRC compliance officer was informed and agreed, providing an extended deadline for the 31 October 2023 (email dated 13 October 2023). All required information is included in this report and the supporting material folder submitted with it, however, the dataset used for compliance assessment provided by MWRC had not yet been quality assured when it was provided to the consent holder.

General Conditions – APP-1993001253.02 & APP-2017201372.00		Compliance	Notes
G12	Within 3 months of these consents commencing, the Consent Holder shall install a pond level sensor alarm on Pond 3. The sensor shall provide a continuous measure of pond level to the Supervisory Control and Data Acquisition (SCADA) system. The sensor shall provide the following alarm functions: a. Alert level at 500mm below overflow, b. High level at 300mm below overflow, and c. High-high level (Overflow imminent) at 100mm below overflow. ADVICE NOTE: In relation to the sensor, the measurement and poling rates need not be high and a poling rate of once per hour would be sufficient.	Compliant	Relevant information was provided in the 2021 – 2022 annual environmental report and was assessed by MWRC as compliant.
Tararua District Wastewater Forum (TDWF)			
G13	The Consent Holder shall initiate the inaugural meeting of the TDWF on or before 14 December in the year in which the resource consents authorising either or both of the Pahiatua or Eketāhuna Wastewater Treatment Plants commence. ADVICE NOTE: The inaugural TDWF meeting shall be initiated following commencement of the earliest application.	Compliant	The inaugural TDWF meeting was held on 14 December 2021
G14	The Consent Holder shall secure and pay for the services of an independent facilitator to facilitate discussions during TDWF meetings.	Compliant	TDC made the required arrangements.
G15	The Consent Holder shall, for all TDWF meetings, provide the venue and administrative support, including but not limited to recording attendees and circulating notes and outcomes discussed at the forum meeting.	Compliant	The TDWF meeting on 13 December 2022 was held in the Council Chambers, in Dannevirke, the attendees were recorded, and notes and outcomes circulated.
G16.	"At least two weeks prior to hosting any meeting of the TDWF, the Consent Holder shall by way of formal correspondence issue invitations to the following parties: a. Water & Environmental Care Assn. Inc, b. Water Protection Society Inc, c. MidCentral District Health Board, d. Manawatu Estuary Trust, e. Wellington Fish and Game, f. John Bent, g. Christina Paton, h. Corny and Charlotte Andrews, i. A representative of each relevant iwi organisation that submitted on the application; j. A representative of MWRC as the regulatory authority, and k. A representative of the Tararua District Council as the Consent Holder. ADVICE NOTE: The parties listed in a – i above are the parties that submitted on the resource consent applications."	Minor non-compliance	Invitations were sent to all required parties except for: - Christina Paton, - Corny and Charlotte Andrews whose contact details could not be sourced in time from the Authority. TDC now has details of C. Paton and is trying to find C. Andrews' details (see supplementary material SM5).
G17	In addition to condition G16 above, at least 2 weeks prior to the meeting, the Consent Holder shall place in the Manawatu Standard and the Bush Telegraph a public notice advising of the date, time, location and purpose of the TDWF meeting.	Compliant	TDC notified the public via the Manawatu Standard on 29 November 2022, and via the Bush Telegraph on 28 November 2022 (see

General Conditions – APP-1993001253.02 & APP-2017201372.00		Compliance	Notes
			supplementary material SM6).
G18	The Consent Holder shall ensure that at least one TDWF meeting occurs annually between 30th October and 14th December.	Compliant	The 2022 TDWF meeting was held on 13 December 2022.
G18A	The functions and agenda of the TDWF shall, in respect of the performance of the WWTP and discharge facilities, include the following: a. Receiving the following documents and participating in informed discussions on them, and also on the performance of the WWTP and the quality of the discharges the subject of these consent conditions: i. Optimisation Programme Plan (see condition G3) ii. WWTP Operations and Management Plan (see condition G4) iii. Annual Environmental Report (see condition G11) iv. Assessment of Environmental Effects arising from the pond and/or wetland (see condition DL2 and DL2A) v. Construction Design Plan (see condition) vi. The Alternatives Investigation Report (see condition G9). b. Making suggestions during the annual forum to the Consent Holder as to any practical measures and other initiatives to address actual or potential adverse effects of the treated wastewater discharge c. Making suggestions during the annual forum as to any additional investigations the Consent Holder might undertake in respect of actual or potential adverse effects of the treated wastewater discharge; and d. Considering during the annual forum any other issues of concern to TDWF attendees relating to the WWTP treated wastewater discharge. ADVICE NOTE: The members of the TDWF shall be entitled to have their own experts present at the forum meetings and to provide advice or recommendations to the forum. The Consent Holder is not obliged to pay for the attendance or advice provided by experts engaged by TDWF members.	Compliant	The TDWF meeting agenda covered the required topics.
G18B	The Consent Holder shall provide minutes and a report of each TDWF meeting to MWRC and the members of the TDWF within four weeks of each meeting. The minutes and report shall include: a. A record of discussions and attendance at the meeting; b. A record of any suggestions provided or issues raised by the members of the TDWF including: i. i.. What actions are proposed by the Consent Holder to respond to suggestions made or issues raised by the TDWF as they relate to functions of the TDWF as set out in condition G18A (and a timeframe for implementing those actions); and ii. Where no actions are proposed to respond to suggestions or issues, the reasons why not.	Compliant	Minutes from the December 2021 TDWF meeting were shared with MWRC and the members of the TDWF and included the required records (see supplementary material SM7).
G18C	The TDWF forum may be terminated following a majority vote of parties listed in G16. The Regional Council shall be advised in writing within 10 working days should termination occur. ADVICE NOTE: Should the forum be terminated compliance with condition G18 is no longer	N/A	The TDWF forum has not been terminated yet.

General Conditions – APP-1993001253.02 & APP-2017201372.00		Compliance	Notes
	required.		
G18D	The involvement of a TDWF party, as identified in G16, may be terminated at the discretion of the independent facilitator or following a majority vote of the other parties. Grounds for termination include continued unreasonable or disruptive behaviour.	N/A	No party's involvement to the TDWF has been terminated.
G19	The MWRC may, pursuant to section 128 of the Act, initiate a review of any conditions of these consents annually in the month of July. Without limiting section 128 (1)(a)(i)-(ii) of the Act, any review shall be for the following specified purposes: a. Assessing the adequacy of the monitoring programme; and/or b. Assessing the effectiveness of the conditions in these consents in avoiding, remedying or mitigating any more than minor unanticipated c. adverse effects on the environment; and/or d. Modification of the monitoring programme; and/or e. Deletion, addition or changes to the conditions of these consents; and/or f. e. Incorporating minimum standards of water quality or air quality from an operative rule in a MWRC Regional Plan.	N/A	Review condition specific to MWRC.
G20	Discharge to water consent ATH-199501433.02, Discharge to air consent ATH-2016200747.00, and Discharge to land consents ATH2016200772.00 and ATH-2017201544.00 shall expire twelve years from commencement.	N/A	These consents shall expire in 2033
G21	Land use consent ATH-2017201543.00 shall expire on 30 November 2025.	N/A	

Table 2: Summary of compliance with conditions of consent ATH-2016200772.00 for the period July 2022 – June 2023.

Pahiatua WWTP – Discharge to Air: ATH-2016200772.00		Compliance	Notes
Pre-development assurance			
A1	Within two months of the commencement of this consent, the Consent Holder shall provide an Odour Operation and Management Plan (OOMP) for certification to the Regulatory Manager of the MWRC as part of the Operation and Management Plan required by condition G4. The purpose of the OOMP shall be to detail the measures the Consent Holder intends to take to avoid and mitigate the potential for odour from the wastewater treatment plant and ponds. The OOMP shall include, but not be limited to the following: a. Details of regular inspections, plant maintenance and cleaning as required to avoid offensive odours; b. Responsibilities of on-site staff; c. Monitoring procedures including details of the dissolved oxygen meter and automated recording system being used; d. Contingency procedures in the event of equipment failures; e. A complaints procedure including; i. Provision of a 24 hour telephone contact number, ii. A stated commitment by the Consent Holder to respond to odour complaints within a specified time period, iii. Actions to be taken by the Consent Holder to verify complaints iv. Provision for recording the complaints and the responses made by the Consent Holder to complaints, and v. Provision for recording actions taken by the Consent Holder to address the sources of any verified odour; f. Management procedures for storage and handling of primary screenings and other solid wastes; and g. Procedures for monitoring and managing pond sludge levels to minimize the risk of upset conditions in the ponds resulting in offensive h. odours. i. Procedures and actions to be taken when the DO levels fall below those specified in condition A6. ADVICE NOTE: The OOMP may be included in the Operations Management Plan provided for in condition G4 of these consents, and sludge management required by condition G7B.	Initially: non-compliant Now: compliant	The OOMP was required by 26 September 2021. A draft OOMP was submitted on 5 November 2021, and MWRC requested the final OOMP to be submitted by 31 July 2023. TDC submitted the final OOMP by the new deadline.
Environmental Standards			
A2	The discharge to air authorised by this consent shall not cause the emission of odour that, in the opinion of the MWRC's Consents Monitoring Officer, is offensive or objectionable at or beyond the property boundary of the Pahiatua Wastewater Treatment Plant site.	N/A	We are unaware of the MWRCs monitoring officer experiencing offensive or objectionable

Pahiatua WWTP – Discharge to Air: ATH-2016200772.00		Compliance	Notes
	ADVICE NOTE: When considering if an odour is objectionable or offensive, the MWRC will take into consideration the FIDOL factors: frequency, intensity, duration, offensiveness and location.		odours at or beyond the property boundary of the Pahiatua WWTP site.
A3	The Consent Holder shall keep a complaints register to record complaints relating to discharges of odour or contaminant gases to air arising from the Wastewater Treatment Plant. The register shall include: a. The details of the complainant if given; b. The location of where the contaminant, e.g. odour, was detected; c. A description of the wind speed and direction when the alleged adverse effect was detected by the complainant; d. The date and time of the detection; e. The most likely cause of the discharge detected; f. The dissolved oxygen levels in the ponds up to and including the 24 hours period prior to when the odour was detected; and g. If applicable, any corrective action undertaken by the Consent Holder to avoid, remedy or mitigate the adverse environmental effect detected by the Complainant. A comment regarding when and what feedback was provided to the Complainant to explain the odour.	Compliant	TDC uses a Customer Request Management System to record public complaints. There were no complaints registered for discharges of odour or contaminant gases during this reporting period (see supplementary material SM8).
A4	The Consent Holder shall advise the MWRC's Regulatory Manager within 24 hours of any complaints relating to air discharges being received.	N/A	No complaints were lodged during this reporting period.
A5	A copy of information recorded in the complaints register shall be included in the Annual Environmental Report required by condition G11 of the General Conditions.	N/A	No complaints were lodged during this reporting period.
A6	The Consent Holder shall continuously monitor Dissolved Oxygen in the wastewater treatment pond 1, near the discharge, and ensure that the Dissolved Oxygen concentration is at or above 0.5 mg/L. An information poling rate of once per 15 minutes or less, out to the SCADA and data storage systems, shall be adopted.	Non-compliance	The DO of Ponds 1 is currently being monitored with measurement polling at hourly intervals, instead of the 15-minute intervals required by the consent. TDC has automated the pond aerators to start when the DO falls below a certain level. Full records of daily minimum levels of DO concentration can be found in Appendix A, Figure A-3

Table 3: Summary of compliance with conditions of consent ATH-199501433.02 for the period July 2022 – June 2023

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
Descriptive Specification			
W1	Until 24 months following commencement of these consents, the treated wastewater shall meet the following standards: a. The concentration of ammoniacal-nitrogen (NH4-N) shall not exceed 10 g/m3 in more than 8 out of 12 consecutive samples, and no more than 18 g/m3 in more than 2 out of 12 consecutive samples; b. The concentration of soluble carbonaceous BOD5 (scBOD5) shall not exceed 23 g/ m3 in more than 8 out of 12 consecutive samples; and no more than 31 g/ m3 in more than 2 out of 12 consecutive samples; and c. The concentration of total suspended solids shall not exceed 41 g/m3 in more than 8 out of 12 consecutive samples, and no more than 65 g/m3 in more than 2 out of 12 consecutive samples. Compliance shall be based on grab samples taken from the discharge monitoring point immediately downstream of the UV treatment plant as shown indicatively on Plan ATH-199501433.02A.	Compliant	a. Ammoniacal nitrogen concentration exceeded 10 g/m^3 on 3 occasions and did not exceed 18 g/m^3 on any sampling occasions during this reporting period. Exceedances occurred in July, August and September 2022 and ranged between 10.3 and 10.8 g/m^3. b. scBOD5 concentration did not exceed 23 g/m^3 on any sampling occasions during this reporting period. c. TSS concentration did not exceed 41 g/m^3 on any sampling occasions during this reporting period. Full records can be found in Appendix A, Table A1
W2	Until 24 months following commencement of these consents, the treated wastewater discharge shall meet the following standards when flow in the Mangatainoka River as measured at "Mangatainoka at Pahiatua Town Bridge" flow recording station is at or below the 20th flow exceedance percentile flow: a. The concentration of E.coli shall not exceed 600MPN/100ml in more than 8 out of 12 consecutive samples, and no more than 2000MPN/100ml in more than 2 out of 12 consecutive samples; and b. The concentration of DRP shall not exceed 1 g/m3 in more than 8 out of 12 consecutive samples, and no more than 2 g/m3 in more than 2 out of 12 consecutive samples. Compliance shall be based on grab samples taken from the discharge monitoring point immediately downstream of the UV treatment plant as shown indicatively on Plan ATH-199501433.02A.	Compliant	a. *E. coli* concentration did not exceed 600 MPN/100ml on any sampling occasions during this reporting period. b. DRP concentration did not exceed 1 g/m^3 on any sampling occasions during this reporting period. Full records can be found in Appendix A, Table A2
W3	From 24 months following commencement of these consents, the treated wastewater shall meet the following standards: a. The concentration of ammoniacal-nitrogen (NH4-N) shall not exceed 10 g/m3 in more than 8 out of 12 consecutive samples, and no more than 18 g/m3 in more than 2 out of 12 consecutive samples; b. The concentration of soluble carbonaceous BOD5 (scBOD5) shall not exceed 5 g/ m3 in more than 8 out of 12 consecutive samples; and no more than 8 g/m3 in more than 2 out of 12 consecutive samples; and c. The concentration of total suspended solids shall not exceed 15 g/m3 in more than 8 out of 12 consecutive samples, and no more than 30 g/m3 in more than 2 out of 12 consecutive samples.	N/A	These consents commenced on 26 July 2021; thus, this condition will not be applicable before 26 July 2023.

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
	Compliance shall be based on grab samples taken from the discharge monitoring point immediately downstream of the UV treatment plant as shown indicatively on Plan ATH-199501433.02A.		
W4	From 24 months following commencement of these consents, the treated wastewater discharge shall meet the following standards when flow in the Mangatainoka River as measured at "Mangatainoka at Pahiatua Town Bridge" flow recording station is at or below the 20th flow exceedance percentile flow: a. The concentration of E.coli shall not exceed 260 MPN/100 ml in more than 8 out of 12 consecutive samples, and no more than 2000 MPN /100ml in more than 2 out of 12 consecutive samples; and b. The concentration of DRP shall not exceed 0.5 g/m3 in more than 8 out of 12 consecutive samples, and no more than 1.0 g/m3 in more than 2 out of 12 consecutive samples. Compliance shall be based on grab samples taken from the discharge monitoring point immediately downstream of the UV treatment plant as shown indicatively on Plan ATH-199501433.02A. Compliance with conditions W2 and W4 will be based on the flow at the "Mangatainoka at Pahiatua Town Bridge" flow recording station being less than 23.3m3/s.	N/A	These consents commenced on 26 July 2021; thus, this condition will not be applicable before 26 July 2023.
W5	The UV disinfection unit shall be equipped with a UV sensor to monitor UV transmission or intensity through the wastewater during operation.	Compliant	Pahiatua WWTP is equipped with a UV disinfection unit and is programmed with an alarm when intensity drops.
W5A	The UV sensor shall be monitored continuously, and shall be programmed with an alarm notifying the Consent Holder if the applied UV dose decreases below the manufacturer's recommended dose for a period of more than 24 hours. ADVICE NOTE: It is expected that this alarm setting will be of the order of 30 mJ/cm2.	Non-compliance	After further investigation by A. D. Riley, TDC were advised that the values required weren't available from the UV unit installed. The RFP evaluation process for the procurement phase of upgrading TDC's SCADA system has begun.
Receiving Water Quality			
W8.	The treated wastewater discharge shall not cause any of the following in the Mangatainoka River at the river flows outlined in Table 1 and, after reasonable mixing, at the monitoring point 200m downstream from the discharge in accordance with condition W17 a. the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials; or b. bacterial and / or fungal slime growths visible to the naked eye as plumose growths or mats; or c. any emission or of objectionable odour; or d. a reduction in horizontal visibility, defined as the horizontal sighting range of a black disc, by more than 20%; or e. the ammoniacal nitrogen (NH4-N) concentration to exceed 2.1 g/m3 at any time, or to exceed 0.4 g/m3 as a rolling annual average; or	Compliant/Not assessed	During this reporting period, at Reach C: a. No such substances were recorded during water quality and periphyton monitoring by MWRC and Traverse Environmental (former Aquanet Consulting) respectively (compliant). b. No such substances were recorded during water quality and periphyton monitoring by MWRC and Traverse Environmental respectively (compliant) c. No odour complaints were lodged (compliant).

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
	f. the rolling annual average particulate organic matter concentration to exceed 5 g/m3 at flows below median flow; or g. the Chlorophyll a. to exceed 120 mg/m2 on more than 8% of occasions on the basis of the last 36 samples collected monthly in accordance with condition W23; or h. the cover of filamentous mats greater than 2 cm long to exceed 30% or cover of mats greater than 3mm thick to exceed 60%; or i. a reduction in Quantitative Macroinvertebrate Community Index (QMCI) of greater than 20%; or j. the rolling annual average scBOD5 concentration to exceed 1.5 g/m3 at flows below the 20th FEP. The River Flows in Table 1 are in the Mangatainoka River as measured at "Mangatainoka at Pahiatua Town Bridge" water level recording station.		d. Black disc (BD) was not used on any occasion, with safe access cited as the reason. Clarity tube (CT) was used instead. CT values up to 0.5 m were considered approximately equivalent to BD values according to Killroy & Biggs (2002). CT values between 0.5 and 0.95 m were converted to approximate BD values based on the equation in Killroy & Biggs (2002). CT values greater than 0.95 could not be transformed and were thus approximated as >2 m BD values. BD estimates showed decrease of horizontal visibility <20% or even increase from upstream to downstream of the discharge. On six occasions, CT visibility both upstream and downstream was greater than 0.95 m and thus no exact BD values could be estimated (not assessed). e. Ammoniacal nitrogen concentration did not exceed 2.1 g/m^3, or, as a rolling annual average, 0.4 g/m^3 on any sampling occasion (compliant). f. POM concentration as a rolling annual average did not exceed 5 g/m^3 on any sampling occasion (compliant). *Note: Data from the 2021 – 2022 reporting period were also used to calculate the rolling annual averages on each month of the 2022 – 2023 reporting period. Only the rolling annual average calculated for June 2023 is based entirely on data from this reporting period.* g. By the end of this reporting period, only 23 records of Chlorophyll-a could be included in the analysis as per condition W23 (not assessed).

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
			Preliminary analysis of the results found Chlorophyll-a to exceed 120 mg/m^2 twice during the time covered by the 23 records (once during the 2021 – 2022 monitoring period and once during the 2022 – 2023 monitoring period). Two exceedances in 23 samples represent 9%. It should be noted that the exceedances at Reach B, upstream from the current discharge represented 13% (3 occasions out of 23). h. Riverbed cover of filamentous algae (>2cm) did not exceed 30% on any occasion (compliant). Riverbed cover by algal mats (>3mm) exceeded 60% on one occasion, January 2023 (61%). As per condition W9(g), and since there was a decrease in cover between upstream (Reach A – 68% and B – 74%) and downstream (Reach C), none of the triggers in W9(g)i were exceeded (compliant). i. As per condition W21 (assessed in a separate report, Appendix B), and since macroinvertebrates were collected during the 2021 – 2022 reporting period, there was no requirement for macroinvertebrates to be collected during the 2022 – 2023 period (not applicable). j. scBOD5 concentrations were recorded as below detection limit on every sampling occasion, with most detection limits being either 3 or 6 g/m^3 (only two occasions had detection limit 1 g/m^3) (not assessed).

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
			Full records of water quality can be found in Appendix A, Table A3Table A4, and Figure A4Figure A5 Full records of periphyton cover and biomass can be found in the report required by condition W28, Appendix B of the present report.
W9.	Compliance with condition W8 shall be assessed as follows: a. If condition W8d (decrease in horizontal visibility of more than 20% between upstream and downstream of the discharge) is exceeded, the Consent Holder shall: i. immediately repeat the horizontal visibility measurement upstream and downstream of the discharge; and ii. If a greater than 20% reduction in horizontal visibility is confirmed by the second measurement, the Consent Holder shall assess whether the discharge is the cause for the reduction in horizontal visibility, based on the results of water quality analyses undertaken the same day under condition W17 of this consent, and any additional measurements, other observations or photographs. b. If the Consent Holder is unable to comply with the limits in condition W8e (ammoniacal nitrogen), W8f (Particulate Organic Matter) or W8j (ScBOD5), the Consent Holder shall use a Wilcoxon Signed Rank test to determine if there are any statistically significant increases or decreases between upstream and downstream. c. If it is determined that there are significant increases or decreases in accordance with the Wilcoxon Signed Rank test (p=0.05 or lower), the Consent Holder shall undertake an investigation into the effects of the discharge from the Pahiatua WWTP compared with upstream to determine, if possible, the cause of the exceedance. d. The Consent Holder shall, within 2 working days of the result in c. being received by the Consent Holder, notify the MWRC's Regulatory Manager of the exceedance and shall subsequently provide the MWRC's Regulatory Manager with a written statement in accordance with W9(e); e. The written statement shall: i. Include, but is not limited to, mitigation measures taken, and if required, further proposed measures to remedy the problem; ii. Include a timeline to complete proposed remediation measures; iii. Be provided to MWRC's Regulatory Manager in draft form: 1. For exceedances of the ammoniacal nitrogen (NH4-N) concentration in the Mangatainoka River above 2.1gm3, within 10 working days after the notification; 2. For any other exceedances, within 20 working days after the notification; iv. Where comments are received from MWRC's Regulatory Manager within 5 working days of receipt of the draft written statement, either	Compliant	Assessment of compliance, where required, was undertaken as per condition W9.

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
	1. Incorporate those comments in the final written statement, or 2. Explain why comments have not been incorporated in the final written statement; v. Be provided to MWRC's Regulatory Manager in final form within 10 working days of providing the draft. f. The findings of investigations, actions taken and reporting under clauses W9(d and W9(e) and, if required, further proposed measures to remedy the problem and a timeframe for doing so, shall be reported in the annual report required by condition G11 of the general conditions and updated accordingly in the OMP as necessary. g. If the limits in condition W8h (periphyton cover) are exceeded downstream of the discharge, then: i. the Consent Holder shall assess whether the following triggers are exceeded: 1. if periphyton cover upstream of the discharge was less than 30% cover, the Consent Holder shall assess whether a more than 10 point increase in the mean percentage cover by filamentous algae over 2 cm long or mat over 0.3 cm thick has occurred between upstream and downstream of the discharge on that sampling occasion. 2. if periphyton cover upstream of the discharge was more than 30% cover, the Consent Holder shall assess whether a more than 15 point increase in the mean percentage cover by filamentous algae over 2 cm long or mat over 0.3 cm thick has occurred between upstream and downstream of the discharge on that sampling occasion. ii. If the triggers in 1 or 2 above are exceeded, then the Consent Holder shall analyse the last 36 measurements collected under condition W23 to assess whether there is a consistent increase (by use of a Wilcoxon signed ranked test) in the percentage cover by filamentous algae over 2 cm long or mat over 0.3 cm thick between upstream and downstream, and whether there is an increase in the frequency or severity of exceedances of the limit in condition W8h. iii. If the assessment concludes that there is both a consistent increase in the percentage cover by filamentous algae over 2 cm long or mat over 0.3 cm thick between upstream and downstream, and an increase in the frequency or severity of exceedances of the limit in condition W8h, then the condition will be assessed as non-compliant. h. Compliance with the limit in condition W8i (QMCI) shall be determined using equivalence testing at the 20% interval. i. Compliance with condition W8g (periphyton biomass) shall be assessed on the basis of the last 36 measurements collected under condition W23. Missing measurements as a result of inability to sample due to high flows shall be addressed using the method provided for under condition W23(f). ADVICE NOTE: A statistically significant difference is defined as a P value equal to or less than 0.05. ADVICE NOTE: The increase between upstream and downstream periphyton cover (condition W9(g)) shall be calculated as the difference between the % cover downstream minus the % cover upstream. For example, filamentous algae covers of 40% upstream and 55% downstream represent a 15 point increase in filamentous algae cover.		

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
W10.	Wastewater monitoring To enable sampling of the treated wastewater the Consent Holder shall establish and maintain safe access to a sampling port as close as is practicable to the end of the wastewater treatment system post UV. The sampling port location shall be identified in the OMP required under condition G4.	Compliant	TDC contracts out wastewater monitoring with MWRC Environmental Data team which conducts sampling in the region. Based on on-going communications between TDC and said team, the access is safe for sampling.
W11.	The Consent Holder shall take monthly grab samples of the treated wastewater at the sampling port referred to in condition W10. The samples shall be analysed for the constituents and at the frequencies listed in Table 2 to assess compliance with conditions W1 to W4 of this consent.	Compliant	TDC has contracted this task to MWRC's Environmental Data Team. Grab samples of the treated wastewater were collected monthly and were analysed for the constituents listed in Table 2 of condition W17.
W12	The Consent Holder must ensure that a flow meter is located and maintained on each of the inflow and outflow lines to and from the treatment plant for the duration of the consent. The flow meter on the outflow line must be positioned to measure the entire volume of treated sewage wastewater discharged into the surface water of the Mangatainoka River/or into wetland as authorised by this consent. The inflow meter must be positioned prior to the inlet screen so as to measure the entire wastewater volume entering the plant.	Compliant	Pahiatua WWTP is equipped with inflow and outflow meters
W13	The flow meters required by condition W12 shall be verified by a registered verifier upon installation and every five (5) years following commencement of this consent to ensure compliance with condition W12. The Consent Holder shall provide evidence of the verification in writing to MWRC's Regulatory Manager within one month of the verification being completed. ADVICE NOTE: Written verification can be sent to the Regulatory Manager via email compliance.shared@horizons.govt.nz –OR– via mail addressed to: C/- The Regulatory Manager, Horizons Regional Council, Private Bag 11025, Manawatu Mail Centre, Palmerston North 4442.	Compliant	Pahiatua WWTP flowmeters were last verified in July 2020. This consent commenced in July 2021. Thus, 5 years following commencement would be July 2026.
W14	The Consent Holder shall, for the duration of this consent, maintain in a fully operational condition, a GPRS data logger / telemetry unit compatible with the MWRC's Telemetry system on the discharge line traceable to +/- 5 % or better. ADVICE NOTE: This unit, which is attached to the pulse counter output, will be monitored by the MWRC to ensure compliance with the resource consent conditions.	N/A	MWRC compliance officer to assess this condition.
W15	Where telemetry equipment fails for reasons other than fair wear and tear, replacement or repair and recalibration will be at the Consent Holder's expense. Replacement or repair and recalibration will be within five working days.	Compliant	There are no reports of Pahiatua WWTP telemetry equipment failing during the period.
W16	With the exception of network power failure or network maintenance the Consent Holder shall ensure that power supply is maintained at the site at all times. ADVICE NOTE: If power supply is lost at the site due to Consent Holder negligence or abuse and telemetry units require recalibration by MWRC staff the costs associated will be recovered from the Consent Holder.	Compliant	Power supply was always maintained at site during the reporting period.
River and Wastewater Monitoring			

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
W17.	Prior to the relocation of the discharge point, the Consent Holder shall take samples from the Mangatainoka River at Reach B and Reach C. Once the discharge point has been relocated, the Consent Holder shall take samples from the Mangatainoka River at Reach A and Reach B as shown on Plan ATH-199501433.02A attached to and forming part of these consent conditions. The river samples shall be analysed for the constituents and at the frequency listed in Table 2 to assess compliance with conditions W8 and W9 of this consent. The wastewater samples shall be analysed for the constituents and at the frequency listed in Table 2 to assess compliance with conditions W1-W4 of this consent. ADVICE NOTE: pH, temperature, horizontal visibility and dissolved oxygen shall be measured on site, directly in the river. ADVICE NOTE: It is preferable that the downstream sample is collected before the upstream sample so that disturbed sediment does not impact the downstream sampling result. ADVICE NOTE: Testing for Dissolved Aluminium is only required if Alum is used as the flocculent.	Minor non-compliance	Effluent and in-river samples were collected monthly and were analysed for all constituents in Table 2 of condition W17, except for aluminium, results for which were not provided for July and August 2022 (with the latter being attributed to an error by the ELS laboratory).
W18.	Should a flocculent involving Aluminium be used, then from the date this consent commences: a. The Consent Holder shall assess annually for the first three years of this consent, and thereafter once every three years, the dissolved aluminium in-river monitoring results against a trigger concentration of 0.055 g/m3 and run a Wilcoxon Signed Rank test on the last 12 consecutive monthly samples to determine if there are any significant increases in dissolved aluminium concentration between upstream and downstream results. The results shall be interpreted in light of the wastewater dissolved aluminium results, to evaluate whether the discharge is a likely cause of any increase between upstream and downstream in-stream results. b. In the event that the median dissolved aluminium concentration exceeds the trigger concentration of 0.055 g/m3, and that a significant increase is detected between upstream and downstream results, and that the discharge is a likely cause of that increase, an investigation into the risk of toxic effects due to dissolved aluminium shall be undertaken within one month of detecting the significant increase. The findings shall be reported in the annual report required by condition G11 of the general conditions. c. If the investigation in b. shows a likelihood of toxic effects then measures to address that situation shall be proposed by the Consent Holder and implemented subject to certification by the MWRC Regulatory Manager. ADVICE NOTE: To perform the statistical test, analysis needs to be against a minimum of 12 upstream and downstream paired results from the monthly sampling, accordingly no statistical test shall be performed until 12 samples have been collected.	Not assessed	Only 10 samples were analysed for aluminium during this monitoring period, and thus the effect of the discharge on the in-river aluminium concentrations could not be assessed. Preliminary results based on the reduced number of samples do not raise any concerns. Full records and preliminary analysis can be found in the appended report, Appendix B.
W19.	All wastewater and river water quality analyses shall be undertaken by an appropriate accredited laboratory. All methodologies adopted shall be appropriate for either wastewater or river water analyses respectively and the soluble cBOD5 shall be GF/C filtered. The methodologies shall be determined in consultation with the MWRC's Regulatory Manager.	Compliant	The analyses are being carried out by Eurofins ELS Ltd which is an accredited laboratory. The methodology of analysis is agreed upon with Horizon's samplers and deemed to be appropriate against required conditions.

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
W20.	The Consent Holder shall have an appropriately experienced and qualified freshwater ecologist undertake macroinvertebrate sampling in the Mangatainoka River. The macroinvertebrate sampling shall be undertaken following a period of at least three weeks without a significant flood event (defined as an instantaneous river flow exceeding three times the median flow, defined as 26.7 m3/s in the Mangatainoka River at Pahiatua Town Bridge) and during a period of low flow (at least one week below ½ median flow in the Mangatainoka River at Pahiatua Town Bridge defined as 4.45 m3/s).	N/A	Macroinvertebrates were collected during the 2021 – 2022 monitoring period, and as the discharge relocation has not yet been commissioned, no further macroinvertebrate sampling was required, as per condition W21.
W21.	Macroinvertebrate sampling referred to in condition W20 is to be undertaken: a. once prior to the commissioning of the new discharge location, between January and April inclusive, at Reach A, Reach B and Reach C; b. following commissioning of the new discharge location, annually between January and April inclusive for three years at Reach A and Reach B. Should flow conditions defined in condition W20 not be met, monitoring shall occur in the following year until three monitoring rounds are completed; c. Thereafter, every three years at Reach A and Reach B between January and April inclusive and in any other year if one or more of the parameters of condition W8 are exceeded.		
W22.	The macroinvertebrate sampling shall follow Protocols C3 (Hard-bottomed quantitative), P3 (full count with subsampling option) and QC3 (Quality control for full count with subsampling option) from the Ministry for the Environment's "protocols for sampling macroinvertebrates in wadeable streams" (Stark et al. 2001). This shall involve: a. collection of five replicate 0.1 m2 Surber samples at random within a 20 m section of riffle habitat at each sampling site; b. full count of the macroinvertebrate taxa within each replicate sample to the taxonomic resolution level specified for use of the Macroinvertebrate Community Index (MCI); c. enumeration of the results as taxa richness, MCI, QMCI, %EPT taxa and %EPT individuals; and d. Analysis of the QMCI results using equivalence testing at the 20% interval. e. The freshwater ecologist shall ensure the physical characteristics (including but not limited to substrate, depth, velocity, shading) of the upstream and downstream sites shall, as far as is practicable, provide a similar/adequate match.		
W23.	The Consent Holder shall have an appropriately experienced and qualified freshwater ecologist undertake monthly assessments of periphyton in each month of the year. The assessments shall be undertaken: a. prior to the commissioning of the new discharge location, regardless of river flow, Reach A, Reach B and Reach C approximately 200m downstream of Town Creek; and b. following commissioning of the new discharge location, regardless of river flow, for three years at Reach A and Reach B; and c. Thereafter, for twelve months, once every three years at Reach A and Reach B. The periphyton assessment is to include: d. a visual assessment of the percentage cover of both filamentous algae and algal mats (to the nearest 5%) at 5 points across each of four transects encompassing run habitat, and extending across the width of the river at each sampling site. The visual monitoring methods shall follow the protocols outlined in Appendix 2 of "A periphyton monitoring plan for the Manawatu-Wanganui	Compliant	Periphyton was monitored monthly throughout the monitoring period at all three Mangatainoka River reaches. Samples were not collected during July to October 2022, March and May 2023 due to flows in the Mangatainoka exceeding 55 m3/s. Periphyton in these months was assumed to have a biomass less than 120 mg/m2. During the June 2023 sampling occasion flow in the Mangatainoka River was below 55 m3/s, but still too high to safely undertake sampling.

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
	Region" (Kilroy et al. 2008). Reported estimates shall include: i. percentage cover of visible stream or river bed by bacterial and/or fungal growths (sewage fungus) visible to the naked eye; ii. percentage cover of visible stream or river bed by filamentous algae more than 2 cm long; iii. percentage cover of visible stream or river bed by diatoms or cyanobacteria mats more than 0.3 cm thick; iv. percentage cover of visible stream or river bed by diatoms less than 0.3 cm thick; and v. percentage cover of visible stream or river bed that is clean. e. the collection of a periphyton sample at the same established monitoring sites and transects as defined in condition W23(a) above, using method QM-1b from the Stream Periphyton Monitoring Manual (Biggs & Kilroy 2000). A minimum of 10 samples shall be collected at each site. All samples collected at each site shall be pooled for analysis. Analysis of periphyton samples shall follow the Biggs & Kilroy (2000) guidelines for chlorophyll a and Ash Free Dry Weight analysis. f. If flow conditions in the Mangatainoka River render the assessment unsafe and/or unfeasible then: i. if the maximum instantaneous flow in the preceding five day period is found to have exceeded 55 m3/s in the Mangatainoka River at Pahiatua Town Bridge, the occasion shall be included for compliance purposes, and shall be assumed to have a biomass less than 120 mg/m2. ii. if the maximum instantaneous flow in the preceding five day period is found to be less than 55 m3/s in the Mangatainoka River at Pahiatua Town Bridge, repeat monitoring shall be undertaken, within a seven day period. iii. if repeat monitoring is unable to be undertaken within a seven day period due to high flows, then: a. if the maximum instantaneous flow in the preceding five-day period is found to have exceeded 55m3/s in the Mangatainoka River at Pahiatua Town Bridge, the occasion shall be included for compliance purposes and shall be assumed to have a biomass less than 120 mg/m2; b. if the maximum instantaneous flow in the preceding five-day period is found to not have exceeded 55 m3/s in the Mangatainoka River at Pahiatua Town Bridge, the measurement shall be excluded from the compliance analysis, and an additional sampling occasion shall be added to the end of the monitoring period. ADVICE NOTE: The increase between upstream and downstream periphyton cover (condition W9f) shall be calculated as the difference between the % cover downstream minus the % cover upstream. For example, filamentous algae covers of 40% upstream and 55% downstream represent a 15 point increase in filamentous algae cover.		This month was excluded from all periphyton assessments. Assessment included and reported on percentage cover of visible riverbed by sewage fungus, filamentous algae (>2cm long), diatom/cyanobacteria mats (>3mm thick), diatom mats (<3mm thick), and riverbed that was clean. Samples were also analysed for chlorophyll-a and Ash-Free-Dry-Weight (AFDW), with the exception of November 2022, when no AFDW measurements were made. Full records can be found in the Appendix B.
W24	In the first year after relocation of the discharge, the Consent Holder shall have an appropriately experienced and qualified person undertake a one off continuous dissolved oxygen monitoring programme at the points upstream and downstream of the new discharge location (Reaches A and B). This is to be undertaken following a period of at least three weeks without a significant flood event (defined as an instantaneous river flow exceeding three	N/A	The relocation of the discharge has not been commissioned yet; thus, this condition is not applicable for this monitoring period.

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
	times the median flow, defined as 26.7 m3/s in the Mangatainoka River at Pahiatua Town Bridge) and during a period of low flow (at least one week below ½ median flow in the Mangatainoka River at Pahiatua Town Bridge defined as 4.45 m3/s). Monitoring is to occur for no less than 11 days in the period of November to April in the first year where flows in the Mangatainoka River are suitable. ADVICE NOTE: The 11 days during which monitoring takes place need not be consecutive days.		
W25	The continuous dissolved oxygen monitoring is to be undertaken in accordance with the National Environmental Monitoring Standards document for Measuring, Processing and Archiving of Dissolved Oxygen Data (version 2, dated July 2016). The monitoring results shall be compared against the thresholds for Dissolved Oxygen in the latest National Policy Statement for Freshwater Management. The results shall be summarised in a short report to be provided to the MWRC's Regulatory Manager within three months of the monitoring taking place. The report shall include but is not limited to: a. equivalence testing (with a 10% interval) on a rolling 7-day mean minimum calculated for both upstream and downstream; b. an assessment of the 1 day mean minimum for upstream and downstream over the monitoring period; and c. an assessment of whether the discharge caused an adverse impact on DO in the receiving environment, and an assessment of the likely significance of effects on aquatic life.	N/A	This condition is linked to condition W24, and as the discharge relocation has not been commissioned yet, continuous dissolved monitoring is not required for this monitoring period.
Post-development assurance			
W25A	At least once every five years, or earlier if there is an unexplained increase in flows, the Consent Holder must review records of wastewater flows received at the treatment plant to ensure there has been no unexplained increase in flows (based on a five year running average) that could adversely affect treatment plant performance. The results of the review must be included in the next annual monitoring report to the Regulatory Manager as required by condition G11. In the event that the review shows that unexplained increased flows could result in adverse effects on treatment plant performance, the permit holder must investigate the reasons for the unexplained increased flows and put in place remedial works as necessary. In the event there is disagreement between the Consent Holder and MWRC in relation to the need for investigations and/or remedial works, the Consent Holder must commission an independent review by a suitably qualified expert acceptable to the Consent Authority.	N/A	The consent commenced in July 2021; thus, this review should take place by July 2026. Ongoing monitoring of the incoming flows has not shown any unexplained increases, but there have been some uncontrolled discharges from Pond 3.
W26	The Consent Holder shall notify the MWRC's Regulatory Manager within two working days of any non-compliance occurring or when it becomes certain that a breach of consent conditions is about to occur. For conditions requiring compliance with a particular water quality standard, notification is required within two working days of receipt of the water quality analysis from the laboratory.	Compliant	TDC is currently implementing CS-vue and Water Outlook in order to meet the requirements of this condition.
W27	The Consent Holder shall make results of monitoring undertaken required by conditions W17 and W18 of these consents available to the MWRC's Regulatory Manager on request, and data records for each three month period ending March, June, September and December shall be forwarded to MWRC's Regulatory Manager in a suitable electronic format, within 14 days after the end of each three monthly period.	Compliant	Monitoring data are readily accessible to MWRC through the Council's Hilltop software. The lab analysis from ELS takes approximately 10 days post-sampling to be completed and available on the Hilltop server.

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
W28	By 31 October each year, the Consent Holder shall prepare a report that summarises and assesses all of the monitoring information required under conditions W17, W18, W20, W21, W23 and W24 of these consents. This report should be included in the Annual Environmental Report required by condition G11 of the general conditions.	Compliant	The report required by this condition has been appended as Appendix B to the present report.

Table 4: Summary of compliance with conditions of consent ATH-2016200747 and ATH-2017201544.00 for the period July 2022 – June 2023.

Pahiatua WWTP – Pond & Wetland Seepage ATH-2016200747 and ATH-2017201544.00		Compliance	Notes
Descriptive specification			
DL1	Permeability Investigations Within six months of commencement of this consent, the Consent Holder shall submit to the MWRC's Regulatory Manager a plan to investigate the rate of leakage of all the existing treatment ponds. The plan shall include, but not be limited to: a methodology for a water balance to be undertaken for each of the ponds. As a minimum inflows and outflows from the treatment system shall be recorded over a 12 month period, as shall local daily rainfall. The methodology shall also include a representative exercise for measuring pond levels and for the measurement and recording of representative evaporation rates; or other suitable method to determine rate of leakage of each of the treatment ponds. a. The methodology proposed shall be peer reviewed by an independent and suitably qualified expert. b. Results from the water balance undertaken in accordance with the peer reviewed methodology shall be submitted to the MWRC's Regulatory Manager and the TDWF within six months of the completion of the 12 month monitoring period.	Non-compliance	This consent commenced on 26 July 2021. Therefore, the due date for this condition was on 26 January 2022. MWRC, in their 2021-2022 audit report, required the Investigation Plan to be submitted by 31 July 2023. A Statement of Work (SoW) was signed between TDC and WSP consultants on 13/09/2023 with regards to the latter carrying out a Pond Leakage Investigation for the Pahiatua WWTP (see supplementary material SM9). The project is expected to take 12 weeks.
DL2.	By 1 February 2023, the Consent Holder shall submit a report to the MWRC's Regulatory Manager and TDWF, prepared by an independent and suitably experienced and qualified water quality scientist(s), which shall include but not be limited to: a. An assessment of the effects of the discharge through the base and walls of the ponds on both groundwater and surface water as is able to be determined from the analyses and records collected in accordance with conditions of these consents; b. A comment on the extent to which the discharge from the existing ponds and/or constructed wetland is causing, or contributing to, (outside the uncertainty of measurement for the sample) any exceedance of One Plan Schedule E targets in the Mangatainoka River. Should more than minor effects of pond seepage on surface and/or groundwater quality be identified, an assessment of options (BPO) to mitigate any more than minor adverse effects, including an assessment from an independent IPENZ Chartered geotechnical engineer as to whether relining existing wastewater ponds to a permeability standard of 1x10-9 m/s is practicable (this shall include an economic assessment).	Non-compliance	This consent commenced on 26 July 2021. Thus, the due date for this condition was on 26 January 2022. MWRC, in their 2021-2022 audit report, required the Investigation Plan to be submitted by a new date, 31 July 2023. A Statement of Work (SoW) was signed between TDC and WSP consultants on 13/09/2023 with regards to the latter carrying out a Pond Leakage Investigation for the Pahiatua WWTP (see supplementary material SM9). The project is expected to be completed by 02/12/2024.
DL2A	18 months after the wetland treatment system is fully established, but no later than 1 January 2029, the Consent Holder shall submit a report to MWRC's Regulatory Manager and TDWF prepared by an independent and suitably experienced and qualified water quality scientist(s), which shall include but not be limited to comments on the extent to which the discharge from the constructed wetland treatment system is causing, or contributing to, (outside the uncertainty of measurement for the sample) any exceedance of One Plan Schedule E targets in the Mangatainoka River.	N/A	The wetland system has not been established yet. Therefore, there is no need for this report to be submitted to MWRC and TDWF yet.

Pahiatua WWTP – Pond & Wetland Seepage ATH-2016200747 and ATH-2017201544.00		Compliance	Notes
DL3	Groundwater monitoring Within three months of the date of commencement of this consent, the Consent Holder shall install three groundwater monitoring wells on the site at or as near as practicable to the locations specified on Plan ATH-199501433.02 A and to the following specifications: a. The monitoring wells shall have a diameter of a sufficient size (i.e. approximately 50mm) to enable sampling for the analysis of water quality. b. The wells shall be screened from approximately 1 m above to approximately 2 m below the level of the bed of the Mangatainoka River. c. The wells shall be constructed of polyvinyl chloride (PVC) or a similar inert material and shall be capped and secured to prevent entry of surface water. d. The well head should be located within a 'toby', set in concrete, to prevent damage e. A concrete pad at least 0.3 metres radius shall be constructed around the well head and 'toby' to prevent leakage around the casing. The concrete pad shall slope away from the bore. f. The wells shall be installed by a suitably qualified person(s) and constructed in accordance with the New Zealand Standard for Drilling Rock and Soil NZS 4411:2001.	Non-compliance	This consent commenced on 26 July 2021. Thus, the deadline for this condition was on 26 October 2021. The bores have not been installed yet. TDC have sources quotes from Geotech Drilling and Pro-drill. Once the bores are installed, a monitoring and sampling plan will be established.
DL4	The Consent Holder shall take samples from all bores identified in condition DL3 in accordance with the most recent version of the MfE Groundwater sampling protocols (2006). Sampling shall be undertaken quarterly in the months of January, April, July and October for a period of two years following commencement of consent, thereafter reducing to six-monthly in January and July.	Non-compliance	The consent commenced on 26 July 2021. Thus, quarterly bore sampling should had been undertaken until July 2023. Due to the inability of TDC to undertake this sampling according to requirements, it was agreed with MWRC to start sampling in January 2022. However, due to the bores not having been installed, this has not been accomplished.
DL5	Samples collected under condition DL4 shall be analysed for the following: a. Total Phosphorus (TP) b. Dissolved Reactive Phosphorus (DRP) c. Total Nitrogen (TN) d. Nitrate Nitrogen (NO3-N) e. Nitrite Nitrogen (NO2-N) f. Escherichia coli (*E. coli*) g. Dissolved oxygen (field measurements) h. Electrical Conductivity (EC) (field measurements) i. Chloride j. Static water level k. pH (field measurement and laboratory measurement)	Not applicable	No samples were collected and analysed during this reporting period because the bores have not been installed and a sampling plan has not been established yet.

Pahiatua WWTP – Pond & Wetland Seepage ATH-2016200747 and ATH-2017201544.00		Compliance	Notes
DL6	Wetland Design, Development and Construction Within 12 months of commencement of this consent, the Consent Holder shall submit to the MWRC Regulatory Manager, a construction design plan for the development phase of both the wetland treatment system and biodiversity wetlands (together making up the "wetlands"). The wetlands are to be designed by an appropriately qualified and experienced expert, and in consultation with relevant iwi authorities and located in general accordance with Plan ATH-199501433.02 A attached to and forming part of this consent, with necessary modifications. The construction design plan shall include but not be limited to information demonstrating the following matters – Construction and Establishment phase of wetland treatment system wetland a. Construction design of the wetland treatment system: i. The design shall demonstrate that, once constructed, the average water depth of the vertical flow wetland shall not be less than 1.25m and for the surface flow wetland shall not exceed 300mm and the maximum water depth shall not exceed 500mm. ii. A functional explanation of the hydraulic structures (weirs) that will be utilised to ensure the depths are not exceeded shall be provided. iii. Details of reinforced flood sills for the upstream and downstream ends. iv. A surface flow wetland width to length ration of ideally between 1:3 and 1:5 and not more than 1:10. v. The total wetland surface area shall be not less than 3,725M2, comprising 1,282m2 for the vertical flow wetland and 2,443m2 for the surface flow wetland. b. Final details of design of the weirs: i. each weir shall be built with a reinforced spillway: c. Information demonstrating that 50% of the expected maximum treated wastewater flow shall be retained in the surface flow wetland for not less than 24 hours. d. The construction design plan shall contain a specific planting plan to demonstrate how the vegetation shall be planted within two planting seasons following completion of bulk earthworks. e. Planting in the surface flow wetland shall be at a density of not less than two plants per square metre and the entire base of the surface flow shall be planted. f. Details shall be provided of the source of clay material to be used to line the surface flow wetland and anticipated permeability to be achieved once constructed. This is to include confirmation that the source of clay is not 'dispersive' in nature. g. The construction design plan shall demonstrate that the topsoil stripped to allow for the formation of the surface flow wetland shall be relaid in the surface flow wetland prior to planting. h. The construction design plan shall include information demonstrating how the wastewater treatment plant shall be managed so as to allow for gradual introduction of the treated wastewater to the wetland treatment system to allow for planted seedlings to adapt to the fully saturated conditions.	Non-compliance	This consent commenced on 26 July 2021. Thus, the deadline for this condition was on 26 July 2022. The wetland design plan has not been submitted to MWRC yet. The proposed system can be found in Appendix A, section 0. It shows the relative positions of the vertical flow and surface flow wetlands, and the remaining space available for the treatment plant, should the decision be made to shift the entire plant.

Pahiatua WWTP – Pond & Wetland Seepage ATH-2016200747 and ATH-2017201544.00		Compliance	Notes
	i. The construction design plan shall demonstrate how the formation of preferential flow paths will be prevented within the surface flow wetland, and if preferential flow paths do develop, the process to follow to address them. j. The construction design plan shall include details of fencing to exclude livestock from the wetland treatment system. Construction and Establishment phase of biodiversity wetland k. Final details of the biodiversity wetland including construction of bunds to prevent the discharge of treated wastewater down lateral drains; l. Construction of final culvert or weir structure at the outlet; m. Details of erosion resistant structure linking the treatment wetland with the biodiversity wetland; n. Details of fencing to exclude stock from the wetland; o. A specific planting plan to demonstrate how the vegetation in the biodiversity wetland shall be fully planted within 2 years following of the completion of the earthworks associated with the biodiversity wetland; and p. Requirements for minimum area of biodiversity wetland.		
DL6A-DL10G & DL11	The Consent Holder must complete planting of the wetland treatment system within two planting seasons following completion of bulk earthworks and no later than 1 July 2025.	N/A	The wetland system has not been established; thus, these conditions are not applicable for this monitoring period.
DL10H	The methodology required by DL10G (b) must be sent to the MWRC's Regulatory Manager for certification within 30 months of consent commencement.	N/A	This consent commenced on 26 July 2021. Thus, the deadline for this condition will be 26 January 2024.
DL12	All wastewater and bore water quality analyses shall be undertaken by an appropriate accredited laboratory.	N/A	No samples were collected and analysed during this reporting period, as the bores have not yet been installed and a sampling plan has not been established.
DL13	Results of the monitoring required by condition DL5 of this consent shall be transferred within ten working days of their receipt to the MWRC in a format compatible with the MWRC systems.	N/A	No samples were collected and analysed during this reporting period
DL14	The results from the monitoring required by condition DL5 of this consent shall be collated, analysed and interpreted and included in the Annual Report, as required by condition G11 in the General Conditions to these consents.	N/A	No samples were collected and analysed during this reporting period

Table 5: Summary of compliance with conditions of consent ATH-2018202078.00, ATH-2018202079.00 and ATH-2018202080.00 for the period July 2022 – June 2023

Earthworks, Bund & Diversions: ATH-2018202078.00, ATH-2018202079.00 and ATH-2018202080.00		Compliance	Notes
EW1-EW30		N/A	No earthworks have been undertaken during this assessment period and as such none of the conditions in relation to this consent are applicable.

3 Summary

1. Tararua District Council (TDC) operates the Pahiatua Wastewater Treatment Plant (WWTP). A new set of Consents was granted on 26 July 2021, regulating the upgrades and the operation of the WWTP system, as well as the discharges to air, water and land, subject to a suite of conditions. All consents were granted for 12 years (i.e. July 2033), except for the earthworks consent which was granted until 30 November 2025.

2. This report has been prepared to meet the annual reporting requirements as stipulated in condition G11. Alongside this report, are supplementary materials: supplementary material 1 (SM1) containing the full dataset, and supplementary material 2 (SM2) comprising the current Operations Management Plan (OMP). These additional documents are provided in accordance with the requisites of condition G11.

3. Under discharge to water condition W28, an additional report in required. This report assesses and evaluates the monitoring data specified in conditions W17, W18, W20, W21, W23 and W24. It is important to note that this report, as per condition W28, is appended to the report as stipulated by condition G11.

4. The compliance status of the Pahiatua WWTP with relevant consent conditions is outlined in Tables 1 to 5. Analysis results used to assess compliance, and any commentary on non-compliant conditions, additional to Tables 1 – 5 are given in Appendix A of this report.

5. Non-compliance was noted for conditions:
   - G2: the 12-month rolling median of total daily discharge volumes exceeded the limit of 1200 m^3/d every day during the reporting period.
   - G10: the investigation regarding recreational use has not been concluded.
   - W17: Samples collected in July and August 2022 were not analysed for aluminium.
   - DL1: The permeability investigation plan was submitted on 13 September 2023, the extended due date required by MWRC was 31 July 2023.
   - DL2: The permeability investigation report has not yet been submitted (the investigation is ongoing).
   - DL3 – The bores have not yet been installed.
   - DL4 – Groundwater sampling has not yet commenced.
   - DL6 – The wetland design has not yet been submitted to MWRC.

6. Monitoring results for compliance with conditions W8 (d, g, h, j) and W18 could not yet be assessed, due to insufficient number of samples and /or measured concentrations being below detection limits that were higher than those required by the conditions.

4 References

Cathy Kilroy & Barry J. F. Biggs (2002) Use of the SHMAK clarity tube for measuring water clarity: Comparison with the black disk method, New Zealand Journal of Marine and Freshwater Research, 36:3, 519-527, DOI: 10.1080/00288330.2002.9517107

Appendices

Appendix A – Supporting material for the compliance assessment of consent conditions

A series of graphs and tables summarise monitoring information during the reporting period.

General conditions – APP-1993001253.02 & APP-2017201372.00

Condition G2

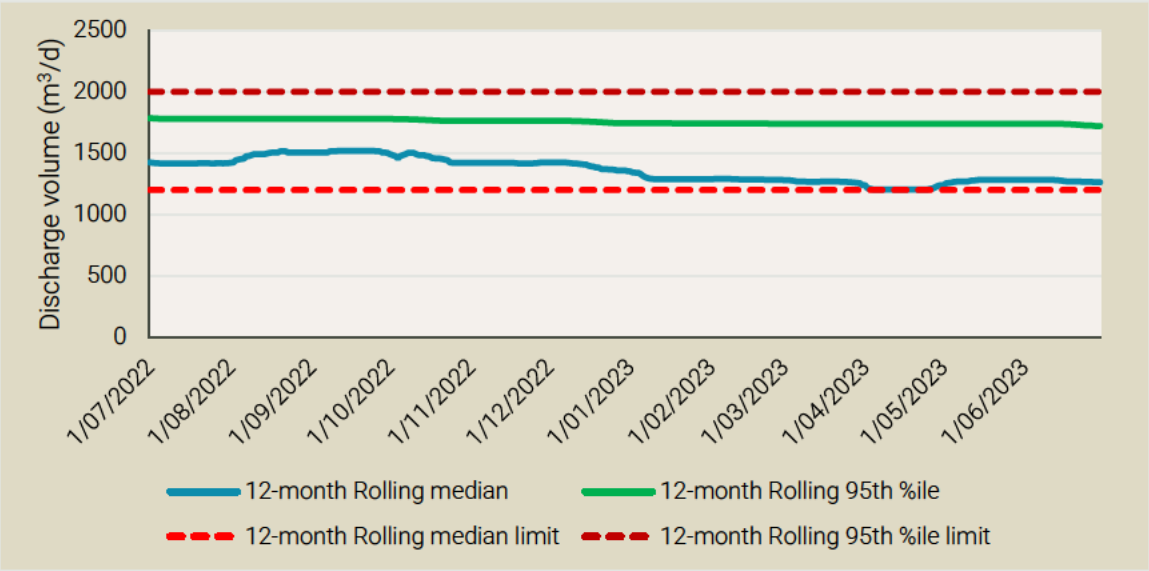

Figure A-1: 12-month rolling median and 12-month rolling 95th percentile of the treated wastewater discharged from the Pahiatua WWTP from July 2022 until June 2023, along with the relevant standards required by the condition. Data from July 2021 until June 2023 were used for the calculation of the rolling averages.

Figure A-2: Signage installed by TDC, informing river users that treated wastewater is being discharge into the Mangatainoka River.

Condition A6

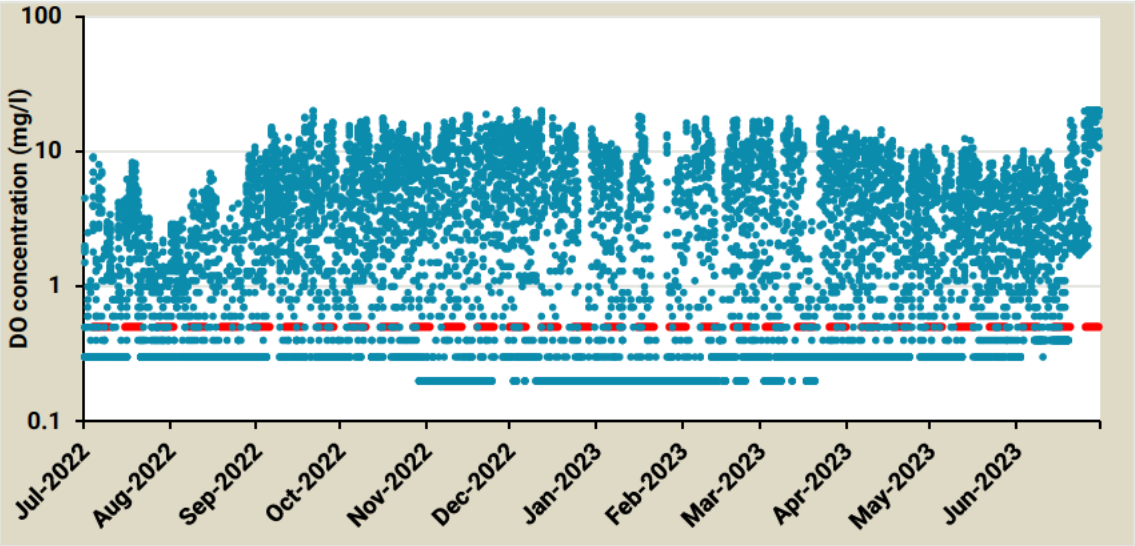

Figure A-3: Hourly minimum DO concentrations in Pond 1 of the Pahiatua WWTP from 1 July 2022 to 30 June 2023. The red dashed line indicates the 0.5 mg/l standard required by the consent condition.

Discharge to Water – ATH-199501433.02

Condition W1

Table A1: NH4N, scBOD5 and TSS concentrations in effluent samples collected from the Pahiatua WWTP discharge between July 2022 and June 2023. Highlighted numbers exceeded condition standards.

Date	NH_4N (g/m^3)	$scBOD_5$ (g/m^3)	TSS (g/m^3)
12/07/2022	8.7	0.5	37
26/07/2022	10.3	1.5	21
9/08/2022	10.8	1.5	1.5
13/09/2022	10.5	3	5
11/10/2022	8.8	1.5	7
15/11/2022	8.6	1.5	7
13/12/2022	9.8	1.5	4
17/01/2023	4.7	3	41
14/02/2023	0.40	1.5	1.5
14/03/2023	0.41	1.5	8
18/04/2023	0.16	1.5	11
9/05/2023	0.68	1.5	9
13/06/2023	7.5	0.5	1.5

Table A2: E. coli and DRP concentrations in effluent samples collected from the Pahiatua WWTP discharge between July 2022 and June 2023, when flows in the Mangatainoka River were below the 20th FEP (23.337 m^3/s).

Date	Flow (m^3/s)	*E. coli* (MPN/100ml)	DRP (g/m^3)
12/07/2022	26.86	12	0.032
26/07/2022	193.38	2	0.057
9/08/2022	65.39	2	0.024
13/09/2022	57.02	2	0.027
11/10/2022	63.67	222	0.013
15/11/2022	13.49	2	0.012
13/12/2022	4.06	2	0.026
17/01/2023	4.73	2	0.006
14/02/2023	5.07	2	0.005
14/03/2023	24.44	2	0.003
18/04/2023	23.28	2	0.003
9/05/2023	5.25	2	0.007
13/06/2023	11.85	2	0.017

Table A3: SHMAK Tube horizontal visibility and estimated black disc values from samples collected in the Mangatainoka River, upstream (U/S – Reach B) and downstream (D/S – Reach C) from the Pahiatua WWTP discharge, along with relative change from upstream to downstream, where that could be calculated.

Date	SHMAK Tube (m)			Black Disc Estimates* (m)		
	U/S (Reach B)	D/S (Reach C)	%Δ	U/S (Reach B)	D/S (Reach C)	%Δ
26/07/2022	0.08	0.07	-10%	0.08	0.07	-10%
9/08/2022	0.10	0.09	-10%	0.10	0.09	-10%
13/09/2022	0.20	0.21	5%	0.20	0.21	5%
11/10/2022	0.95	0.95	0%	>2m	>2m	
15/11/2022	0.94	0.94	0%	2.32	2.32	0%
13/12/2022	0.95	0.95	0%	>2m	>2m	
17/01/2023	0.95	0.95	0%	>2m	>2m	
14/02/2023	0.72	0.75	4%	1.03	1.15	12%
14/03/2023	0.46	0.47	1%	0.46	0.47	1%
18/04/2023	0.95	0.95	0%	>2m	>2m	
9/05/2023	0.95	0.95	0%	>2m	>2m	
13/06/2023	0.95	0.95	0%	>2m	>2m	

* Black disc estimates were derived using generalised equations in Biggs and Kilroy (2002).

Table A4: NH4N, POM and scBOD5 concentrations from samples collected from the Mangatainoka River, upstream (U/S – Reach B) and downstream (D/S – Reach C) from the Pahiatua WWTP discharge, along with average river flow on the day of sampling, and relative change from upstream to downstream, where that could be calculated.

Date	Flow	NH_4N (g/m^3)			POM (g/m^3)			$scBOD_5$ (g/m^3)	
	(m^3/s)	U/S (Reach B)	D/S (Reach C)	Rolling Annual Average D/S	U/S (Reach B)	D/S (Reach C)	Rolling Annual Average D/S	U/S (Reach B)	D/S (Reach C)
26/07/2022	65.39	0.0360	0.039	0.024	11	8.0	1.5	<3	<3
9/08/2022	57.02	0.0260	0.038	0.025	21	14.0	1.5	<3	<3
13/09/2022	63.67	0.0250	0.026	0.025	6	6.0	1.5	<6	<6
11/10/2022	13.49	0.0070	0.007	0.026	1.5	1.5	1.5	<1	<1
15/11/2022	4.06	0.0140	0.013	0.024	1.5	1.5	1.5	<6	<6
13/12/2022	4.73	0.0190	0.021	0.025	1.5	1.5	1.5	<3	<3
17/01/2023	5.07	0.0210	0.020	0.024	4	1.5	1.5	<3	<3
14/02/2023	24.44	0.0200	0.004	0.024	1.5	1.5	1.5	<3	<3
14/03/2023	23.28	0.0120	0.014	0.024	1.5	1.5	1.5	<3	<3
18/04/2023	5.25	0.0001	0.002	0.021	1.5	1.5	1.5	<3	<3
9/05/2023	11.85	0.0001	0.005	0.019	1.5	1.5	1.5	<3	<3
13/06/2023	7.20	0.0001	0.006	0.016	1.5	1.5	1.5	<1	<1

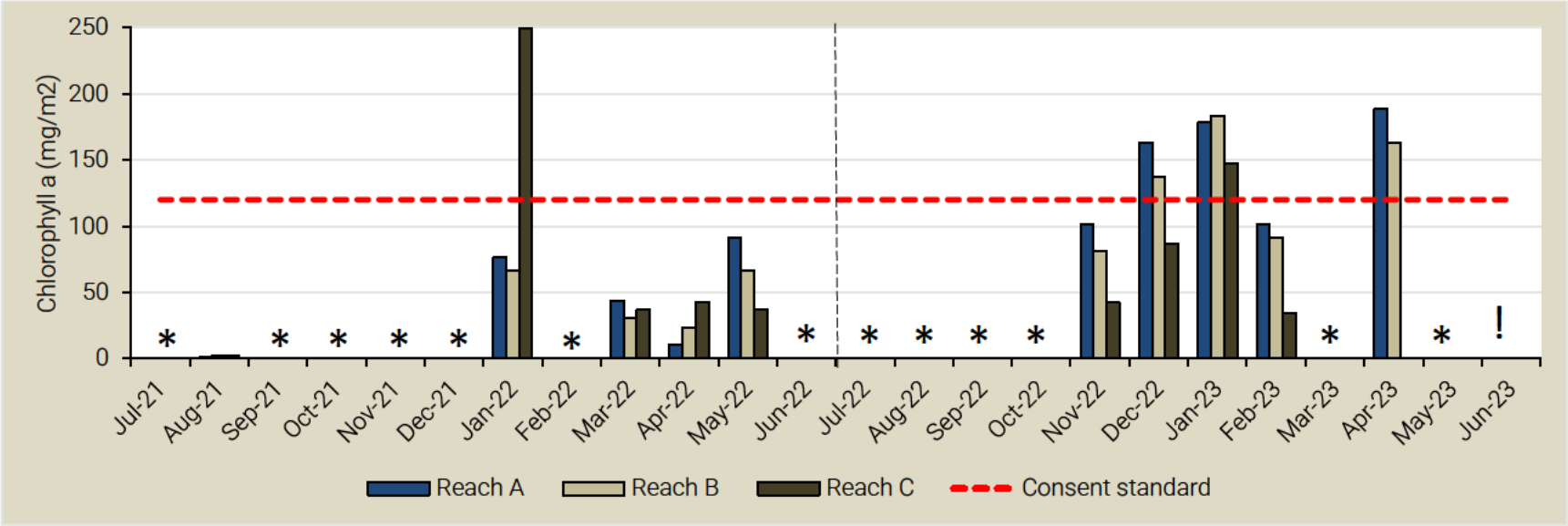

Figure A4: Mangatainoka River monthly chlorophyll-a concentration upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP discharge., for the 2021/22 and 2022/23 reporting periods. The vertical dashed line separates the two reporting periods. Asterisks denote occasions when sampling could not be undertaken due to high flows over 55 m^3/s in the Mangatainoka River, and exclamation marks denote occasions when sampling could not be undertaken due to flows below 55 m^3/s, but still too high to safely undertake sampling.

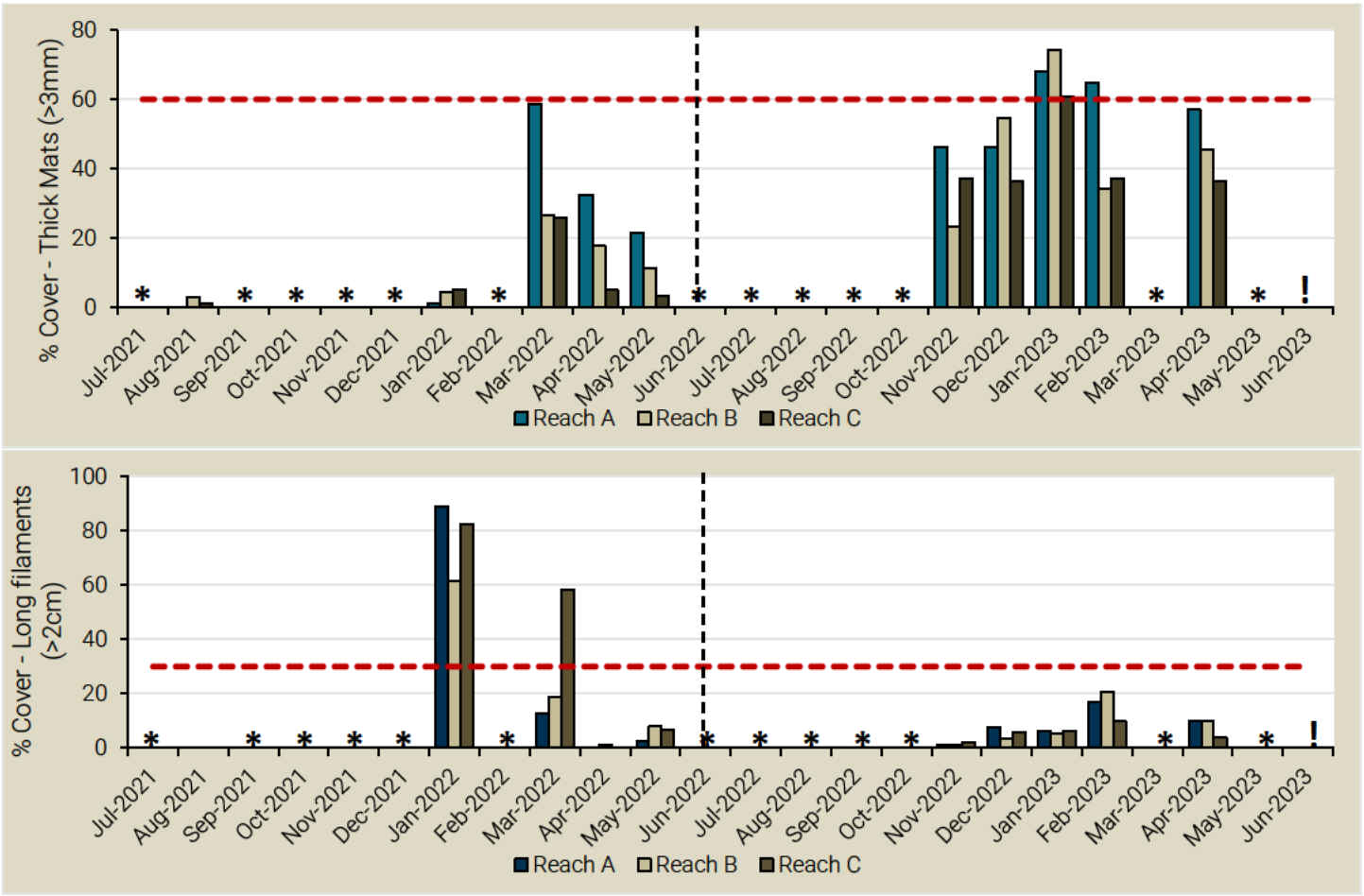

Figure A5: Riverbed periphyton cover as thick mats (top) and long filaments (bottom) in the Mangatainoka River upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP discharge for the 2021/22 and 2022/23 reporting periods (separated by the vertical dashed line). Asterisks denote occasions when sampling could not be undertaken due to high flows over 55 m^3/s in the Mangatainoka River, and exclamation marks denote occasions when sampling could not be undertaken due to flows below 55 m^3/s, but still too high to safely undertake sampling.

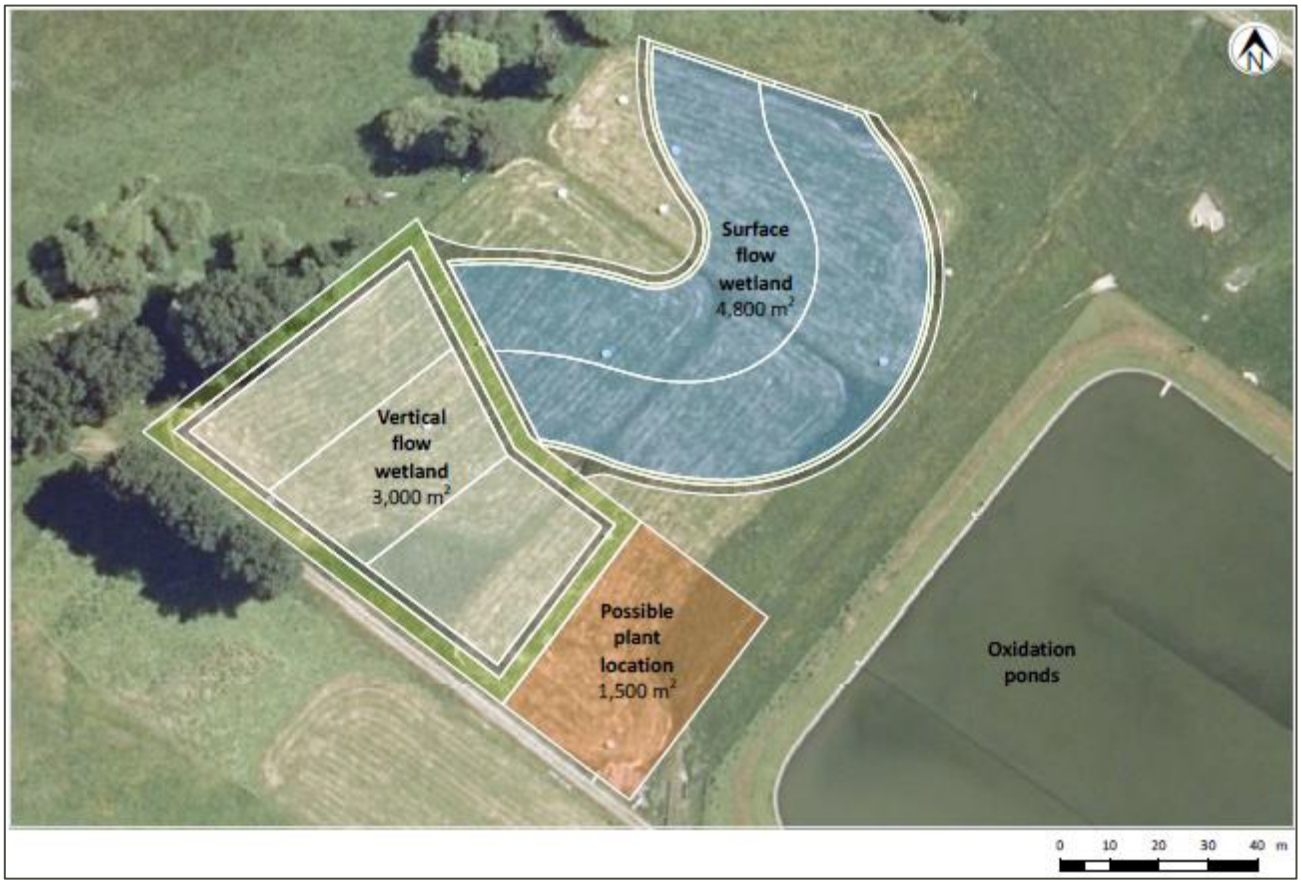

Figure A6: Pahiatua WWTP wetland treatment system proposed plan, showing the relative positions of the vertical and surface flow wetlands, and a potential space if it is decided to shift the treatment plant.

Tararua District Council

Pahiatua Wastewater Treatment Plant

DISCHARGE PERMIT ATH-1995001433.02

Monitoring Report

PREPARED ON

31 October 2023

Report Information

Report Status	FINAL
Author	[redacted]
Review By	[redacted]
Approved By	[redacted]
Date	31 October 2023

EXECUTIVE SUMMARY

1. Tararua District Council (TDC) operates the Pahiatua Wastewater Treatment Plant (WWTP). A new set of Consents was granted on 26 July 2021, regulating the upgrades and the operation of the WWTP system, as well as the discharges to air, water and land, subject to a suite of conditions. All consents were granted for 12 years (i.e. July 2033), except for the earthworks consent which was granted until 30 November 2025.

2. This report has been prepared to fulfil the annual reporting requirement under Condition W28. It summarises the findings derived from monitoring information specified in conditions W17, W18, W20, W21, W23 and W24 for the July 2022 to June 2023 reporting period. Condition W22 is also included for completeness.

3. The effect of the discharge on in-river aluminium concentrations cannot yet be fully assessed, as only 10 samples have been analysed. A preliminary analysis based on those samples, however, does not indicate any significant increase of the concentrations downstream of the discharge.

4. Periphyton community assemblages were similar among the three reaches. Chlorophyll-a and Ash-Free-Dry-Weight were consistently lower downstream of the discharge compared to upstream.

Table A: Summary of compliance with Discharge Permit ATH-1995001433.02 Conditions assessed for the Annual Compliance Report for the July 2022 – June 2023 monitoring period.

Condition		Notes
W17	Wastewater and river water monitoring frequency and constituents	Effluent and in-river samples were collected monthly and were analysed for all constituents in Table 2 of condition W17. It is important to note results for aluminium were not provided for July and August (the latter due to an error by the ELS laboratory).
W18	In-river dissolved aluminium assessment	Only 10 samples were analysed for aluminium during this monitoring period, thus the effect of the discharge on in-river aluminium concentrations could not be assessed. Preliminary results based on the reduced number of samples do not indicate that aluminium concentrations increased significantly downstream from the discharge.
W20, W21, W22	Macroinvertebrate monitoring	Macroinvertebrates were collected during the previous monitoring period (2021– 2022), and as the discharge relocation has not yet occurred, no further macroinvertebrate sampling was required.
W23	Periphyton monitoring	Periphyton was monitored monthly throughout the monitoring period at all three Mangatainoka River reaches. Samples were not collected during July to October 2022, March and May 2023 due to flows in the Mangatainoka exceeding 55 m^3/s. Periphyton in these months was assumed to have a biomass less than 120 mg/m^2. During the June 2023 sampling occasion flow in the Mangatainoka River was below 55 m^3/s, but still too high to safely undertake sampling. This month was excluded from all periphyton assessments. Assessment included and reported on percentage cover of visible riverbed by sewage fungus, filamentous algae (>2cm long), diatom/cyanobacteria mats (>3mm thick), diatom mats (<3mm thick), and riverbed that was clean. Samples were also analysed for chlorophyll-a and Ash-Free-Dry-Weight (AFDW), with the exception of November 2022, when no AFDW measurements were made.
W24	Continuous DO monitoring	The relocation of the discharge has not yet been commissioned; thus, this condition is not applicable for this monitoring period.
W28	Reporting condition	The present report satisfies reporting under this condition.

Table of Contents

List of Figures

List of Tables

1 Context

1.1 Introduction

The Tararua District Council (TDC) owns and operates the Pahiatua Wastewater Treatment Plant (WWTP), on the outskirts of Pahiatua. Wastewater from the township is collected in three oxidation ponds and is currently discharged into Town Creek, which subsequently flows into the Mangatainoka River.

A new consent to change the discharge location from Town Creek to the Mangatainoka River (via wetland treatment) was granted in July 2021 for a period of 12 years. However, the consent allows continued discharge of wastewater to Town Creek for a period of three years (from the granting of the consent), while the wetlands and new discharge location infrastructure are being built. For this reporting period, our assessment is focused on compliance with the conditions related to the Town Creek discharge.

1.2 Scope

This report has been prepared to fulfil annual reporting requirements outlined in Condition W28. It summarises the findings derived from monitoring information specified in conditions W17, W18, W20, W21, W23 and W24 for the July 2022 to June 2023 reporting period. These conditions are briefly summarised here:

- Condition W17 requires effluent and in-river samples to be collected monthly and analysed for a series of constituents.
- Condition W18 regulates the response towards an exceedance of dissolved Aluminium in the river, downstream from the discharge, and requires an investigation into the risk of toxic effects.
- Conditions W20, W21 and W22 regulate monitoring of macroinvertebrates.
- Condition W23 requires monthly monitoring of periphyton biomass and cover.
- Condition W24 requires continuous monitoring of in-river dissolved oxygen in the first year after the discharge relocation.

2 Methods

2.1 Sites monitored

As the new discharge has not yet been commissioned, only two sites (Reach B and Reach C) are required to be monitored for water quality, as per condition W17 (**Error! Reference source not found.**). Reach B is located upstream of the Town Creek discharge to the Mangatainoka River, while Reach C is located 200 m downstream of the Town Creek discharge to the Mangatainoka River. TDC contracted Manawatu-Whanganui Regional Council (MWRC) to undertake this monitoring.

Periphyton monitoring was undertaken at Reach A (located upstream of the Reach B and the Town Creek discharge), Reach B and Reach C, as per condition W23 (Plates 1-3).

According to condition W21, macroinvertebrates were not required to be sampled for the 2022 – 2023 monitoring period because the discharge has not yet been relocated and they were sampled for the 2021 – 2022 monitoring period. Nevertheless, TDC has contracted Traverse Environmental (formerly Aquanet Consulting) to collect and process macroinvertebrate from all three sites. This initiative aims to establish a baseline record of the macroinvertebrate communities across the three reaches. The relevant data and assessments can be found in Appendix C.

Table B1: Sites on the Mangatainoka River sampled for water quality and ecology periphyton for the monitoring period June 2022 – May 2023.

Location	Parameters sampled	Latitude (NZTM)	Longitude (NZTM)
Reach A – New Upstream	Periphyton	5519574.460	1840550.517
Reach B – New Downstream – Old Upstream	Water quality and periphyton	5519998.593	1841118.012
Reach C – Old Downstream	Water quality and periphyton	5519857.522	1841405.019

Figure B1: Map showing location of sites sampled on the Mangatainoka River for water quality and ecology (macroinvertebrates and periphyton), indicated by yellow dots, the WWTP (red placemark) and old and new discharge points (orange placemarks).

Plate 1: Reach A upstream of the Town Creek discharge.

Plate 2: Reach B upstream of the Town Creek discharge. ▶

◀ Plate 3: Reach C, downstream of the Town Creek discharge.

2.2 Timing of monitoring

- Water quality samples were collected by MWRC monthly between July 2022 and June 2023 and analysed for all constituents required by condition W17. Samples were not analysed for Aluminium in July and August 2022, with the latter being attributed to an error by the ELS laboratory.

  The flocculent used in the Pahiatua WWTP is alum (PACL – Poly Aluminium Chloride), which contains aluminium. Aluminium results were provided for September 2022

onwards, noting that the results for August 2022 samples were not available because of an error by the ELS laboratory.

As the discharge relocation has not yet occurred, the requirement by condition W24 for a one-off continuous DO monitoring programme at Reaches A and B is not yet applicable.

- Periphyton was monitored monthly during the reporting period, as per condition W23. For consistency purposes, the week in the middle of each month was selected for monitoring. If the flow of the Mangatainoka River rendered monitoring unsafe and/or unfeasible, the maximum instantaneous flow in the Mangatainoka River at Pahiatua Town Bridge in the preceding five days was assessed;
    - if it exceeded 55 m^3/s, the occasion was included for compliance purposes, and was assumed to have a biomass less than 120 mg/m^2.
    - if the flow of the Mangatainoka River rendered monitoring unsafe and/or unfeasible, but the maximum instantaneous flow in the preceding five days was below 55 m^3/s, monitoring was to be undertaken within seven days, with the same flow criteria.

During the 2022 – 2023 period:

- monitoring was undertaken from November 2022 to February 2023 and in April 2023 (Error! Reference source not found.) on the scheduled sampling occasions;
- from July to October 2022, and in March and May 2023 the flows exceeded 55 m^3/s on the scheduled sampling occasions and/or within a week from those dates, and the periphyton biomass was assumed to be below 120 mg/m^2.
- the only occasion when periphyton could not be assessed due to high flows (which remained below 55 m^3/s) on the scheduled date and within a week from that date was in June 2023.

Table B2: Periphyton monitoring occasions for the reporting period July 2022 – June 2023, with the average flow (m^3/s) of the day, and the maximum instantaneous flow (m^3/s) in the preceding five days

First attempt at monitoring			Repeat monitoring (where required)			Monitoring completed
Date	Maximum instantaneous flow on scheduled sampling day	Maximum instantaneous flow in the preceding five days	Repeat monitoring Date	Mean flow on scheduled sampling day	Maximum instantaneous flow in the preceding five days	
12/07/2022	420.88	134.85	-	-	-	Assumed compliance
15/08/2022	14.08	61.26	-	-	-	Assumed compliance
13/09/2022	96.17	62.56	-	-	-	Assumed compliance
13/10/2022	74.99	41.94	-	-	-	Assumed compliance
15/11/2022	4.27	5.90	-	-	-	Yes
12/12/2022	6.33	10.43	-	-	-	Yes
19/01/2023	4.03	11.21	-	-	-	Yes
13/02/2023	4.09	8.18	-	-	-	Yes
13/03/2023	42.87	5.66	20/03/2023	15.21	65.32	Assumed compliance
11/04/2023	4.36	5.36	-	-	-	Yes
15/05/2023	50.23	110.11	22/05/2023	55.82	52.66	Assumed compliance
15/06/2023	6.48	9.69	22/06/2023	7.30	9.49	No

2.3 Periphyton monitoring

Periphyton was monitored by Traverse Environmental as per condition W23. At each sampling site:

- Periphyton cover was visually assessed following the protocols in "A periphyton monitoring plan for the Manawatu-Wanganui Region" (Kilroy et al., 2008), as per condition W23d. An underwater viewer was used to estimate the percent cover of the different algal types along five equidistant points across each of four cross-sectional transects of the river, encompassing run habitat, and resulting in a total of 20 measurements.
- A periphyton biomass sample (chlorophyll a and Ash-Free-Dry-Weight – AFDW) was also taken at the same time, sites and transects as the visual monitoring, following the

protocols of Biggs and Kilroy (2000) in the "Stream Periphyton Monitoring Manual" (Method QM-1b), as per condition W23e. Rock scrapings were collected and pooled from 10 stones at each site; samples were then frozen and sent to the Cawthron Institute for analysis.

On one occasion, in November 2022 periphyton samples were not analysed for AFDW.

3 Results

3.1 Aluminium assessment

Results from only ten in-river sample analyses were provided for the 2022 – 2023 monitoring period; thus, it was not possible to perform the Wilcoxon statistical test as required by condition W18.

Preliminary assessment showed that aluminium concentrations exceeded 0.055 g/m^3 on two occasions (**Figure B2**); September 2022 (Reach B 0.68 g/m^3 and Reach C 0.072 g/m^3) and March 2023 (Reach B 0.080 g/m^3 and Reach C 0.089 g/m^3). Aluminium concentrations in the effluent when these exceedances occurred were 0.079 g/m^3 and 0.083 g/m^3 for September 2022 and March 2023, respectively.

The medians were 0.012 g/m^3 for Reach B and 0.011 g.m^3 for Reach C. Wilcoxon test with only ten paired samples did not indicate significant differences between upstream and downstream ($p = 0.8$).

Overall, the discharge does not appear to be contributing to an increase in aluminium concentration in the Mangatainoka River. However, more data are required to confidently assess if the discharge is having any effects.

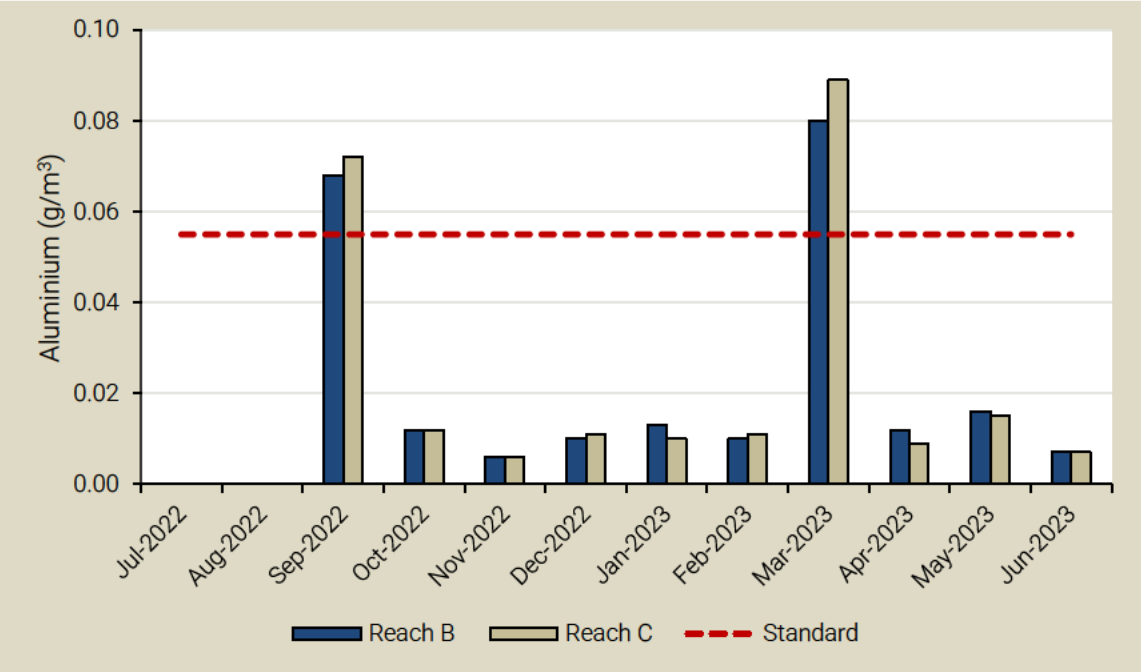

Figure B2: Aluminium concentration in the Mangatainoka River, upstream (Reach B) and downstream (Reach C) from the Pahiatua WWTP, for the monitoring period July 2022 – June 2023.

3.2 Periphyton communities

The relative abundances of the different periphyton types covering the riverbed as percentage coverage are given in **Table B3** and graphically presented in **Figure B3**.

Table B3: Relative abundance of periphyton communities assessed at the three Mangatainoka River monitoring sites, upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP Town Creek discharge, for the July 2022 to June 2023 reporting period.

Date	Reach	Bacterial and/or fungal growths visible to the naked eye	Filamentous algae > 2 cm long	Diatoms or cyanobacteria mats > 0.3 cm thick	Diatoms < 0.3 cm thick	Clean substrate
12/07/2022	A, B, C	Mangatainoka River flow >55 m^3/s – Assumed compliance				
15/08/2022	A, B, C	Mangatainoka River flow >55 m^3/s – Assumed compliance				
13/09/2022	A, B, C	Mangatainoka River flow >55 m^3/s – Assumed compliance				
13/10/2022	A, B, C	Mangatainoka River flow >55 m^3/s – Assumed compliance				
15/11/2022	A	0	1.3	46.2	46.4	5.5
	B	0	1.1	23.5	73.2	1.3
	C	0	2.3	37.3	58.5	0.3
12/12/2022	A	0	7.5	46.4	41.6	1.8
	B	0	3.6	54.7	26.4	12.3
	C	0	5.9	36.5	46.9	3.0
19/01/2023	A	0	6.2	68.0	19.6	4.3
	B	0	5.4	74.3	10.2	7.8
	C	0	6.1	61.0	26.0	4.7
13/02/2023	A	0	16.8	64.8	11.8	1.1
	B	0	20.7	34.5	35.1	4.5
	C	0	9.8	37.3	46.4	6.0
20/03/2023	A, B, C	Mangatainoka River flow >55 m^3/s – Assumed compliance				
11/04/2023	A	0	10.0	57.1	23.8	0.4
	B	0	10.1	45.7	34.5	2.8
	C	0	3.9	36.5	44.4	2.1
22/05/2023	A, B, C	Mangatainoka River flow >55 m^3/s – Assumed compliance				
22/06/2023	A, B, C	Mangatainoka River flow high, but <55 m^3/s – Excluded from analysis				

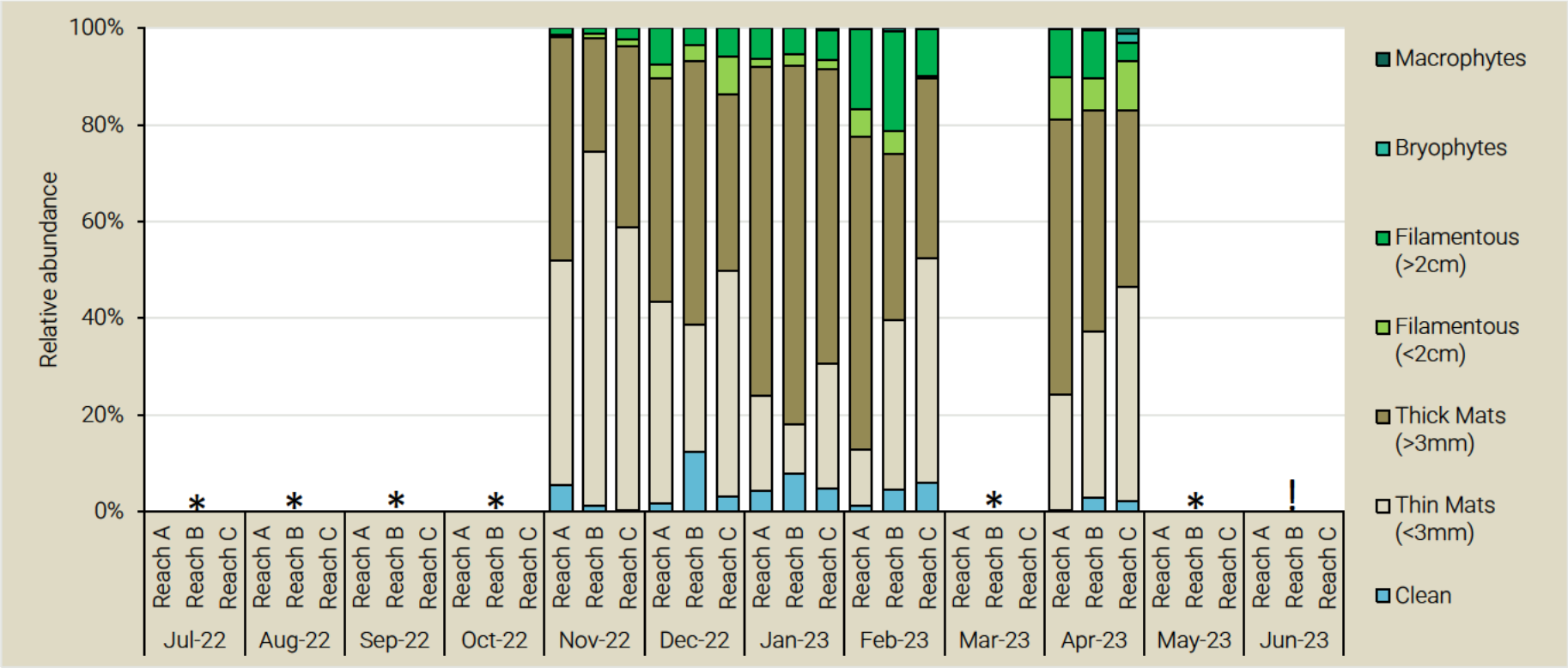

Figure B3: Relative abundance of the different periphyton types in the Mangatainoka River upstream (Reach A and Reach B) and downstream (Reach C) of the Pahiatua WWTP Town Creek discharge, for the monitoring period July 2022 – June 2023. Asterisks denote occasions when sampling could not be undertaken due to high flows over 55 m^3/s in the Mangatainoka River, and exclamation marks denote occasions when sampling could not be undertaken due to high flows but that were below 55 m^3/s.

The composition of the periphyton community covering the riverbed was similar among the three sites and was comprised mostly of thin and / or thick mats. During February 2023 there was a large difference in periphyton composition among the three sites; thick mats were the dominant periphyton type at Reach A (65%), while there was similar cover of thin and thick mats at Reach B (both types 35%) and Reach C (thin 46% and thick 37%).

Periphyton biomass during the July 2022 – June 2023 monitoring period ranged between 100 and 190 mg/m^2 in Reach A, 80 and 190 mg/m^2 in Reach B and 34 and 150 mg/m^2 in Reach C (Error! Reference source not found.). Concentrations in Reach C were consistently lower than concentrations in the two upstream reaches.

Ash-Free-Dry-Weight (AFDW) during the July 2022 – June 2023 monitoring period ranged between 19 and 27 g/m^2 in Reach A, 15 and 29 g/m^2 in Reach B and 7 and 22 g/m^2 in Reach C (Figure B4). Concentration in Reach C were consistently lower than in Reach B, and in all but one occasion (January 2023) also lower than the concentration in Reach A.

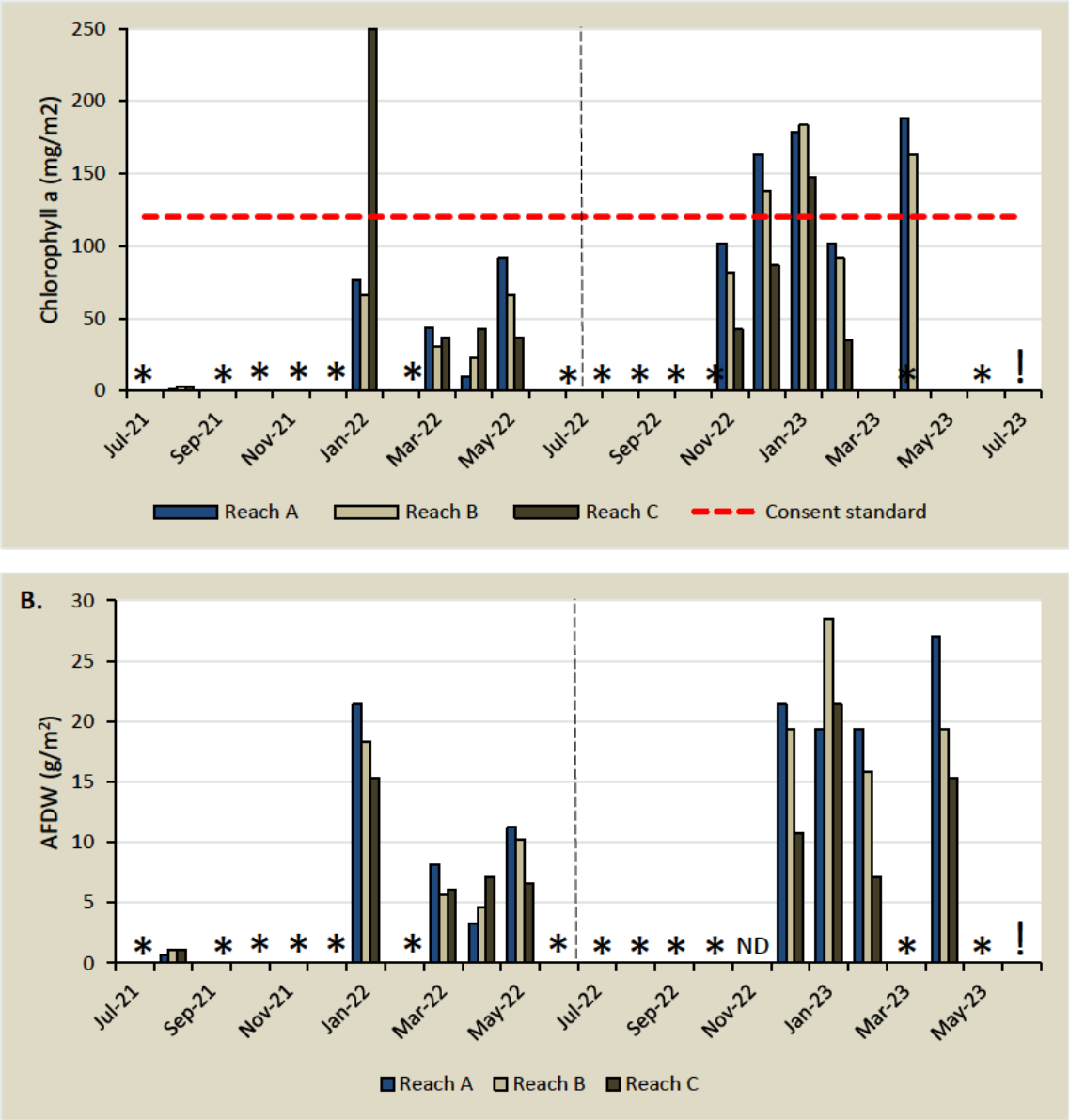

Figure B4: Concentrations of A) Chlorophyll-a[1] and B) Ash-Free-Dry-Weight in the Mangatainoka River upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP Town Creek discharge from July 2021 to June 2023 (i.e., reporting periods 2021-22 and 2022-23). Asterisks denote occasions when sampling could not be undertaken due to high flows over 55 m^3/s in the Mangatainoka River, and exclamation marks denote occasions when sampling could not be undertaken due to high flows but that were below 55 m^3/s. ND denotes an occasion when no analysis was performed.

[1] The dashed red line represents the standard required by condition W8 of the discharge to water consent (120 mg/m^2). Assessment of compliance with condition W8 can be found .in the main body of the report required by condition G11.

4 Summary

1. Tararua District Council (TDC) operates the Pahiatua Wastewater Treatment Plant (WWTP). A new set of Consents was granted on 26 July 2021, regulating the upgrades and the operation of the WWTP system, as well as the discharges to air, water and land, subject to a suite of conditions. All consents were granted for 12 years (i.e. July 2033), except for the earthworks consent which was granted until 30 November 2025.

2. This report has been prepared to fulfil the annual reporting requirement under Condition W28. It summarises the findings derived from monitoring information specified in conditions W17, W18, W20, W21, W23 and W24 for the July 2022 to June 2023 reporting period. Condition W22 is also included for completeness.

3. Wastewater and river water samples were collected monthly and analysed for the constituents required by condition W17.

4. The effect of the discharge on in-river aluminium concentrations cannot yet be fully assessed, as only 10 samples have been collected. A preliminary analysis based on those samples, however, does not indicate any significant increase in aluminium concentrations downstream of the Town Creek discharge.

5. Macroinvertebrates were not required to be sampled this year, as the discharge relocation has not yet been commissioned and macroinvertebrate monitoring was undertaken during the 2021 – 2022 monitoring period.

6. Periphyton community assemblages were similar among the three reaches. Chlorophyll-a and Ash-Free-Dry-Weight were consistently lower downstream of the discharge compared to upstream.

7. Continuous DO monitoring required by condition W24 is not to be undertaken until the discharge relocation has occurred.

5 References

Biggs, B. J., & Kilroy, C., 2000, Stream periphyton monitoring manual. NIWA.

Kilroy, C., Biggs, B.J.F., Death, D., 2008, A periphyton monitoring plan for the Manawatu-Whanganui region. NIWA Client Report CHC2008-03. 43

R Core Team (2023). _R: A Language and Environment for Statistical Computing_. R Foundation for Statistical Computing, Vienna, Austria. <https://www.R-project.org/>.

Stark, J. D., 1985, A macroinvertebrate community index of water quality for stony streams. Water & Soil miscellaneous publication 87. Wellington, New Zealand, National Water and Soil Conservation Authority Wellington. 53 p

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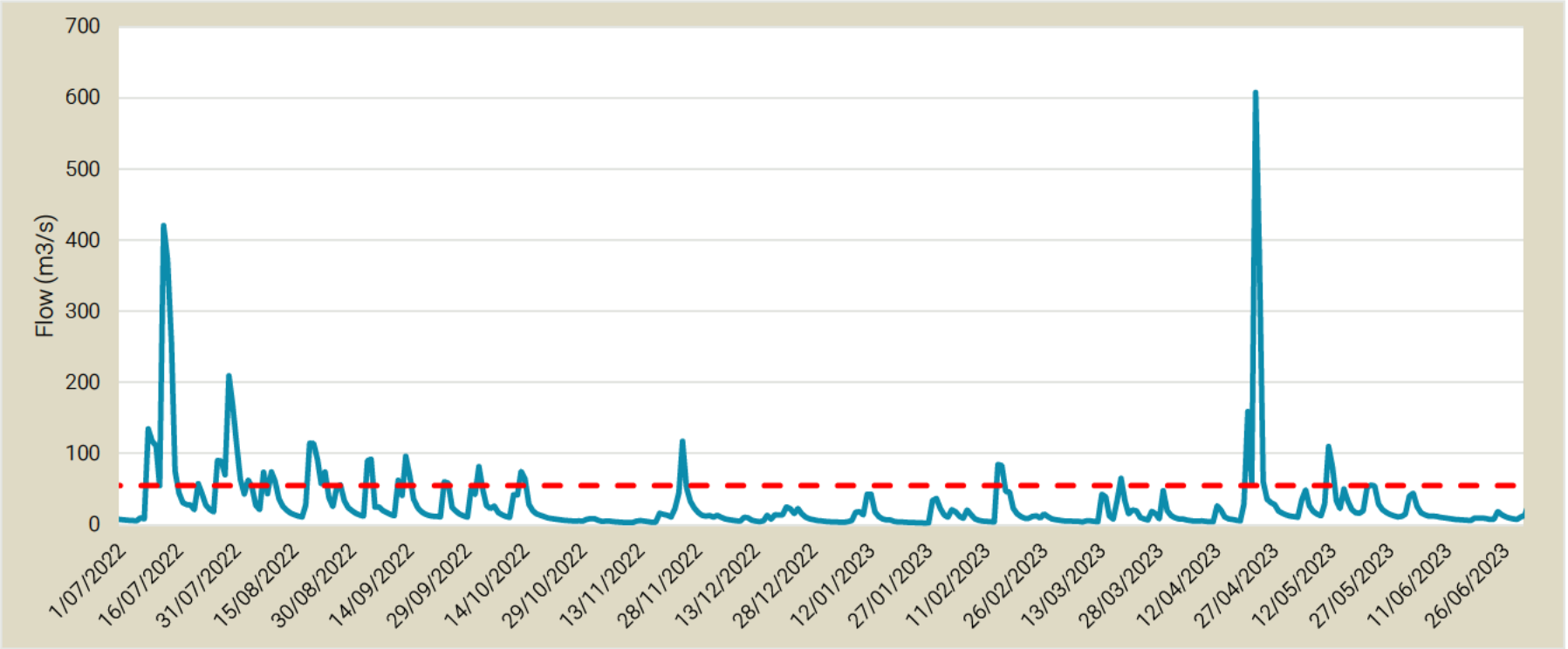
Appendices

Appendix I – Flow in the Mangatainoka River at Pahiatua Town Bridge

Source: Horizons Environmental Data



Appendix II – Macroinvertebrate sampling

Methods

Macroinvertebrate samples were collected from the Mangatainoka River by Traverse Environmental. Repeated flood events and constant high flows during the monitoring period rendered macroinvertebrates unable to be collected according to the flow criteria set by the consent. Traverse reduced the stand-down period after a flood event to two weeks, in accordance with the National Environmental Monitoring Standards. While the post-flood reduced stand-down period criterion was met, the low flows criterion could not be met during March and April 2023 either. Macroinvertebrates were finally collected on 11 April 2023, ahead of a forecasted intense rain event which was expected to lead to flooding of the river, but at the same time after only 13 days since the last flood event (29 March 2023) and after only 2 days of low flows.

- Macroinvertebrate sampling and identification was carried out following Protocols C3 (Hard-bottom, Quantitative), P3 (Full count with subsampling option) and QC3 (Quality control for full count with subsampling option) from the Ministry for the Environment's "Protocols for sampling macroinvertebrates in wadeable streams" (Stark et al. 2001). Five replicate 0.1 m² Surber samples were taken at random within a 20 m section of riffle habitat at each sampling site (as per condition W22a).

- Macroinvertebrate taxa were fully counted within each replicate sample, to the taxonomic resolution level specified for use of the Macroinvertebrate Community Index (as per condition 22b).

- Macroinvertebrate indices were calculated to assess relationships between macroinvertebrate communities and water quality at each study site.

    - Taxonomic richness is the number of different kinds of organisms (taxa) in a sample.
    - The Macroinvertebrate Community Index (MCI) (Stark 1985) considers the presence of macroinvertebrates based on an assigned score which is dependent on their tolerance to pollution (1= highly tolerant, 10 = highly sensitive).
    - The Quantitative Macroinvertebrate Community Index (QMCI) is similar to the MCI, but also takes into account the number of individuals of each species collected.
    - Ephemeroptera, Plecoptera and Trichoptera (mayflies, stoneflies and caddisflies) (EPT) consist of insects which are generally sensitive to pollution. The percentage of EPT taxa is the proportion of all taxa collected that belong to one of these groups.
    - The percentage of EPT individuals measures the proportion of the individual macroinvertebrates collected that are mayflies, stoneflies and caddisflies.

- Values for the macroinvertebrate indices discussed above and associated water quality categories are given in Table A, and are defined in the National Policy Statement for Freshwater Management 2020 (NPS-FM 2020).

Table II1: Interpretation of MCI, and QMCI values based on the National Policy Statement for Freshwater Management (NPS-FM, 2020).

Interpretation	MCI	QMCI
Excellent / Clean water	> 130	> 6.5
Good / Mild pollution	110-129	5.5-6.49
Fair / Moderate pollution	90-109	4.5-5.49
Poor / Severe pollution	< 90	< 4.5

Statistical differences between sites were assessed with the R statistical software (R Core Team, 2022), performing Analysis of Variance (ANOVA) for the three sites, and when there was a significant difference detected, a Tukey Honestly Significant Difference (HSD) test was also performed. Values at $P < 0.05$ indicate a statistically significant change.

Results

A complete list of macroinvertebrate taxa collected is presented in the end of this Appendix and relative abundances of the main taxonomic groups are presented in Figure A. Communities in all three reaches were dominated by Chironomids (ranging between 38 and 51%), followed by caddisflies at the reaches upstream from the discharge (Reach A 32% and B 36%) and beetles at Reach C (30%), downstream from the discharge.

Macroinvertebrate monitoring data collected during this monitoring period do not show any consistent evidence of the discharge having an adverse effect on community health. No metric showed a statistically significant difference from upstream to downstream ($p > 0.05$). The MCI indicated fair water quality for all three sites (ranging between 97 and 104), but below the OnePlan standard for the Mana_8c sub-catchment zone. QMCI indicated poor water quality for all three sites (ranging between 3.6 and 4.2). The average number of taxa ranged between 16 and 19, with 35 to 43% of them being EPT taxa, and EPT individuals comprising 23 to 43% of the total (Figure B).

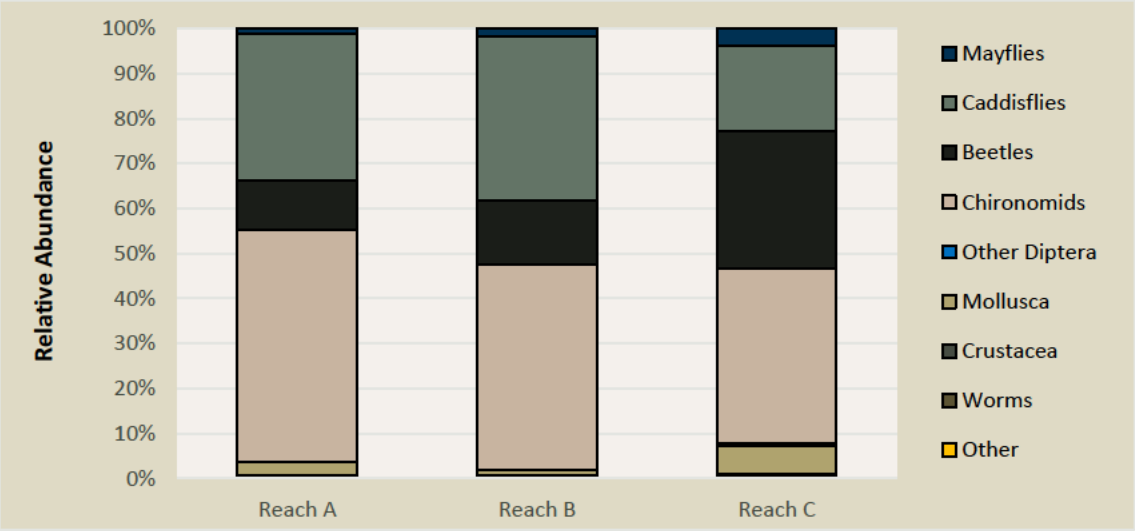


Figure II1: Relative abundance of the main taxonomic groups collected in April 2023 at sites sampled on the Mangatainoka River, upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP Town Creek discharge.

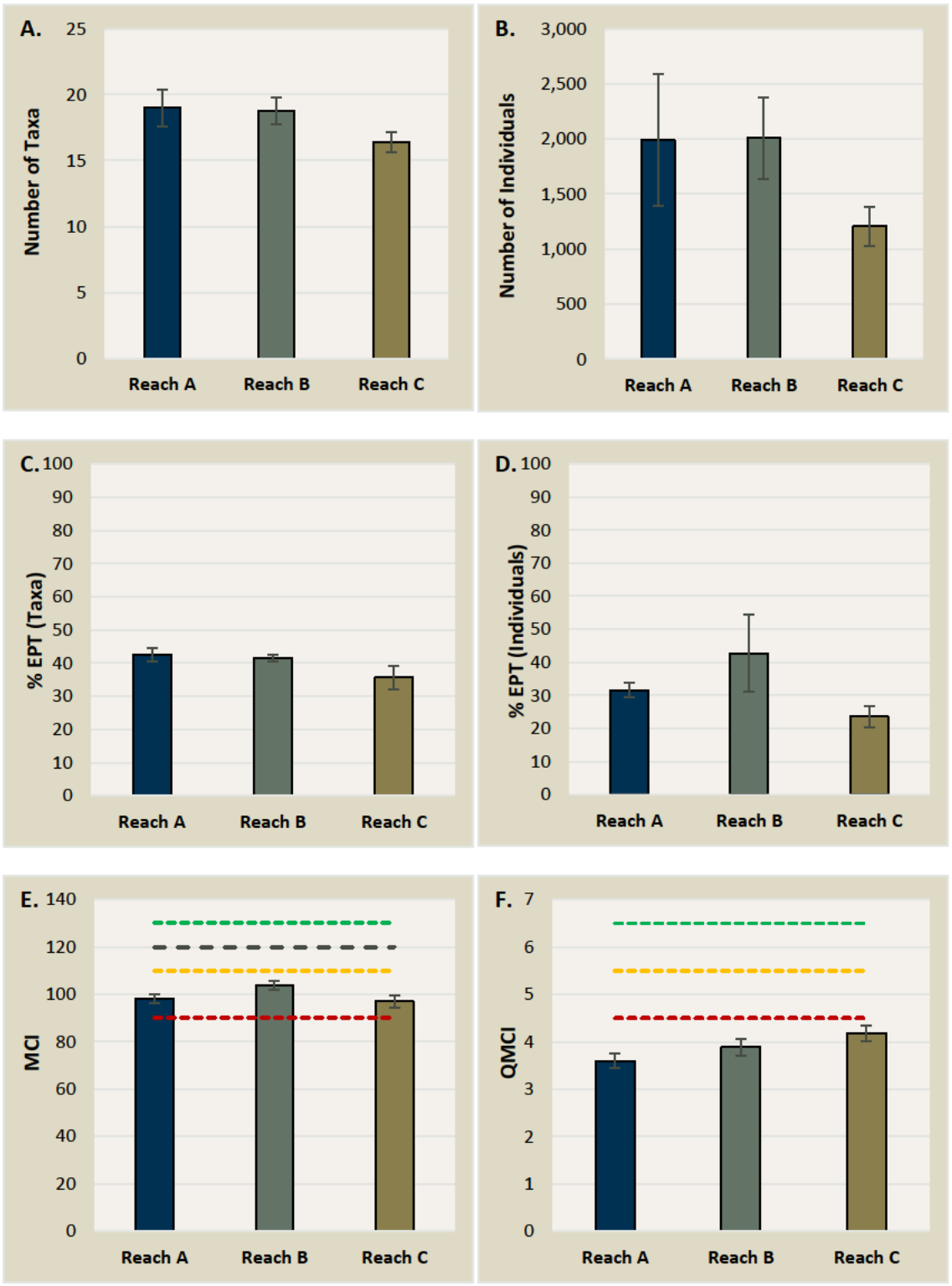


Figure II2: Mean (±SE) A. Number of Taxa, B. Number of Individuals, C. %EPT (Taxa), D. %EPT (Individuals), E. MCI, F. QMCI for the sites sampled in April 2023 on the Mangatainoka River, upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP Town Creek discharge. NPSFM (2020) attribute state limits are represented by red, yellow and green dashed lines. The One Plan MCI standard for the Mana_8c sub-catchment zone is represented by a dashed black line. Metrics from reaches sharing a symbol were statistically different ($p < 0.05$).

Table II2: Mean density of invertebrates collected in 5 Surber samples (0.1 m^2) at sites sampled on the Mangatainoka River, upstream (Reaches A and B) and downstream (Reach C) of the discharge from the Pahiatua WWTP in April 2023.

Taxa	MCI Score	Reach A	Reach B	Reach C
Mayflies				
Austroclima sp.	9	3.8	8.8	2.4
Coloburiscus sp.	9	0.6	3.4	0.0
Deleatidium sp.	8	24.0	31.0	43.8
Caddisflies				
Aoteapsyche sp.	4	604.6	710.8	200.6
Hydrobiosis Early Instar	5	1.8	1.0	1.8
Hydrobiosis	5	14.8	12.0	15.0
Neurochorema sp.	6	11.8	4.0	15.2
Olinga sp.	9	1.0	1.6	2.0
Psilochorema sp.	8	0.0	0.2	0.0
Pycnocentria sp.	7	0.8	0.0	0.0
Pycnocentrodes sp.	5	15.4	4.2	6.6
Oxyethira sp.	2	3.2	0.0	1.4
Beetles				
Berosus	5	0.4	0	0
Elmidae	6	219.3	284.0	358.4
Chironomidae				
Maoridiamesa sp.	3	102.4	130.8	18.5
Orthocladiinae	2	457.0	326.4	264.3
Tanytarsini	3	455.2	449.8	178.0
Other Diptera				
Aphrophila sp.	5	0.8	2.2	2.0
Austrosimulium sp.	3	0.0	1.0	1.8
Empididae	3	1.0	1.0	1.2
Muscidae	3	0.4	0.4	0.0
Crustacea				
Amphipoda	5	6.0	5.2	4.2
Mollusca				
Ferrissia sp.	3	0.2	0.0	0.0
Physa sp.	3	4.4	3.2	2.4
Potamopyrgus sp.	4	53.4	20.2	72.2
Worms				
Namanereis	6.7	0	0	7.6
Oligochaetes	1	1.8	1.8	0.8
Other				
Archichauliodes diversus	7	4.6	5.0	7.0
Number of Taxa		19.0	18.8	16.4
Number of Individuals		1989.5	2008.2	1207.2
% EPT (Taxa)		42.6	41.6	35.7
% EPT (Individuals)		31.6	42.7	23.6
MCI		98.3	103.7	97.1
QMCI		3.60	3.89	4.17
ASPM		0.36	0.41	0.31

Traverse Environmental

Pahiatua Wastewater Treatment Plant

Annual Environmental Report

Prepared for Tararua District Council

October 2024

Pahiatua Wastewater Treatment Plant

Annual Environmental Report

Prepared for:	Tararua District Council
Prepared by:	[redacted]
Date of issue:	31 October 2024

Quality Assurance		
Reviewed by:	[redacted]	[redacted]
Approved for release by:	[redacted]	[redacted]
Report status:	FINAL	

Recommended citation: Rados D. (2024) Pahiatua Wastewater Treatment Plant. Annual environmental report.

Executive summary

Tararua District Council (TDC) operates the Pahiatua Wastewater Treatment Plant (WWTP). A new set of consents was granted on 26 July 2021, regulating the upgrades and the operation of the WWTP system, as well as the discharges to air, water and land, subject to a suite of conditions. The main suite of consents was granted for a term of 12 years.

This Annual Environmental Report has been prepared to meet the requirements of condition G11 of APP-1993001253.02 and APP-2017201372.00 and covers the period 1 July 2023 to 30 June 2024. During this period, wastewater and receiving water quality monitoring required by the consents was carried out by the Manawatū-Whanganui Regional Council (MWRC) and ecological monitoring was carried out by Traverse Environmental.

This report includes:

- a summary of analyses and records collected in accordance with consent conditions,
- our assessment of compliance with consent conditions, and
- comments on any non-compliance and any additional monitoring or remedial action undertaken or planned.

Alongside this report are supplementary materials: supplementary material 1 (SM1) containing the full dataset, and supplementary material 2 (SM2) comprising the current Operations Management Plan (OMP). These additional documents are provided in accordance with condition G11. In addition, a monitoring report (required under condition W28) is appended.

For the period 1 July 2023 to 30 June 2024, non-compliance with consent conditions was noted as summarised below. The majority of the non-compliance was of a technical nature related to water sampling or testing matters outside of TDC's control, or delays by TDC in completing some operational or reporting actions (as noted below, considerable progress has been made to address these delays). The only instances of non-compliance related to exceedances of consent limits were the short-term exceedances of the median discharge volume (arising mainly from the influence of high discharge volumes in the previous year on the calculated rolling median values) and reduced downstream visibility in the Mangatainoka River on two occasions (although turbidity measurements were lower downstream on both occasions).

General conditions

G2 – the 12-month rolling median of total daily discharge volumes exceeded 1,200 m^3/day on 20 days.

G7B – the sludge management and disposal system is described in the OMP instead of the OOMP, however both plans have been certified by MWRC.

G9B – the WTS is not yet operational (a concept design plan draft was presented at the TDC stakeholder hui on 17 October 2024 following the site visit to the WWTP with Tonkin and Taylor two days earlier – final draft due to MWRC on 14 December 2024).

G9C – a resource consent application for the outfall structure is yet to be lodged (TDC engaged a consultant in June and is currently waiting for the final design plan from Tonkin and Taylor).

G10 – late completion of the recreational use survey (submitted to MWRC on 2 April 2024).

G11 – this report has been submitted past the due date of 15 October.

Discharge to Air consent

A6 – dissolved oxygen concentration in pond 1 fell below 0.5 mg/L 35% of the time.

Discharge to Water consent

W5a – UV sensor alarm system was set up late (completed on 12 August 2024).

W9 – repeat horizontal visibility measurements were not carried out/reported by MWRC for the two occasions when the difference between upstream and downstream measurements was greater than 20% (although lab turbidity suspended sediment and measurements suggest there may have been an error in the visibility readings).

W11 and W17 – no effluent sample was able to be collected by MWRC in November 2023 as the WWTP was shut down for maintenance of the clarifier, and samples collected in February 2024 were not analysed by the lab for *E. coli* as required.

Discharge to Land – Pond and wetland seepage consent

DL1 – permeability investigation report has not yet been submitted due to a full set of monitoring data not being available for 2024 (scheduled to be submitted in 2025).

DL2 – report on discharge effects through the base and walls of the ponds to surface and groundwaters is still to be submitted (will follow the completion of the permeability investigation).

DL6 – WTS design has not yet been submitted (a draft concept plan and site visit have been completed – final plan to be submitted to MWRC for approval in December 2024).

DL13 – groundwater monitoring results were not reported within the 10-day timeframe (although this has since been rectified).

Contents

1 Introduction

Tararua District Council (TDC) owns and operates the Pahiatua Wastewater Treatment Plant (WWTP), located on the outskirts of Pahiatua. Wastewater from the township is collected in three oxidation ponds and is currently discharged into Town Creek, which subsequently flows into the Mangatainoka River.

A new consent to change the discharge location from Town Creek to the Mangatainoka River (via wetland treatment) was granted in July 2021 for a period of 12 years. However, the consent allows continued discharge of wastewater to Town Creek for a period of three years (from the granting of the consent), while the wetlands and new discharge location infrastructure are being built. For this reporting period, our assessment is focused on compliance with the conditions related to the Town Creek discharge.

Consents APP-1993001253.02 & APP-2017201372.00 (General Conditions), ATH-2016200772.00 (Discharge to Air), ATH-199501433.02 (Discharge to Water), ATH-2016200747.00 & ATH-2017201544.00 (Discharge to Land – Pond and Wetland Seepage) and ATH-2017201543.00 (Earthworks) regulate the construction, function and discharges of the Pahiatua WWTP, subject to a suite of conditions.

1.1 Scope

This report has been prepared to fulfil condition G11, which requires an Annual Environmental Report to be submitted that includes:

- a summary of analyses and records collected in accordance with conditions of these consents,
- TDC's indicative assessment of compliance with consent conditions,
- a comment on any non-compliance and any additional monitoring or remedial action undertaken or planned,
- a record of any complaints that are received relating to the operation of the Pahiatua WWTP and wetland treatment system,
- a copy of the full quality assured data set for the period, and
- a copy of the current OMP and the register of certified changes to the OMP.

This Annual Environmental Report covers the period 1 July 2023 to 30 June 2024.

Additionally, a separate report is required under condition W28 of the Discharge to Water consent summarising and assessing monitoring information as specified in conditions W17, W18, W20, W21, W23, and W24. The condition W28 report is provided as Appendix A to this report.

2 Compliance with consent conditions

Table 1 to Table 5 summarise compliance with relevant consent conditions for the July 2023 to June 2024 period. Section 3 and Appendix A provide details of analyses undertaken to assess compliance.

Table 1: Summary of compliance with general conditions of consents APP-1993001253.02 & APP-2017201372.00 for the period July 2023–June 2024.

General Conditions – APP-1993001253.02 & APP-2017201372.00		TDC assessment	Notes
Descriptive specification			
G1	The activity authorised by these consents shall be undertaken in general accordance with the application and Assessment of Environmental Effects received on 1 April 2015 and supplementary documents received: a. On 11 December 2015, being a response to the s92 further information request of June 2015; b. On 12 April 2017, being a response to the s92 further information request of November 2016; c. Further information received on 28 April 2017 included in the s41B hearing report; d. The revised wetland location plan tabled at the hearing on 23-25 May 2017; e. Information filed with the Environment Court detailing the wetland treatment system; and f. Further information provided through the Environment Court appeal process. Where the application is inconsistent with the requirements of the conditions, the conditions will prevail.	Compliant	Consent is generally being carried out as per the conditions.
G2	The wastewater discharge authorised by these consents shall be limited to: a. A 12 month rolling median daily (midnight to midnight) discharge volume no greater than 1,200 m^3/day; b. A 12 month 95th rolling percentile daily (midnight to midnight) discharge volume no greater than 2,000 m3 /day, at approximate map reference NZTopo50 BM35:409-193 (Town Creek) until the discharge point is relocated to approximate map reference NZTopo50 BM35:407-194 (Mangatainoka River) pursuant to condition G9B. ADVICE NOTE: For the purposes of compliance, 12 month rolling refers to any continuous 12 month period. The median (or 95th percentile) statistic will then be calculated on the 365 individual daily discharge volumes for that period. That is then compared to the discharge threshold to see if it is exceeded.	Non-compliant	The rolling 12-month median exceeded 1,200 m^3/day on 20 days (see Section 3.1.1) although: • most exceedances (16 days) occurred in July 2023 as a result of high volumes during the previous reporting year, and • the rolling 95th percentile flow did not exceed 2,000 m^3/day. Plotted records are provided in Section 3.1.1. Note, the last two years of discharge volumes were assessed, so that 12-month rolling statistics could be derived.
G2A	The Consent Holder shall adopt the BPO when selecting new key elements of the overall wastewater treatment and wetland treatment systems.	Compliant	TDC has been adopting BPO for the new key elements of the treatment systems.

General Conditions – APP-1993001253.02 & APP-2017201372.00		TDC assessment	Notes
	ADVICE NOTE: This condition only applies at the time of design decisions and then only to key elements such as the wetland treatment system, any new clarifier system and elements of a similar fundamental importance in meeting treated wastewater quality limits.		
Management and Operation			
G3	Within one month of commencement of these consents, the Consent Holder shall prepare a plan detailing the final plant Structured Optimisation Programme (SOP) for the Pahiatua Wastewater Treatment Plant and submit it to Manawatū-Whanganui Regional Council's (MWRC) Regulatory Manager. The SOP plan shall specify a suitably qualified operations technician who will implement the structured optimisation programme. The SOP plan shall describe the measures and steps required to optimise the treatment plant components so that the treatment plant is able to meet the conditions of this consent and shall specify a stepwise optimisation process of the Chemical dosing system, lamella clarifier operation (or alternative), micro-filter operation and UV disinfection, which shall be implemented as part of the optimisation programme and within the timeframes stipulated in the plan. The Treatment Plant will be optimised in accordance with the SOP within 12 months of commencement of these consents. For any additional upgrades, not listed above, the SOP shall be updated within one month of installation of new equipment and optimisation will be achieved within 18 months	Compliant	26 August 2021: SOP submission due date 31 July 2023: Extended submission due date. December 2021: Update to the SOP by WSP 28 June 2022: WSP produced the Tararua WWTP Strategy. The efficacy of the lamellar clarifier as part of the process was questioned and a decision was made to include an upgrade of the DAF at the Pahiatua site. The upgrade design discussion document concluded that the 2x2,500 m^3/d DAF Plant configuration is the recommended option, as it will provide the council with the highest flexibility, energy efficiency and redundancy. (supplementary material folder, file SM3) 19 March 2024: Last update to the SOP (supplementary material folder, file SM4) TDC noted that this action plan has been completed, and this has now led to programmed treatment plant upgrade. 18/03/2024: Upgrade phase 1 commenced. 30/06/2024: Estimated phase 1 completion.
G4	WWTP Operations and Management Plan Within six months of commencement of these consents, the Consent Holder shall prepare, and forward to MWRC's Regulatory Manager or their agent, an Operation and Management Plan (OMP). The OMP must be prepared by a by a suitably qualified expert acceptable to the Consent Authority . The OMP shall include but not be limited to: a. Specification of the treated wastewater quality to be met by these conditions; b. A description of the entire treatment system facility including a description of each of the respective system components and the type of flocculent to be used, if any, c. Plans of the treatment facility, including a revised Plan ATH-199501433.02 A showing final discharge and monitoring locations and the corresponding map references,	Compliant	26 January 2021: OMP submission due date. 31 July 2023: Extended submission due date. 31 July 2023: OMP submission

General Conditions – APP-1993001253.02 & APP-2017201372.00		TDC assessment	Notes
	d. A description of routine inspection and maintenance procedures to be undertaken with respect to the treatment plant and discharge components, including dates and times or approximate frequencies when inspections and maintenance are to be undertaken, e. Records of the commissioning and optimisation programme (in accordance with condition G3), f. Procedures for recording routine maintenance and all repairs that are undertaken g. A description of monitoring, including methodology, locations and frequency, and record keeping of that monitoring, including a map showing details of monitoring locations, h. Details of the roles of personnel or organisations responsible for undertaking monitoring, including their contact details, i. Procedures for reporting for compliance purposes, including the dates when particular reports are to be completed, when they are to be provided to other parties and who those parties are, j. A description of procedures for reporting non-compliances to MWRC, k. Procedures for reviewing and updating the Operations and Management Plan, l. An Odour Operation and Management Plan (OOMP) prepared in accordance with condition A1, m. Procedures and actions to be taken when monitored parameters exceed relevant trigger levels specified in these conditions. This includes actions to be taken when DO levels reduce below those specified in condition A6 of the discharge to air consent, and when water level alarms specified in condition G12 are triggered, and n. An emergency response plan. ADVICE NOTE: Operational Management Plan (OMP) means at any time, the latest version of the OMP prepared under condition G4, including any changes or updates to the OMP made by the Consent holder, including under conditions G7A.		
G4A	Clauses (f), (k), and (l) of condition G4 must be technically certified by the MWRC's Regulatory Manager or their agent. The Consent Holder may, on an interim basis, implement those parts of the OMP if the Consent holder is not advised within 20 working days of MWRC's acknowledgement of receipt of the OMP that amendments are required, pursuant to conditions G5 or G7A.	Compliant	31 July 2023: OMP submission 18 December 2023: OMP assessment by MWRC returned to TDC 31 March 2024: Revised OMP submission due date. Revised OMP submitted on time. (supplementary material folder, file SM2) 4 June 2024: OMP technically certified. (supplementary material folder, file SM5)

General Conditions – APP-1993001253.02 & APP-2017201372.00		TDC assessment	Notes
G4AA	The MWRC may appoint its own suitably qualified expert to undertake a peer review of the OMP, including any amendments, at any time. Should MWRC consider that amendments to the OMP are required, as a result of the peer review, then: a. in respect of amendments to the parts of the OMP covered by clauses (f), (k) and (l), MWRC will raise these amendments with the Consent Holder immediately so that the amendments may feed into the certification process under conditions G4A or G7A; or b. in respect of amendments to the remaining parts of the OMP, MWRC may discuss these with TDC for TDC's consideration. ADVICE NOTE: Any peer review shall be undertaken by a suitably experienced wastewater treatment plant operator. The intent of the review is to assess issues and develop specific measures to correct them.	N/A	18 December 2023: OMP assessment by MWRC returned to TDC 31 March 2024: Revised OMP submission due date. Revised OMP submitted on time. 4 June 2024: OMP technically certified.
G5	If MWRC's Regulatory Manager advises the Consent Holder that clauses (f), (k) and (l) do not achieve technical certification, the Consent Holder shall amend those parts of the OMP and re-submit the OMP to the Regulatory Manager within 20 working days of being advised of the reasons why technical certification was withheld.	Compliant	Clauses (f), (k) and (l) were technically certified on 4 June 2024.
G6	The Consent Holder shall undertake all activities authorised by these consents in accordance with the OMP (certified as required by the conditions of these consents) and any amendments to the OMP in accordance with these conditions.	Compliant	The revised OMP was submitted in March 2024 and was technically certified on 4 June 2024.
G7	The Consent Holder shall ensure that a copy of the OMP, including any amendments, is kept onsite. The OMP and any copy kept on-site shall be amended within 5 working days of any changes being made to the design, operation or management of the treatment system addressed by the OMP, with the exception of elements covered by clauses (f), (k) and (l) of condition G4 which require technical certification under condition G7A. Subject to condition G7A below, any amendments to the OMP shall be forwarded to MWRC within two weeks of an amendment to the OMP.	Compliant	A copy of the certified OMP is kept on-site.
G7A	Any amendments to the OMP that relate to clauses (f), (k) and (l) of condition G4 must be certified by the MWRC's Regulatory Manager or their agent, before the amendments are implemented. ADVICE NOTE: If, within 20 working days of acknowledgement of receipt of the amended OMP, the Consent Holder is not advised to the contrary by the Regulatory Manager or their agent, the Consent Holder may operate in accordance with the amendment on an interim basis.	Compliant	The revised OMP was certified on 4 June 2024.
G7B	A sludge management and disposal system must be installed and operated to ensure solids build-up in the main treatment plant does not compromise treatment plant performance. This system must be reflected, as necessary, in the Odour Operation and Management Plan (OOMP) required under condition A1.	Non-compliant*	A sludge management and disposal system was installed and is operating in the treatment plant for managing sludge from the clarifier automatically. The sludge is processed through a wave press and sent off site for disposal.

General Conditions – APP-1993001253.02 & APP-2017201372.00		TDC assessment	Notes
			* a technicality – the system is documented as required but within TDC's OMP rather than the OOMP (both plans have been certified by Horizons).
G8	Within one month of commencement of these consents, the Consent Holder shall install and thereafter maintain signage advising river users that treated wastewater is being discharged. Prior to the relocation of the discharge point in accordance with condition G9B, signage shall be installed at the following locations: a. At the current discharge location into Town Creek; b. At the confluence of Town Creek and the Mangatainoka River; c. 500m downstream of the confluence of Town Creek and the Mangatainoka River Following the relocation of the discharge in accordance with condition G9B, the signage above may be removed, and the Consent Holder shall install and thereafter maintain signage at the following locations: d. Approximately 300m upstream of the discharge location; e. Approximately 500m downstream of the discharge location.	Compliant	TDC has installed signage at the appropriate locations. Evidence was provided for the 2022 – 2023 annual compliance report (section 3.1.2, Figure 2).
G9	The Consent Holder shall commence an investigation into alternative methods and treatment and discharge (Alternatives Investigation) on or before five years from the expiry of these consents (discharge permits). The Alternatives Investigation shall be undertaken in consultation with the relevant iwi authorities. The findings of the Alternatives Investigation shall be provided to the relevant iwi authorities, the Tararua District Wastewater Forum (TDWF), and the Regulatory Manager of MWRC.	N/A	These consents will expire 12 years after commencement, i.e., 26 July 2033. Consequently, the required investigation will not be due before 2028.
G9AA	On or before three years from the expiry of these consents (discharge permits), the Consent Holder shall submit to the MWRC's Regulatory Manager, a Future Directions Report confirming the best practicable option for future management and treatment of wastewater discharged from the Pahiatua wastewater treatment plant and the proposed pathway for implementing the option. The Future Directions Report shall: a. be informed by the Alternatives Investigation undertaken in accordance with G9; b. specify a date by which a new application shall be lodged; c. be prepared in consultation with the relevant iwi authorities; and d. be provided to the relevant iwi authorities and the TDWF within two months of its completion. ADVICE NOTE: The intention of the Future Directions Report is to provide a pathway for implementing a long-term (35-year) solution for the treatment and management of wastewater discharged from the Pahiatua wastewater treatment plant.	N/A	As these consents will expire in 26 July 2033, the Future Directions Report will not be due before 2030.

General Conditions – APP-1993001253.02 & APP-2017201372.00		TDC assessment	Notes
G9B	Within three years following commencement of these consents: a. the wetland treatment system authorised by ATH-2017201543.00 shall be installed and operational; and b. treated wastewater shall flow through the wetland treatment system authorised by ATH-2017201543.00 and be discharged at the proposed discharge point and no longer into Town Creek.	Non-compliant	Was required by 26 July 2024. The WTS is expected to be installed and operational in 2025 (concept design draft from Tonkin & Taylor can be found in the supplementary material folder (SM6)). The final design plan is to be submitted in December 2024.
G9C	Any consent(s) required for the outfall structure that will enable the treated wastewater to be discharged at the Mangatainoka River discharge point shall be sought within 3 months of commencement of these consents.	Non-compliant	TDC have engaged a consultant to apply for the outfall structure consent and are currently waiting for the design plan. Provisional discharge outlet structure placements are currently aligned with the concept design provided by Tonkin & Taylor (15th October) and are to be confirmed in the detailed design to be released by 14th December.
G10	Within six months of commencement of this consent, and at least three weeks prior to the first scheduled annual meeting of the TDWF following the completion of the report, the Consent Holder shall undertake a recreational use investigation of the reach of the Mangatainoka River from 500m upstream to 1000m downstream of the proposed discharge point referred to in condition G9B, and provide a report documenting the investigation to MWRC's Regulatory Manager and the TDWF. The investigation and subsequent report shall include but not be limited to the following: a. Identification of all public access points to the Mangatainoka River b. Identification of recreation activities that are undertaken, including existing use patterns and preferences, and any barriers to use.	Non-compliant	The recreational use investigation survey was carried out in January 2024 (later than required) following signing of Statement of Work with WSP on 16 August 2023. A report on the survey findings was submitted on 2 April 2024, within the timeframe of a further extension (31 May) granted by MWRC. (supplementary material folder, file SM7)
G10A	By 31 October in the years 2021, 2023 and 2025 the Consent Holder shall provide to MWRC's Regulatory Manager details of inflow and infiltration investigations undertaken in the previous two financial years. Details of any forward works programme for repairs or upgrades to the Council network must be included. Any such works must be undertaken in general accordance with the principles of the Infiltration and Inflow Control Manual, Water New Zealand, 2015 (or relevant updates). ADVICE NOTE: Extracts from appropriate Asset Management documents may be used to help form the basis of information to demonstrate compliance with this condition	N/A	Not required in 2024. Last I&I investigation report was required by 31 October 2023. TDC held a meeting with MWRC on 30 April 2024 to respond to non-compliance for the 2022-2023 reporting period (see the supplementary material folder, file SM8).
G11	By 15 October of each year, the Consent Holder shall provide to MWRC's Regulatory Manager and the members of the TDWF, an Annual Environmental Report for the 12 month period ending 30 June of that year. The report shall include but not be limited to: a. A summary of analyses and records collected in accordance with conditions of these consents; b. An assessment of compliance against conditions of these consents; c. A comment on any non-compliance and any additional monitoring or remedial action undertaken or planned;	Non-compliant	This report. MWRC acknowledged (email 8 October 2024) the discrepancy between the due date for submission of the Annual Environmental Report (15 October) and the due date of the monitoring report required by condition W28 (31 October), which is required to be attached to this report. TDC are seeking a variation to conditions to align these dates for future reporting.

General Conditions – APP-1993001253.02 & APP-2017201372.00		TDC assessment	Notes
	d. A record of any complaints that are received relating to the operation of the Pahiatua WWTP and wetland treatment system; e. A copy of the full quality assured data set for the period; and f. A copy of the current OMP and the register of certified changes to the OMP. ADVICE NOTE: For remedial actions to be undertaken an overview on timing of actions, including reference to appropriate Asset Management Plans is required. This report shall be provided to members of the TDWF not less than 10 working days prior to any TWDF meeting.		
G12	Within 3 months of these consents commencing, the Consent Holder shall install a pond level sensor alarm on Pond 3. The sensor shall provide a continuous measure of pond level to the Supervisory Control and Data Acquisition (SCADA) system. The sensor shall provide the following alarm functions: a. Alert level at 500mm below overflow, b. High level at 300mm below overflow, and c. High-high level (Overflow imminent) at 100mm below overflow. ADVICE NOTE: In relation to the sensor, the measurement and poling rates need not be high and a poling rate of once per hour would be sufficient.	Compliant	Relevant information was provided in the 2021–2022 Annual Environmental Report and was assessed by MWRC as compliant.
Tararua District Wastewater Forum (TDWF)			
G13	The Consent Holder shall initiate the inaugural meeting of the TDWF on or before 14 December in the year in which the resource consents authorising either or both of the Pahiatua or Eketāhuna Wastewater Treatment Plants commence. ADVICE NOTE: The inaugural TDWF meeting shall be initiated following commencement of the earliest application.	Compliant	The inaugural TDWF meeting was held on 14 December 2021.
G14	The Consent Holder shall secure and pay for the services of an independent facilitator to facilitate discussions during TDWF meetings.	Compliant	Mr. Philip Hindrup was the forum chair for the TDWF meeting.
G15	The Consent Holder shall, for all TDWF meetings, provide the venue and administrative support, including but not limited to recording attendees and circulating notes and outcomes discussed at the forum meeting.	Compliant	The TDWF meeting was held at TDC Chambers with the support services provided as required.
G16.	"At least two weeks prior to hosting any meeting of the TDWF, the Consent Holder shall by way of formal correspondence issue invitations to the following parties: a. Water & Environmental Care Assn. Inc, b. Water Protection Society Inc, c. MidCentral District Health Board, d. Manawatu Estuary Trust, e. Wellington Fish and Game, f. John Bent, g. Christina Paton, h. Corny and Charlotte Andrews, i. A representative of each relevant iwi organisation that submitted on the application;	Compliant	Invitations were sent to all required parties except Corny and Charlotte Andrews. Corny passed away and Charlotte could not be tracked down. (supplementary material folder, file SM9)

General Conditions – APP-1993001253.02 & APP-2017201372.00		TDC assessment	Notes
	j. A representative of MWRC as the regulatory authority, and k. A representative of the Tararua District Council as the Consent Holder. ADVICE NOTE: The parties listed in a – i above are the parties that submitted on the resource consent applications."		
G17	In addition to condition G16 above, at least 2 weeks prior to the meeting, the Consent Holder shall place in the Manawatu Standard and the Bush Telegraph a public notice advising of the date, time, location and purpose of the TDWF meeting.	Compliant	The meeting was notified in the Manawatu Standard on 22 November 2023 and in the TDC Newsletter on 27 November. (supplementary material folder, file SM10 and SM11)
G18	The Consent Holder shall ensure that at least one TDWF meeting occurs annually between 30th October and 14th December.	Compliant	The annual TDWF meeting was held on 7 December 2023.
G18A	The functions and agenda of the TDWF shall, in respect of the performance of the WWTP and discharge facilities, include the following: a. Receiving the following documents and participating in informed discussions on them, and also on the performance of the WWTP and the quality of the discharges the subject of these consent conditions: i. Optimisation Programme Plan (see condition G3) ii. WWTP Operations and Management Plan (see condition G4) iii. Annual Environmental Report (see condition G11) iv. Assessment of Environmental Effects arising from the pond and/or wetland (see condition DL2 and DL2A) v. Construction Design Plan (see condition) vi. The Alternatives Investigation Report (see condition G9). b. Making suggestions during the annual forum to the Consent Holder as to any practical measures and other initiatives to address actual or potential adverse effects of the treated wastewater discharge c. Making suggestions during the annual forum as to any additional investigations the Consent Holder might undertake in respect of actual or potential adverse effects of the treated wastewater discharge; and d. Considering during the annual forum any other issues of concern to TDWF attendees relating to the WWTP treated wastewater discharge. ADVICE NOTE: The members of the TDWF shall be entitled to have their own experts present at the forum meetings and to provide advice or recommendations to the forum. The Consent Holder is not obliged to pay for the attendance or advice provided by experts engaged by TDWF members.	Compliant	The TDWF meeting agenda covered the required topics. (supplementary material folder, file SM12)
G18B	The Consent Holder shall provide minutes and a report of each TDWF meeting to MWRC and the members of the TDWF within four weeks of each meeting. The minutes and report shall include: a. A record of discussions and attendance at the meeting; b. A record of any suggestions provided or issues raised by the members of the TDWF including: i. i.. What actions are proposed by the Consent Holder to respond to suggestions made or issues raised by the TDWF as they relate to functions of the TDWF as set out in condition G18A (and a timeframe for implementing those actions); and	Compliant	Meeting minutes were provided on 22 December 2023 (15 days after the meeting) and contained the required information. (supplementary material folder, file SM12)

General Conditions – APP-1993001253.02 & APP-2017201372.00		TDC assessment	Notes
	ii. Where no actions are proposed to respond to suggestions or issues, the reasons why not.		
G18C	The TDWF forum may be terminated following a majority vote of parties listed in G16. The Regional Council shall be advised in writing within 10 working days should termination occur. ADVICE NOTE: Should the forum be terminated compliance with condition G18 is no longer required.	N/A	The TDWF forum has not been terminated yet.
G18D	The involvement of a TDWF party, as identified in G16, may be terminated at the discretion of the independent facilitator or following a majority vote of the other parties. Grounds for termination include continued unreasonable or disruptive behaviour.	N/A	No party's involvement to the TDWF has been terminated.
G19	The MWRC may, pursuant to section 128 of the Act, initiate a review of any conditions of these consents annually in the month of July. Without limiting section 128 (1)(a)(i)-(ii) of the Act, any review shall be for the following specified purposes: a. Assessing the adequacy of the monitoring programme; and/or b. Assessing the effectiveness of the conditions in these consents in avoiding, remedying or mitigating any more than minor unanticipated c. adverse effects on the environment; and/or d. Modification of the monitoring programme; and/or e. Deletion, addition or changes to the conditions of these consents; and/or f. e. Incorporating minimum standards of water quality or air quality from an operative rule in a MWRC Regional Plan.	N/A	Review condition specific to MWRC.
G20	Discharge to water consent ATH-199501433.02, Discharge to air consent ATH-2016200747.00, and Discharge to land consents ATH2016200772.00 and ATH-2017201544.00 shall expire twelve years from commencement.	N/A	These consents shall expire in 2033
G21	Land use consent ATH-2017201543.00 shall expire on 30 November 2025.	N/A	

Table 2: Summary of compliance with conditions of consent ATH-2016200772.00 for the period July 2023–June 2024.

Pahiatua WWTP – Discharge to Air: ATH-2016200772.00		TDC assessment	Notes
Pre-development assurance			
A1	Within two months of the commencement of this consent, the Consent Holder shall provide an Odour Operation and Management Plan (OOMP) for certification to the Regulatory Manager of the MWRC as part of the Operation and Management Plan required by condition G4. The purpose of the OOMP shall be to detail the measures the Consent Holder intends to take to avoid and mitigate the potential for odour from the wastewater treatment plant and ponds. The OOMP shall include, but not be limited to the following: a. Details of regular inspections, plant maintenance and cleaning as required to avoid offensive odours; b. Responsibilities of on-site staff; c. Monitoring procedures including details of the dissolved oxygen meter and automated recording system being used; d. Contingency procedures in the event of equipment failures; e. A complaints procedure including; i. Provision of a 24 hour telephone contact number, ii. A stated commitment by the Consent Holder to respond to odour complaints within a specified time period, iii. Actions to be taken by the Consent Holder to verify complaints iv. Provision for recording the complaints and the responses made by the Consent Holder to complaints, and v. Provision for recording actions taken by the Consent Holder to address the sources of any verified odour; f. Management procedures for storage and handling of primary screenings and other solid wastes; and g. Procedures for monitoring and managing pond sludge levels to minimize the risk of upset conditions in the ponds resulting in offensive h. odours. i. Procedures and actions to be taken when the DO levels fall below those specified in condition A6. ADVICE NOTE: The OOMP may be included in the Operations Management Plan provided for in condition G4 of these consents, and sludge management required by condition G7B.	Compliant	The original OOMP was submitted late but the final version was supplied within the revised timeframe of 31 July 2023 set by MWRC. The OOMP was subsequently certified on 4 June 2024 (see supplementary material SM13).
Environmental Standards			
A2	The discharge to air authorised by this consent shall not cause the emission of odour that, in the opinion of the MWRC's Consents Monitoring Officer, is offensive or objectionable at or beyond the property boundary of the Pahiatua Wastewater Treatment Plant site. ADVICE NOTE: When considering if an odour is objectionable or offensive, the MWRC will take into consideration the FIDOL factors: frequency, intensity, duration, offensiveness and location.	Compliant	TDC did not receive reports by MWRC's monitoring officer experiencing offensive or objectionable odours at or beyond the property boundary of the Pahiatua WWTP site.

Pahiatua WWTP – Discharge to Air: ATH-2016200772.00		TDC assessment	Notes
A3	The Consent Holder shall keep a complaints register to record complaints relating to discharges of odour or contaminant gases to air arising from the Wastewater Treatment Plant. The register shall include: a. The details of the complainant if given; b. The location of where the contaminant, e.g. odour, was detected; c. A description of the wind speed and direction when the alleged adverse effect was detected by the complainant; d. The date and time of the detection; e. The most likely cause of the discharge detected; f. The dissolved oxygen levels in the ponds up to and including the 24 hours period prior to when the odour was detected; and g. If applicable, any corrective action undertaken by the Consent Holder to avoid, remedy or mitigate the adverse environmental effect detected by the Complainant. A comment regarding when and what feedback was provided to the Complainant to explain the odour.	Compliant	TDC uses a Customer Request Management System to record public complaints. There were no complaints registered for discharges of odour or contaminant gases during this reporting period.
A4	The Consent Holder shall advise the MWRC's Regulatory Manager within 24 hours of any complaints relating to air discharges being received.	N/A	No complaints were lodged during this reporting period.
A5	A copy of information recorded in the complaints register shall be included in the Annual Environmental Report required by condition G11 of the General Conditions.	N/A	No complaints were lodged during this reporting period.
A6	The Consent Holder shall continuously monitor Dissolved Oxygen in the wastewater treatment pond 1, near the discharge, and ensure that the Dissolved Oxygen concentration is at or above 0.5 mg/L. An information poling rate of once per 15 minutes or less, out to the SCADA and data storage systems, shall be adopted.	Non-compliant	Monitoring was carried out as required, with the DO of Pond 1 measured at 15-minute intervals over the reporting period. However, 35% pf the DO concentrations fell below 0.5 mg/L. TDC has automated the pond aerators to start when DO falls below 0.5 mg/L. TDC is in the process of upgrading its automation systems, currently in the design phase. Full records of daily minimum levels of DO concentration can be found in section 3.2.1, Figure 3.

Table 3: Summary of compliance with conditions of consent ATH-199501433.02 for the period July 2023–June 2024.

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
Descriptive Specification			
W1	Until 24 months following commencement of these consents, the treated wastewater shall meet the following standards: a. The concentration of ammoniacal-nitrogen (NH4-N) shall not exceed 10 g/m3 in more than 8 out of 12 consecutive samples, and no more than 18 g/m3 in more than 2 out of 12 consecutive samples; b. The concentration of soluble carbonaceous BOD5 (scBOD5) shall not exceed 23 g/ m3 in more than 8 out of 12 consecutive samples; and no more than 31 g/ m3 in more than 2 out of 12 consecutive samples; and c. The concentration of total suspended solids shall not exceed 41 g/m3 in more than 8 out of 12 consecutive samples, and no more than 65 g/m3 in more than 2 out of 12 consecutive samples. Compliance shall be based on grab samples taken from the discharge monitoring point immediately downstream of the UV treatment plant as shown indicatively on Plan ATH-199501433.02A.	Compliant	These consents commenced on 26 July 2021; thus, this condition was applicable until 25 July 2023, and the relevant targets only applied to the 18 July 2023 sample for this monitoring period. On that occasion: a. Ammoniacal nitrogen concentration exceeded 10 g/m^3 (15.4 g/m^3). b. $scBOD_5$ concentration did not exceed 23 g/m (0.5 g/m^3). c. TSS concentration did not exceed 41 g/m^3 (8 g/m^3). Full records can be found in section 3.3.1, Table 6.
W2	Until 24 months following commencement of these consents, the treated wastewater discharge shall meet the following standards when flow in the Mangatainoka River as measured at "Mangatainoka at Pahiatua Town Bridge" flow recording station is at or below the 20th flow exceedance percentile flow: a. The concentration of E.coli shall not exceed 600MPN/100ml in more than 8 out of 12 consecutive samples, and no more than 2000MPN/100ml in more than 2 out of 12 consecutive samples; and b. The concentration of DRP shall not exceed 1 g/m3 in more than 8 out of 12 consecutive samples, and no more than 2 g/m3 in more than 2 out of 12 consecutive samples. Compliance shall be based on grab samples taken from the discharge monitoring point immediately downstream of the UV treatment plant as shown indicatively on Plan ATH-199501433.02A.	Compliant	These consents commenced on 26 July 2021; thus, this condition was applicable until 25 July 2023, and the relevant targets only applied to the 18 July 2023 sample for this monitoring period. On that occasion: a. *E. coli* concentration did not exceed 600 MPN/100mL (2 MPN/100mL). b. DRP concentration did not exceed 1 g/m^3 (0.056 g/m^3). Full records can be found in section 3.3.2, Table 7.
W3	From 24 months following commencement of these consents, the treated wastewater shall meet the following standards: a. The concentration of ammoniacal-nitrogen (NH4-N) shall not exceed 10 g/m3 in more than 8 out of 12 consecutive samples, and no more than 18 g/m3 in more than 2 out of 12 consecutive samples;	Compliant	These consents commenced on 26 July 2021; thus, this condition became applicable from 26 July 2023, and the relevant targets applied, for this monitoring period, from the August 2023 samples onwards. On those occasions: a. Ammoniacal-N concentration exceeded 10 g/m^3 three times and did not exceed 18 g/m^3. Exceedances occurred from August to October 2023, and ranged between 11and 15 g/m^3.

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
	b. The concentration of soluble carbonaceous BOD5 (scBOD5) shall not exceed 5 g/ m3 in more than 8 out of 12 consecutive samples; and no more than 8 g/m3 in more than 2 out of 12 consecutive samples; and c. The concentration of total suspended solids shall not exceed 15 g/m3 in more than 8 out of 12 consecutive samples, and no more than 30 g/m3 in more than 2 out of 12 consecutive samples. Compliance shall be based on grab samples taken from the discharge monitoring point immediately downstream of the UV treatment plant as shown indicatively on Plan ATH-199501433.02A.		b. $scBOD_5$ concentration did not exceed 5 g/m^3. c. TSS concentration exceeded 15 g/m^3 on 6 occasions (October and December 2023, January to March and June 2024), and 30 g/m^3 on one occasion (February 2024). Exceedances ranged between 18 and 65 g/m^3. *Note: There were no data for November 2023, however this did not affect compliance assessment.* Full records can be found in Section 3.3.1, Table 6.
W4	From 24 months following commencement of these consents, the treated wastewater discharge shall meet the following standards when flow in the Mangatainoka River as measured at "Mangatainoka at Pahiatua Town Bridge" flow recording station is at or below the 20th flow exceedance percentile flow: a. The concentration of E.coli shall not exceed 260 MPN/100 ml in more than 8 out of 12 consecutive samples, and no more than 2000 MPN /100ml in more than 2 out of 12 consecutive samples; and b. The concentration of DRP shall not exceed 0.5 g/m3 in more than 8 out of 12 consecutive samples, and no more than 1.0 g/m3 in more than 2 out of 12 consecutive samples. Compliance shall be based on grab samples taken from the discharge monitoring point immediately downstream of the UV treatment plant as shown indicatively on Plan ATH-199501433.02A. Compliance with conditions W2 and W4 will be based on the flow at the "Mangatainoka at Pahiatua Town Bridge" flow recording station being less than 23.3m3/s.	Compliant	These consents commenced on 26 July 2021; thus, this condition became applicable from 26 July 2023, and the relevant targets applied, for this monitoring period, from the August 2023 samples onwards. On those occasions, and when flow in the Mangatainoka River was below 20th FEP: a. *E. coli* concentration did not exceed 260 MPN/100mL. b. DRP concentration did not exceed 0.5 g/m^3. Note: *There were no data for November 2023, however this did not affect compliance assessment.* *Samples from 12 February were not analysed by the lab for E. coli on time, were discarded and new samples were collected on 22 February, which were also not analysed in time, and consequently those results should be considered of lower quality.* Full records can be found in section 3.3.2 Samples from 13 February 2024 were not analysed by the ELS lab for *E. coli* on time and were discarded. New samples were collected on 22 February but were analysed outside the required timeframe, with the results being considered of lower quality (email from D. Bentley-Hewitt, 26/02/2024). Table 7.
W5	The UV disinfection unit shall be equipped with a UV sensor to monitor UV transmission or intensity through the wastewater during operation.	Compliant	Pahiatua WWTP is equipped with a UV disinfection unit and is programmed with an alarm when intensity drops.

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
W5A	The UV sensor shall be monitored continuously, and shall be programmed with an alarm notifying the Consent Holder if the applied UV dose decreases below the manufacturer's recommended dose for a period of more than 24 hours. ADVICE NOTE: It is expected that this alarm setting will be of the order of 30 mJ/cm2.	Non-compliant	The UV sensor alarm was set up on 12 August 2024 (email to C. Dodds), later than the due date (29 March 2024). Graphical representation of the Pahiatua WWTP system and the recorded information relevant to the UV treatment system can be found in section 3.3.3, Figure 4.
Receiving Water Quality			
W8.	The treated wastewater discharge shall not cause any of the following in the Mangatainoka River at the river flows outlined in Table 1 and, after reasonable mixing, at the monitoring point 200m downstream from the discharge in accordance with condition W17 a. the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials; or b. bacterial and / or fungal slime growths visible to the naked eye as plumose growths or mats; or c. any emission or of objectionable odour; or d. a reduction in horizontal visibility, defined as the horizontal sighting range of a black disc, by more than 20%; or e. the ammoniacal nitrogen (NH4-N) concentration to exceed 2.1 g/m3 at any time, or to exceed 0.4 g/m3 as a rolling annual average; or f. the rolling annual average particulate organic matter concentration to exceed 5 g/m3 at flows below median flow; or g. the Chlorophyll a. to exceed 120 mg/m2 on more than 8% of occasions on the basis of the last 36 samples collected monthly in accordance with condition W23; or h. the cover of filamentous mats greater than 2 cm long to exceed 30% or cover of mats greater than 3mm thick to exceed 60%; or i. a reduction in Quantitative Macroinvertebrate Community Index (QMCI) of greater than 20%; or j. the rolling annual average scBOD5 concentration to exceed 1.5 g/m3 at flows below the 20th FEP. The River Flows in Table 1 are in the Mangatainoka River as measured at "Mangatainoka at Pahiatua Town Bridge" water level recording station.	Compliant	During this reporting period at Reach C, and using data from the 2022–2023 reporting period to calculate rolling annual averages where required: a. No such substances were recorded during water quality and periphyton monitoring by MWRC and Traverse Environmental respectively [compliant] b. No such substances were recorded during water quality and periphyton monitoring by MWRC and Traverse Environmental respectively [compliant]. c. No odour complaints were lodged [compliant]. d. Black Disc (BD) was not used on any occasion, with safe access or low flows cited as the reasons. A Clarity Tube (CT) was used instead and CT measurements converted to black disc estimates (see section 3.3.4.1, Table 8). BD estimates indicated a greater than 20% decrease from upstream to downstream in August and September 2023. CT measurements also indicated a decrease >20%. Results of related water quality variables (turbidity and TSS) do not suggest a significant adverse effect of the discharge on visual clarity downstream. BD estimates could not be assessed in October 2023, and between December 2023 and May 2024, as CT records were "> 0.95 m" [not assessed]. e. Ammoniacal-N concentration did not exceed 2.1 g/m^3, or, as a rolling annual average, 0.4 g/m^3 on any sampling occasion [compliant] (section 3.3.4.2, Table 9).

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
			f. POM concentrations were always below the detection limit of 3 g/m^3 during this reporting period, and for most of the previous period. Consequently, the rolling annual average could not be calculated. However, irrespective of the actual concentrations, the rolling annual average would have not exceeded 5 g/m^3 [compliant] (3.3.4.2, Table 9). g. By the end of this reporting period, 30 records of Chlorophyll-a could be included in the analysis, as per condition 23 [not assessed] (section 3.3.4.3, Figure 5. Preliminary analysis of the results found Chlorophyll-a to exceed 120 mg/m^2 downstream from the current discharge (Reach C) three times during the time covered by the 30 records (10%), once during each of the three reporting periods. There were also five exceedances at Reach A (17%) and four exceedances at Reach B (13%), upstream of the discharge. Two of these occasions coincided with downstream exceedances. *Note: on five occasions during this reporting period, periphyton sampling was not feasible due to flows in the Mangatainoka being too high, but below the flood limit of 55 m^3/s.* h. Riverbed cover of filamentous algae (>2cm) did not exceed 30% on any occasion [compliant] (section 3.3.4.4, Figure 6). Riverbed cover of algal mats (>3mm) did not exceed 60% on any occasion [compliant] (section 3.3.4.4, Figure 6). *Note: on five occasions during this monitoring period, periphyton sampling was not feasible due to high flows in the Mangatainoka, but which were below the flood limit of 55 m^3/s.* i. As per condition W21 (assessed in a separate report, Appendix A), and since macroinvertebrates were collected during the 2021 – 2022 reporting period, there was no requirement for macroinvertebrates to be collected during the 2023 – 2024 period (not applicable). j. scBOD$_5$ concentrations were recorded as below detection limit on most sampling occasions of the current and the previous reporting periods [not assessed] (section 3.3.4.2, Table 9).
W9.	Compliance with condition W8 shall be assessed as follows: a. If condition W8d (decrease in horizontal visibility of more than 20% between upstream and downstream of the discharge) is exceeded, the Consent Holder shall:	Non-compliant	Assessment of compliance was undertaken as required except that no repeat horizontal visibility measurements were recorded by MWRC when the difference between upstream and downstream measurements was >20% (condition W9a i). However, note that the

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
	i. immediately repeat the horizontal visibility measurement upstream and downstream of the discharge; and ii. If a greater than 20% reduction in horizontal visibility is confirmed by the second measurement, the Consent Holder shall assess whether the discharge is the cause for the reduction in horizontal visibility, based on the results of water quality analyses undertaken the same day under condition W17 of this consent, and any additional measurements, other observations or photographs. b. If the Consent Holder is unable to comply with the limits in condition W8e (ammoniacal nitrogen), W8f (Particulate Organic Matter) or W8j (ScBOD5), the Consent Holder shall use a Wilcoxon Signed Rank test to determine if there are any statistically significant increases or decreases between upstream and downstream. c. If it is determined that there are significant increases or decreases in accordance with the Wilcoxon Signed Rank test (p=0.05 or lower), the Consent Holder shall undertake an investigation into the effects of the discharge from the Pahiatua WWTP compared with upstream to determine, if possible, the cause of the exceedance. d. The Consent Holder shall, within 2 working days of the result in c. being received by the Consent Holder, notify the MWRC's Regulatory Manager of the exceedance and shall subsequently provide the MWRC's Regulatory Manager with a written statement in accordance with W9(e); e. The written statement shall: i. Include, but is not limited to, mitigation measures taken, and if required, further proposed measures to remedy the problem; ii. Include a timeline to complete proposed remediation measures; iii. Be provided to MWRC's Regulatory Manager in draft form: 1. For exceedances of the ammoniacal nitrogen (NH4-N) concentration in the Mangatainoka River above 2.1gm3, within 10 working days after the notification; 2. For any other exceedances, within 20 working days after the notification; iv. Where comments are received from MWRC's Regulatory Manager within 5 working days of receipt of the draft written statement, either 1. Incorporate those comments in the final written statement, or 2. Explain why comments have not been incorporated in the final written statement; v. Be provided to MWRC's Regulatory Manager in final form within 10 working days of providing the draft. f. The findings of investigations, actions taken and reporting under clauses W9(d and W9(e) and, if required, further proposed measures to remedy the problem and a timeframe for doing so, shall be reported in the annual		corresponding lab turbidity and TSS results suggest a possible error in the visual clarity measurements (see section 3.3.4.1).

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
	report required by condition G11 of the general conditions and updated accordingly in the OMP as necessary. g. If the limits in condition W8h (periphyton cover) are exceeded downstream of the discharge, then: i. the Consent Holder shall assess whether the following triggers are exceeded: 1. if periphyton cover upstream of the discharge was less than 30% cover, the Consent Holder shall assess whether a more than 10 point increase in the mean percentage cover by filamentous algae over 2 cm long or mat over 0.3 cm thick has occurred between upstream and downstream of the discharge on that sampling occasion. 2. if periphyton cover upstream of the discharge was more than 30% cover, the Consent Holder shall assess whether a more than 15 point increase in the mean percentage cover by filamentous algae over 2 cm long or mat over 0.3 cm thick has occurred between upstream and downstream of the discharge on that sampling occasion. ii. If the triggers in 1 or 2 above are exceeded, then the Consent Holder shall analyse the last 36 measurements collected under condition W23 to assess whether there is a consistent increase (by use of a Wilcoxon signed ranked test) in the percentage cover by filamentous algae over 2 cm long or mat over 0.3 cm thick between upstream and downstream, and whether there is an increase in the frequency or severity of exceedances of the limit in condition W8h. iii. If the assessment concludes that there is both a consistent increase in the percentage cover by filamentous algae over 2 cm long or mat over 0.3 cm thick between upstream and downstream, and an increase in the frequency or severity of exceedances of the limit in condition W8h, then the condition will be assessed as non-compliant. h. Compliance with the limit in condition W8i (QMCI) shall be determined using equivalence testing at the 20% interval. i. Compliance with condition W8g (periphyton biomass) shall be assessed on the basis of the last 36 measurements collected under condition W23. Missing measurements as a result of inability to sample due to high flows shall be addressed using the method provided for under condition W23(f). ADVICE NOTE: A statistically significant difference is defined as a P value equal to or less than 0.05. ADVICE NOTE: The increase between upstream and downstream periphyton		

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
	cover (condition W9(g)) shall be calculated as the difference between the % cover downstream minus the % cover upstream. For example, filamentous algae covers of 40% upstream and 55% downstream represent a 15 point increase in filamentous algae cover.		
W10.	Wastewater monitoring To enable sampling of the treated wastewater the Consent Holder shall establish and maintain safe access to a sampling port as close as is practicable to the end of the wastewater treatment system post UV. The sampling port location shall be identified in the OMP required under condition G4.	Compliant	TDC contracts out wastewater monitoring to the MWRC Environmental Data team. Based on on-going communications between TDC and said team, the access is safe for sampling.
W11.	The Consent Holder shall take monthly grab samples of the treated wastewater at the sampling port referred to in condition W10. The samples shall be analysed for the constituents and at the frequencies listed in Table 2 to assess compliance with conditions W1 to W4 of this consent.	Non-compliant	TDC has contracted this work to MWRC's Environmental Data Team. Grab samples of the treated wastewater were collected monthly, except for November 2023, when no effluent sample was able to be collected as the WWTP was shut down for maintenance of the clarifier. Testing was carried out as required except for *E. coli* on 13 February 2024, when the sample was discarded due to delays in lab testing. A replacement sample was collected on 22 February.
W12	The Consent Holder must ensure that a flow meter is located and maintained on each of the inflow and outflow lines to and from the treatment plant for the duration of the consent. The flow meter on the outflow line must be positioned to measure the entire volume of treated sewage wastewater discharged into the surface water of the Mangatainoka River/or into wetland as authorised by this consent. The inflow meter must be positioned prior to the inlet screen so as to measure the entire wastewater volume entering the plant.	Compliant	Pahiatua WWTP is equipped with inflow and outflow meters.
W13	The flow meters required by condition W12 shall be verified by a registered verifier upon installation and every five (5) years following commencement of this consent to ensure compliance with condition W12. The Consent Holder shall provide evidence of the verification in writing to MWRC's Regulatory Manager within one month of the verification being completed. ADVICE NOTE: Written verification can be sent to the Regulatory Manager via email compliance.shared@horizons.govt.nz –OR– via mail addressed to: C/- The Regulatory Manager, Horizons Regional Council, Private Bag 11025, Manawatu Mail Centre, Palmerston North 4442.	Compliant	Pahiatua WWTP flowmeters were last verified in July 2020. This consent commenced in July 2021. Thus, verification is due by July 2026.
W14	The Consent Holder shall, for the duration of this consent, maintain in a fully operational condition, a GPRS data logger / telemetry unit compatible with the MWRC's Telemetry system on the discharge line traceable to +/- 5 % or better. ADVICE NOTE: This unit, which is attached to the pulse counter output, will be monitored by the MWRC to ensure compliance with the resource consent	N/A	MWRC compliance officer to assess this condition.

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
	conditions.		
W15	Where telemetry equipment fails for reasons other than fair wear and tear, replacement or repair and recalibration will be at the Consent Holder's expense. Replacement or repair and recalibration will be within five working days.	Compliant	The telemetry system failed on 8 August 2024 for a few hours, as ADR was updating the WWTP UV system with regards to compliance with condition W5A. As soon as the update was completed, communication was also restored.
W16	With the exception of network power failure or network maintenance the Consent Holder shall ensure that power supply is maintained at the site at all times. ADVICE NOTE: If power supply is lost at the site due to Consent Holder negligence or abuse and telemetry units require recalibration by MWRC staff the costs associated will be recovered from the Consent Holder.	Compliant	Power supply was always maintained at site during the reporting period.
River and Wastewater Monitoring			
W17.	Prior to the relocation of the discharge point, the Consent Holder shall take samples from the Mangatainoka River at Reach B and Reach C. Once the discharge point has been relocated, the Consent Holder shall take samples from the Mangatainoka River at Reach A and Reach B as shown on Plan ATH-199501433.02A attached to and forming part of these consent conditions. The river samples shall be analysed for the constituents and at the frequency listed in Table 2 to assess compliance with conditions W8 and W9 of this consent. The wastewater samples shall be analysed for the constituents and at the frequency listed in Table 2 to assess compliance with conditions W1-W4 of this consent. ADVICE NOTE: pH, temperature, horizontal visibility and dissolved oxygen shall be measured on site, directly in the river. ADVICE NOTE: It is preferable that the downstream sample is collected before the upstream sample so that disturbed sediment does not impact the downstream sampling result. ADVICE NOTE: Testing for Dissolved Aluminium is only required if Alum is used as the flocculent.	Non-compliant	Effluent and in-river samples were collected monthly by MWRC except in November 2023 when no effluent sample was able to be collected as the WWTP was shut down for maintenance of the clarifier. All required constituents were measured except *E. coli* on 13 February 2024, when the sample was not tested by the lab on time and discarded. New samples were collected on 22 February but were tested outside the required timeframe, giving results of lower reliability; this non-compliance is considered Force Majeure with both occasions being outside of the control of both MWRC and TDC (email by D. Bentley-Hewitt, 28/02/2024). Tabulated results are in the supplementary material folder, file SM1.
W18.	Should a flocculent involving Aluminium be used, then from the date this consent commences: a. The Consent Holder shall assess annually for the first three years of this consent, and thereafter once every three years, the dissolved aluminium in-river monitoring results against a trigger concentration of 0.055 g/m3 and run a Wilcoxon Signed Rank test on the last 12 consecutive monthly samples to determine if there are any significant increases in dissolved aluminium concentration between upstream and downstream results. The results shall be interpreted in light of the wastewater dissolved aluminium results, to evaluate whether the discharge is a likely cause of any increase between upstream and downstream in-stream results. b. In the event that the median dissolved aluminium concentration exceeds	Compliant	In-river dissolved aluminium concentrations did not exceed the 0.055 g/m^3 limit on any occasion (median concentrations both upstream and downstream = 0.010 g/m^3). The Wilcoxon Signed Rank test did not indicate significant change from upstream to downstream ($p = 0.94$). Detailed results and analysis can be found in Appendix A, section 4.1 of the report required under W28.

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
	the trigger concentration of 0.055 g/m3, and that a significant increase is detected between upstream and downstream results, and that the discharge is a likely cause of that increase, an investigation into the risk of toxic effects due to dissolved aluminium shall be undertaken within one month of detecting the significant increase. The findings shall be reported in the annual report required by condition G11 of the general conditions. c. If the investigation in b. shows a likelihood of toxic effects then measures to address that situation shall be proposed by the Consent Holder and implemented subject to certification by the MWRC Regulatory Manager. ADVICE NOTE: To perform the statistical test, analysis needs to be against a minimum of 12 upstream and downstream paired results from the monthly sampling, accordingly no statistical test shall be performed until 12 samples have been collected.		
W19.	All wastewater and river water quality analyses shall be undertaken by an appropriate accredited laboratory. All methodologies adopted shall be appropriate for either wastewater or river water analyses respectively and the soluble cBOD5 shall be GF/C filtered. The methodologies shall be determined in consultation with the MWRC's Regulatory Manager.	Compliant	The analyses were carried out by Eurofins ELS Ltd which is an accredited laboratory. The methodology of analysis is agreed upon with MWRC's samplers and deemed to be appropriate against required conditions.
W20.	The Consent Holder shall have an appropriately experienced and qualified freshwater ecologist undertake macroinvertebrate sampling in the Mangatainoka River. The macroinvertebrate sampling shall be undertaken following a period of at least three weeks without a significant flood event (defined as an instantaneous river flow exceeding three times the median flow, defined as 26.7 m3/s in the Mangatainoka River at Pahiatua Town Bridge) and during a period of low flow (at least one week below ½ median flow in the Mangatainoka River at Pahiatua Town Bridge defined as 4.45 m3/s).	N/A	Macroinvertebrates were collected during the 2021–2022 monitoring period, and as the discharge relocation has not yet been commissioned no further macroinvertebrate sampling was required, as per condition W21. Nevertheless, TDC contracted Traverse to collect and process macroinvertebrates from all three sites, to establish a baseline record of the macroinvertebrate communities across the three reaches. The relevant data and assessments can be found appended to the report required under W28, which can be found in Appendix A.
W21.	Macroinvertebrate sampling referred to in condition W20 is to be undertaken: a. once prior to the commissioning of the new discharge location, between January and April inclusive, at Reach A, Reach B and Reach C; b. following commissioning of the new discharge location, annually between January and April inclusive for three years at Reach A and Reach B. Should flow conditions defined in condition W20 not be met, monitoring shall occur in the following year until three monitoring rounds are completed; c. Thereafter, every three years at Reach A and Reach B between January and April inclusive and in any other year if one or more of the parameters of condition W8 are exceeded.		
W22.	The macroinvertebrate sampling shall follow Protocols C3 (Hard-bottomed quantitative), P3 (full count with subsampling option) and QC3 (Quality control for full count with subsampling option) from the Ministry for the Environment's "protocols for sampling macroinvertebrates in wadeable streams" (Stark et al.		

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
	2001). This shall involve: a. collection of five replicate 0.1 m2 Surber samples at random within a 20 m section of riffle habitat at each sampling site; b. full count of the macroinvertebrate taxa within each replicate sample to the taxonomic resolution level specified for use of the Macroinvertebrate Community Index (MCI); c. enumeration of the results as taxa richness, MCI, QMCI, %EPT taxa and %EPT individuals; and d. Analysis of the QMCI results using equivalence testing at the 20% interval. e. The freshwater ecologist shall ensure the physical characteristics (including but not limited to substrate, depth, velocity, shading) of the upstream and downstream sites shall, as far as is practicable, provide a similar/adequate match.		
W23.	The Consent Holder shall have an appropriately experienced and qualified freshwater ecologist undertake monthly assessments of periphyton in each month of the year. The assessments shall be undertaken: a. prior to the commissioning of the new discharge location, regardless of river flow, Reach A, Reach B and Reach C approximately 200m downstream of Town Creek; and b. following commissioning of the new discharge location, regardless of river flow, for three years at Reach A and Reach B; and c. Thereafter, for twelve months, once every three years at Reach A and Reach B. The periphyton assessment is to include: d. a visual assessment of the percentage cover of both filamentous algae and algal mats (to the nearest 5%) at 5 points across each of four transects encompassing run habitat, and extending across the width of the river at each sampling site. The visual monitoring methods shall follow the protocols outlined in Appendix 2 of "A periphyton monitoring plan for the Manawatu-Wanganui Region" (Kilroy et al. 2008). Reported estimates shall include: i. percentage cover of visible stream or river bed by bacterial and/or fungal growths (sewage fungus) visible to the naked eye; ii. percentage cover of visible stream or river bed by filamentous algae more than 2 cm long; iii. percentage cover of visible stream or river bed by diatoms or cyanobacteria mats more than 0.3 cm thick; iv. percentage cover of visible stream or river bed by diatoms less than 0.3 cm thick; and v. percentage cover of visible stream or river bed that is clean. e. the collection of a periphyton sample at the same established	Compliant	Periphyton was monitored monthly throughout the monitoring period at all three Mangatainoka River reaches. Samples were not collected during July 2023 due to flows in the Mangatainoka exceeding 55 m^3/s. Periphyton for that month was assumed to have a biomass less than 120 mg/m^2. During the August to October and December 2023 and June 2024 sampling occasions flow in the Mangatainoka River was below 55 m^3/s, but still too high to safely undertake sampling. These months were excluded from all periphyton assessments. Assessment included and reported on percentage cover of visible riverbed by sewage fungus, filamentous algae (>2 cm long), diatom/cyanobacteria mats (>0.3 cm thick), diatom mats (<0.3 cm thick), and riverbed that was clean. Samples were also analysed for chlorophyll a and Ash-Free Dry Weight (AFDW). Detailed results and analysis can be found in Appendix A, section 4.2 of the report required under W28.

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
	monitoring sites and transects as defined in condition W23(a) above, using method QM-1b from the Stream Periphyton Monitoring Manual (Biggs & Kilroy 2000). A minimum of 10 samples shall be collected at each site. All samples collected at each site shall be pooled for analysis. Analysis of periphyton samples shall follow the Biggs & Kilroy (2000) guidelines for chlorophyll a and Ash Free Dry Weight analysis. f. If flow conditions in the Mangatainoka River render the assessment unsafe and/or unfeasible then: i. if the maximum instantaneous flow in the preceding five day period is found to have exceeded 55 m3/s in the Mangatainoka River at Pahiatua Town Bridge, the occasion shall be included for compliance purposes, and shall be assumed to have a biomass less than 120 mg/m2. ii. if the maximum instantaneous flow in the preceding five day period is found to be less than 55 m3/s in the Mangatainoka River at Pahiatua Town Bridge, repeat monitoring shall be undertaken, within a seven day period. iii. if repeat monitoring is unable to be undertaken within a seven day period due to high flows, then: a. if the maximum instantaneous flow in the preceding five-day period is found to have exceeded 55m3/s in the Mangatainoka River at Pahiatua Town Bridge, the occasion shall be included for compliance purposes and shall be assumed to have a biomass less than 120 mg/m2; b. if the maximum instantaneous flow in the preceding five-day period is found to not have exceeded 55 m3/s in the Mangatainoka River at Pahiatua Town Bridge, the measurement shall be excluded from the compliance analysis, and an additional sampling occasion shall be added to the end of the monitoring period. ADVICE NOTE: The increase between upstream and downstream periphyton cover (condition W9f) shall be calculated as the difference between the % cover downstream minus the % cover upstream. For example, filamentous algae covers of 40% upstream and 55% downstream represent a 15 point increase in filamentous algae cover.		
W24	In the first year after relocation of the discharge, the Consent Holder shall have an appropriately experienced and qualified person undertake a one off continuous dissolved oxygen monitoring programme at the points upstream and downstream of the new discharge location (Reaches A and B). This is to be undertaken following a period of at least three weeks without a significant flood event (defined as an instantaneous river flow exceeding three times the median flow, defined as 26.7	N/A	The relocation of the discharge has not been commissioned yet; thus, this condition is not applicable for this monitoring period.

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
	m3/s in the Mangatainoka River at Pahiatua Town Bridge) and during a period of low flow (at least one week below ½ median flow in the Mangatainoka River at Pahiatua Town Bridge defined as 4.45 m3/s). Monitoring is to occur for no less than 11 days in the period of November to April in the first year where flows in the Mangatainoka River are suitable. ADVICE NOTE: The 11 days during which monitoring takes place need not be consecutive days.		
W25	The continuous dissolved oxygen monitoring is to be undertaken in accordance with the National Environmental Monitoring Standards document for Measuring, Processing and Archiving of Dissolved Oxygen Data (version 2, dated July 2016). The monitoring results shall be compared against the thresholds for Dissolved Oxygen in the latest National Policy Statement for Freshwater Management. The results shall be summarised in a short report to be provided to the MWRC's Regulatory Manager within three months of the monitoring taking place. The report shall include but is not limited to: a. equivalence testing (with a 10% interval) on a rolling 7-day mean minimum calculated for both upstream and downstream; b. an assessment of the 1 day mean minimum for upstream and downstream over the monitoring period; and c. an assessment of whether the discharge caused an adverse impact on DO in the receiving environment, and an assessment of the likely significance of effects on aquatic life.	N/A	This condition is linked to condition W24, and as the discharge relocation has not been commissioned yet, continuous dissolved monitoring is not required for this monitoring period.
Post-development assurance			
W25A	At least once every five years, or earlier if there is an unexplained increase in flows, the Consent Holder must review records of wastewater flows received at the treatment plant to ensure there has been no unexplained increase in flows (based on a five year running average) that could adversely affect treatment plant performance. The results of the review must be included in the next annual monitoring report to the Regulatory Manager as required by condition G11. In the event that the review shows that unexplained increased flows could result in adverse effects on treatment plant performance, the permit holder must investigate the reasons for the unexplained increased flows and put in place remedial works as necessary. In the event there is disagreement between the Consent Holder and MWRC in relation to the need for investigations and/or remedial works, the Consent Holder must commission an independent review by a suitably qualified expert acceptable to the Consent Authority.	N/A	The consent commenced in July 2021; thus, this review should take place by July 2026.
W26	The Consent Holder shall notify the MWRC's Regulatory Manager within two working days of any non-compliance occurring or when it becomes certain that a breach of consent conditions is about to occur. For conditions requiring compliance with a particular water quality standard, notification is required within two working days of receipt of the water quality analysis from the	Compliant	TDC is currently implementing CS-vue and Water Outlook and any non-compliances are being reported in time.

Pahiatua WWTP – Discharge to Water ATH-199501433.02		Compliance	Notes
	laboratory.		
W27	The Consent Holder shall make results of monitoring undertaken required by conditions W17 and W18 of these consents available to the MWRC's Regulatory Manager on request, and data records for each three month period ending March, June, September and December shall be forwarded to MWRC's Regulatory Manager in a suitable electronic format, within 14 days after the end of each three monthly period.	Compliant	TDC initiated forwarding results to MWRC in January 2024, and has so far submitted the results for the first two quarters of 2024.
W28	By 31 October each year, the Consent Holder shall prepare a report that summarises and assesses all of the monitoring information required under conditions W17, W18, W20, W21, W23 and W24 of these consents. This report should be included in the Annual Environmental Report required by condition G11 of the general conditions.	Compliant	The report required by this condition has been appended as Appendix A to the present report.

Table 4: Summary of compliance with conditions of consent ATH-2016200747 and ATH-2017201544.00 for the period July 2023–June 2024.

Pahiatua WWTP – Pond & Wetland Seepage ATH-2016200747 and ATH-2017201544.00		Compliance	Notes
Descriptive specification			
DL1	Permeability Investigations Within six months of commencement of this consent, the Consent Holder shall submit to the MWRC's Regulatory Manager a plan to investigate the rate of leakage of all the existing treatment ponds. The plan shall include, but not be limited to: a methodology for a water balance to be undertaken for each of the ponds. As a minimum inflows and outflows from the treatment system shall be recorded over a 12 month period, as shall local daily rainfall. The methodology shall also include a representative exercise for measuring pond levels and for the measurement and recording of representative evaporation rates; or other suitable method to determine rate of leakage of each of the treatment ponds. a. The methodology proposed shall be peer reviewed by an independent and suitably qualified expert. b. Results from the water balance undertaken in accordance with the peer reviewed methodology shall be submitted to the MWRC's Regulatory Manager and the TDWF within six months of the completion of the 12 month monitoring period.	Non-compliant	The extension granted by MWRC to allow submission of the investigation plan by 31 July 2023 was not met. A Statement of Work (SoW) was signed on 13 September 2023 for WSP to undertake the investigation and MWRC granted an extension to the reporting date to 19 October 2024. While the investigation is underway, the level sensor in pond 2 was only installed in June 2024 and there have been issues with data quality. The investigation report is expected to be submitted in July 2025.
DL2.	By 1 February 2023, the Consent Holder shall submit a report to the MWRC's Regulatory Manager and TDWF, prepared by an independent and suitably experienced and qualified water quality scientist(s), which shall include but not be limited to: a. An assessment of the effects of the discharge through the base and walls of the ponds on both groundwater and surface water as is able to be determined from the analyses and records collected in accordance with conditions of these consents; b. A comment on the extent to which the discharge from the existing ponds and/or constructed wetland is causing, or contributing to, (outside the uncertainty of measurement for the sample) any exceedance of One Plan Schedule E targets in the Mangatainoka River. Should more than minor effects of pond seepage on surface and/or groundwater quality be identified, an assessment of options (BPO) to mitigate any more than minor adverse effects, including an assessment from an independent IPENZ Chartered geotechnical engineer as to whether relining existing wastewater ponds to a permeability standard of 1x10-9 m/s is practicable (this shall include an economic assessment).	Non-compliant	This assessment has been delayed as it requires the permeability investigation to be completed. TDC have engaged Traverse Environmental Ltd to undertake the assessment.
DL2A	18 months after the wetland treatment system is fully established, but no later than 1 January 2029, the Consent Holder shall submit a report to MWRC's Regulatory Manager and TDWF prepared by an independent and suitably experienced and qualified water quality scientist(s), which shall include but not be limited to comments on the extent to which the discharge from the constructed wetland treatment system is causing, or contributing to, (outside the uncertainty of measurement for the sample) any exceedance of One Plan Schedule E targets in the Mangatainoka River.	N/A	The wetland system has not been established yet. Therefore, there is no need for this report to be submitted to MWRC and TDWF yet.

Pahiatua WWTP – Pond & Wetland Seepage ATH-2016200747 and ATH-2017201544.00		Compliance	Notes
DL3	Groundwater monitoring Within three months of the date of commencement of this consent, the Consent Holder shall install three groundwater monitoring wells on the site at or as near as practicable to the locations specified on Plan ATH-199501433.02 A and to the following specifications: a. The monitoring wells shall have a diameter of a sufficient size (i.e. approximately 50mm) to enable sampling for the analysis of water quality. b. The wells shall be screened from approximately 1 m above to approximately 2 m below the level of the bed of the Mangatainoka River. c. The wells shall be constructed of polyvinyl chloride (PVC) or a similar inert material and shall be capped and secured to prevent entry of surface water. d. The well head should be located within a 'toby', set in concrete, to prevent damage e. A concrete pad at least 0.3 metres radius shall be constructed around the well head and 'toby' to prevent leakage around the casing. The concrete pad shall slope away from the bore. f. The wells shall be installed by a suitably qualified person(s) and constructed in accordance with the New Zealand Standard for Drilling Rock and Soil NZS 4411:2001.	Compliant	The groundwater monitoring wells were installed 30 April 2024 and groundwater monitoring has commenced (MWRC had granted an extension to the original date of October 2021 to allow installation by 26 April 2024).
DL4	The Consent Holder shall take samples from all bores identified in condition DL3 in accordance with the most recent version of the MfE Groundwater sampling protocols (2006). Sampling shall be undertaken quarterly in the months of January, April, July and October for a period of two years following commencement of consent, thereafter reducing to six-monthly in January and July.	Compliant	Groundwater monitoring commenced on 30 April 2024 and is being undertaken monthly.
DL5	Samples collected under condition DL4 shall be analysed for the following: a. Total Phosphorus (TP) b. Dissolved Reactive Phosphorus (DRP) c. Total Nitrogen (TN) d. Nitrate Nitrogen (NO3-N) e. Nitrite Nitrogen (NO2-N) f. Escherichia coli (*E. coli*) g. Dissolved oxygen (field measurements) h. Electrical Conductivity (EC) (field measurements) i. Chloride j. Static water level k. pH (field measurement and laboratory measurement)	Compliant	Groundwater samples were collected and analysed for the required constituents. (see supplementary material folder, SM1 and SM14)
DL6	Wetland Design, Development and Construction Within 12 months of commencement of this consent, the Consent Holder shall submit to the MWRC Regulatory Manager, a construction design plan for the development phase of both the wetland treatment system and biodiversity wetlands (together making up the "wetlands"). The wetlands are to be designed by an appropriately qualified and experienced expert, and in consultation with relevant iwi authorities and located in general	Non-compliant (with original reporting timeframe- since revised)	A construction design plan will be submitted for approval in December 2024. See the supplementary material folder (SM6) for the concept design draft from Tonkin & Taylor.

Pahiatua WWTP – Pond & Wetland Seepage ATH-2016200747 and ATH-2017201544.00		Compliance	Notes
	accordance with Plan ATH-199501433.02 A attached to and forming part of this consent, with necessary modifications. The construction design plan shall include but not be limited to information demonstrating the following matters – Construction and Establishment phase of wetland treatment system wetland a. Construction design of the wetland treatment system: i. The design shall demonstrate that, once constructed, the average water depth of the vertical flow wetland shall not be less than 1.25m and for the surface flow wetland shall not exceed 300mm and the maximum water depth shall not exceed 500mm. ii. A functional explanation of the hydraulic structures (weirs) that will be utilised to ensure the depths are not exceeded shall be provided. iii. Details of reinforced flood sills for the upstream and downstream ends. iv. A surface flow wetland width to length ration of ideally between 1:3 and 1:5 and not more than 1:10. v. The total wetland surface area shall be not less than 3,725M2, comprising 1,282m2 for the vertical flow wetland and 2,443m2 for the surface flow wetland. b. Final details of design of the weirs: i. each weir shall be built with a reinforced spillway: c. Information demonstrating that 50% of the expected maximum treated wastewater flow shall be retained in the surface flow wetland for not less than 24 hours. d. The construction design plan shall contain a specific planting plan to demonstrate how the vegetation shall be planted within two planting seasons following completion of bulk earthworks. e. Planting in the surface flow wetland shall be at a density of not less than two plants per square metre and the entire base of the surface flow shall be planted. f. Details shall be provided of the source of clay material to be used to line the surface flow wetland and anticipated permeability to be achieved once constructed. This is to include confirmation that the source of clay is not 'dispersive' in nature. g. The construction design plan shall demonstrate that the topsoil stripped to allow for the formation of the surface flow wetland shall be relaid in the surface flow wetland prior to planting. h. The construction design plan shall include information demonstrating how the wastewater treatment plant shall be managed so as to allow for gradual introduction of the treated wastewater to the wetland treatment system to allow for planted seedlings to adapt to the fully saturated conditions. i. The construction design plan shall demonstrate how the formation of preferential flow paths will be prevented within the surface flow wetland, and if preferential flow paths do develop, the process to follow to address them.		

Pahiatua WWTP – Pond & Wetland Seepage ATH-2016200747 and ATH-2017201544.00		Compliance	Notes
	j. The construction design plan shall include details of fencing to exclude livestock from the wetland treatment system. Construction and Establishment phase of biodiversity wetland k. Final details of the biodiversity wetland including construction of bunds to prevent the discharge of treated wastewater down lateral drains; l. Construction of final culvert or weir structure at the outlet; m. Details of erosion resistant structure linking the treatment wetland with the biodiversity wetland; n. Details of fencing to exclude stock from the wetland; o. A specific planting plan to demonstrate how the vegetation in the biodiversity wetland shall be fully planted within 2 years following of the completion of the earthworks associated with the biodiversity wetland; and p. Requirements for minimum area of biodiversity wetland.		
DL6A-DL10G & DL11	The Consent Holder must complete planting of the wetland treatment system within two planting seasons following completion of bulk earthworks and no later than 1 July 2025.	N/A	The wetland system has not been established. 1 July 2025: Due date for completion of planting of the WTS. These conditions are not applicable for this monitoring period.
DL10H	The methodology required by DL10G (b) must be sent to the MWRC's Regulatory Manager for certification within 30 months of consent commencement.	N/A	26 July 2021: Commencement of consent. 26 January 2024: Due date for submission of methodology required by condition DL10G(b). This condition is not applicable yet, as the WTS has not been established.
DL12	All wastewater and bore water quality analyses shall be undertaken by an appropriate accredited laboratory.	N/A	Wastewater and groundwater analyses are being undertaken by Central Environmental Laboratories (CEL), which is an accredited laboratory.
DL13	Results of the monitoring required by condition DL5 of this consent shall be transferred within ten working days of their receipt to the MWRC in a format compatible with the MWRC systems.	Non-compliant	Groundwater monitoring results were not transferred to MWRC as required during the reporting period.
DL14	The results from the monitoring required by condition DL5 of this consent shall be collated, analysed and interpreted and included in the Annual Report, as required by condition G11 in the General Conditions to these consents.		Results from groundwater monitoring required by condition DL5 will be presented, analysed and interpreted in the report by WSP, expected by July 2025.

Table 5: Summary of compliance with conditions of consent ATH-2018202078.00, ATH-2018202079.00 and ATH-2018202080.00 for the period July 2023–June 2024.

Earthworks, Bund & Diversions: ATH-2018202078.00, ATH-2018202079.00 and ATH-2018202080.00		Compliance	Notes
EW1-EW30		N/A	No earthworks have been undertaken during this assessment period and as such none of the conditions in relation to this consent are applicable. Earthworks are programmed for 2025.

3 Condition assessments

3.1 General conditions

3.1.1 Condition G2: wastewater discharge volumes

During the current reporting period:

- The 12-month rolling median of the total daily discharge exceeded 1,200 m^3 on 20 days:
  - 16 days in the beginning of the period (1–16/07/2023), ranging between 1204 m^3/d and 1261 m^3/d. On those days, the daily discharges did not exceed 1,200 m^3/day, consequently, the median exceedances resulted from increased discharges during the previous monitoring period.
  - 4 days in September 2023 (1–4/09/2023), 1204.3 m^3/d on all four days.
- The 12-month rolling 95th percentile of total daily discharge volumes did not exceed 2,000 m^3/day on any occasion, and ranged between 1,478 and 1,722 m^3/day.

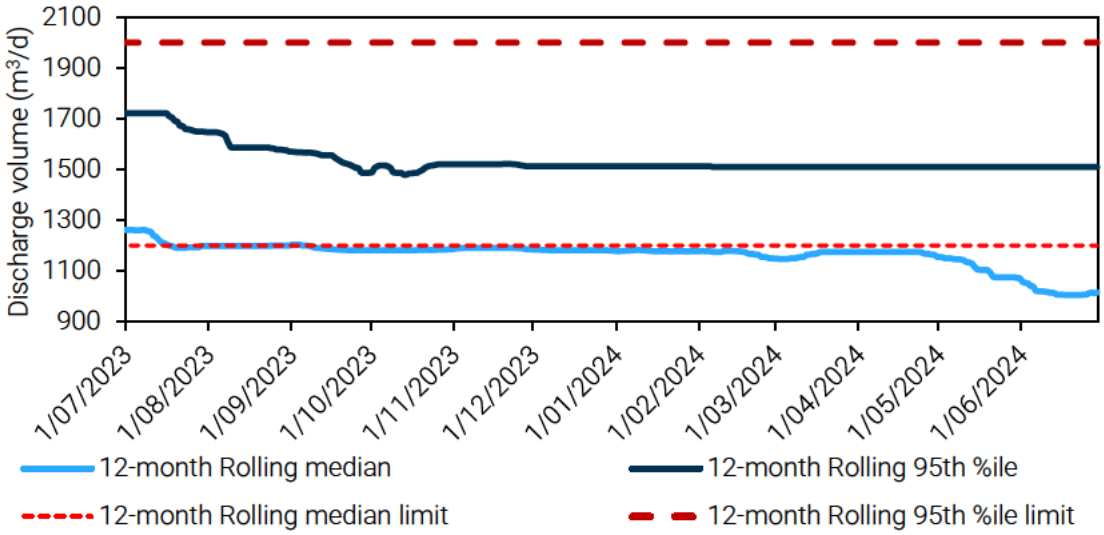


Figure 1: 12-month rolling median and 12-month rolling 95th percentile of the treated wastewater discharged from the Pahiatua WWTP from July 2023 until June 2024, along with the relevant standards required by the condition. Data from July 2022 until June 2024 were used for the calculation of the rolling averages.

3.1.2 Condition G8: signage

Figure 2: Signage installed by TDC, informing river users that treated wastewater is being discharged into the Mangatainoka River.

3.2 Discharge to air conditions

3.2.1 Condition A6: Dissolved oxygen (DO) monitoring

The pond aerators are programmed to start automatically when DO concentration in pond 1 falls below 0.5 mg/L. A total of 35% of measured concentrations fell below this threshold although, when DO was assessed as a daily average, this reduced to 10% of the time (Figure 3).

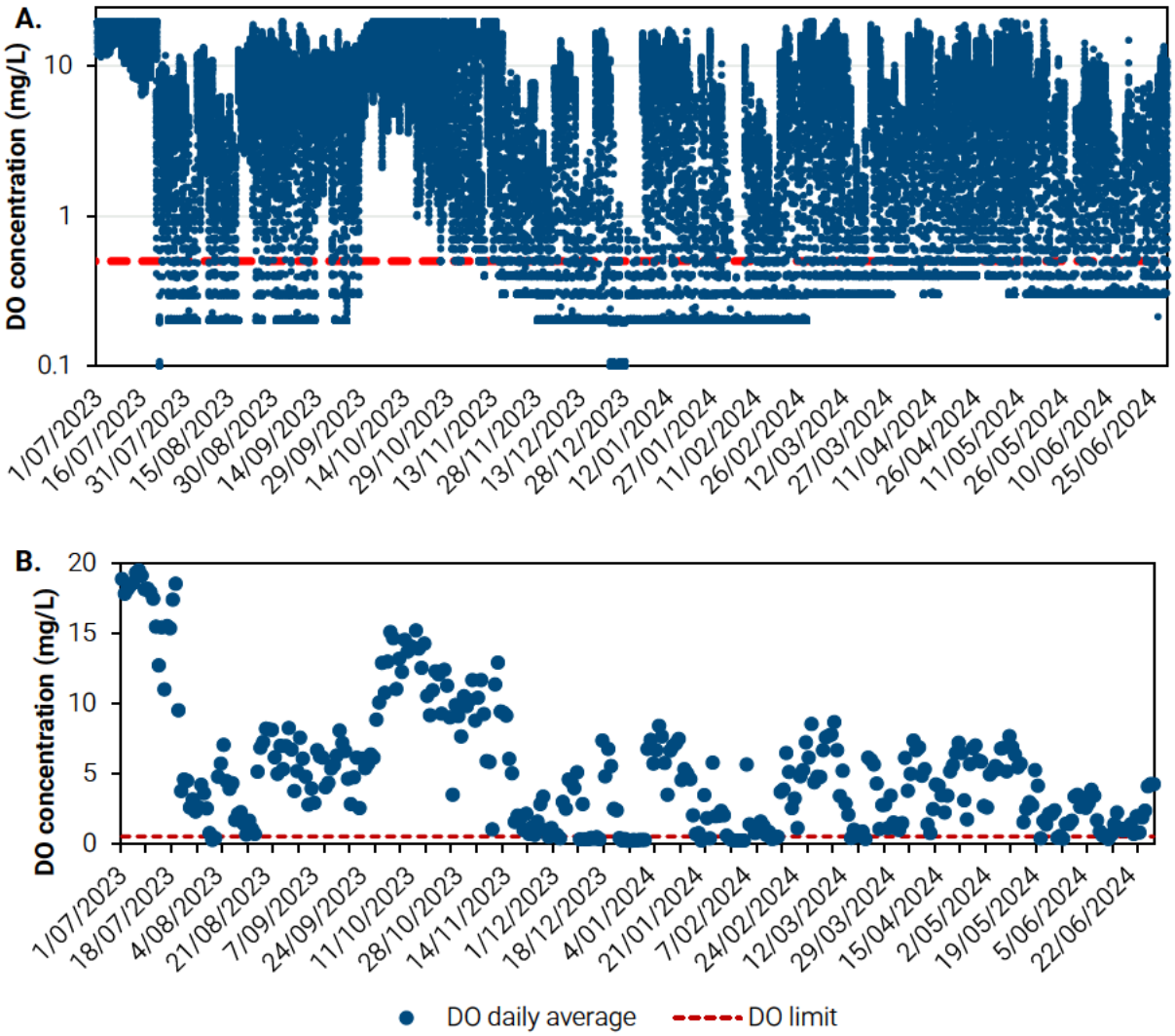


Figure 3: A)15-minute and B) daily average DO concentrations in Pond 1 of the Pahiatua WWTP, from 1 July 2023 to 30 June 2024. The dashed red line represents the 0.5 mg/L standard required by the consent condition.

3.3 Discharge to water conditions

3.3.1 Conditions W1 and W3: effluent water quality

Table 6: NH4N, scBOD5 and TSS concentrations in effluent samples collected from the Pahiatua WWTP discharge between July 2023 and June 2024. For each parameter, the condition specifies two thresholds (lower and upper), above which exceedances are limited. Yellow highlighted numbers exceeded the lower threshold and red highlighted numbers exceeded the upper threshold.

Date	NH_4N (g/m^3)	$scBOD_5$ (g/m^3)	TSS (g/m^3)
18/07/2023	15.4	< 1	8
15/08/2023	13.6	< 1	4
26/09/2023	14.8	< 1	11
10/10/2023	11	< 1	24
November 2023	-	-	-
12/12/2023	8.78	< 1	21
16/01/2024	4.52	< 1	18
13/02/2024	0.965	< 3	65
12/03/2024	2.17	< 1	24
09/04/2024	5.56	< 1	10
14/05/2024	0.288	< 1	13
14/06/2024	3.67	< 1	26

3.3.2 Conditions W2 and W4: Effluent quality during flows < 20th Flow Exceedance Percentile (FEP) flow

Samples from 13 February 2024 were not analysed by the ELS lab for *E. coli* on time and were discarded. New samples were collected on 22 February but were analysed outside the required timeframe, with the results being considered of lower quality (email from D. Bentley-Hewitt, 26/02/2024).

Table 7: *E. coli* and DRP concentrations in effluent samples collected from the Pahiatua WWTP discharge between July 2023 and June 2024. Samples were assessed for compliance when flows in the Mangatainoka River were below the 20th FEP (23.337 m^3/s).

Date	Flow (m^3/s)	*E. coli* (MPN/100ml)	DRP (g/m^3)
18/07/2023	15.89	< 4	0.056
15/08/2023	25.25	< 4	0.029
26/09/2023	19.29	< 4	0.116
10/10/2023	8.91	< 4	0.041
November 2023	-	-	-
12/12/2023	3.80	< 4	0.029
16/01/2024	9.92	< 4	0.013
13/02/2024	2.63	-	0.004
22/02/2024	1.79	< 4	-
12/03/2024	1.26	< 4	0.003
09/04/2024	3.32	< 4	0.007
14/05/2024	1.45	< 4	0.007
14/06/2024	1.66	< 4	0.008

3.3.3 Condition W5A: UV sensor

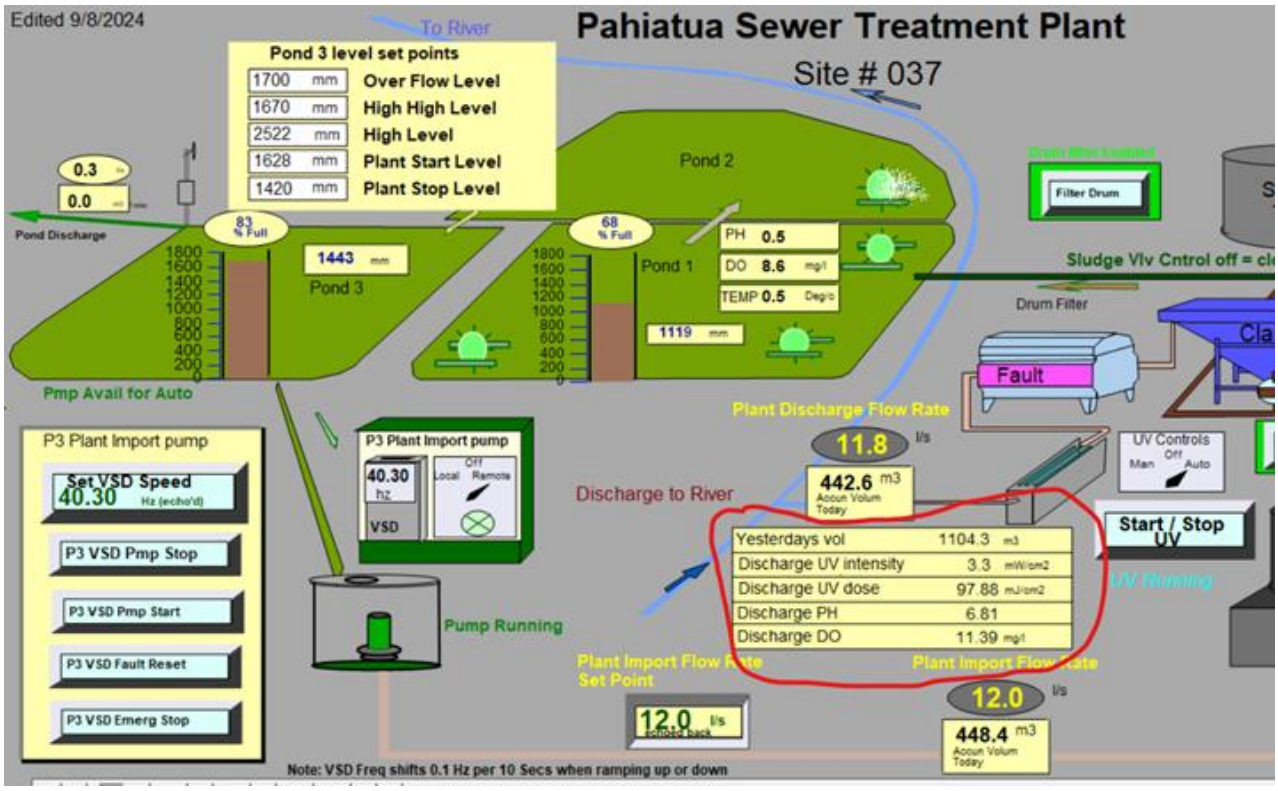


Figure 4: Graphical representation of the Pahiatua WWTP, with the UV system display circled after the system update

3.3.4 Condition W8: Effects in Mangatainoka River

3.3.4.1 W8(d) – Horizontal visibility

The Black Disc (BD) method of measuring horizontal visibility was not used on any occasion during this reporting period, with unsafe access or low flows cited as the reasons. A clarity tube (CT) was used instead. Clarity tube measurements were converted to BD estimates as per Kilroy and Biggs (2002). CT values up to 0.5 m were considered approximately equivalent to BD values. CT values between 0.5 and 0.95 m were converted to approximate BD values based on the equation in Kilroy and Biggs (2002) below. CT values greater than 0.95 m could not be transformed and were approximated as "> 2 m" BD values.

$$Y_{BD} = 7.28 \times 10^{(YCT/62.5)}$$

where: Y_{BD} = horizontal distance of the black disk (in cm)

Y_{CT} = distance of the clarity tube (in cm).

This conversion provides approximate black disc values only, as this formula was derived using data solely from Canterbury streams, and its applicability to the Mangatainoka River is unknown.

BD estimates (Table 8):

- indicated a decrease from upstream to downstream greater than 20% (the threshold specified in condition W8(d)) in August and September 2023. Condition W9(a)i requires repeat measurements on the same monitoring occasion, but none were provided by MWRC. CT measurements also indicated a decrease greater than 20%.
- indicated an increase from upstream to downstream, in July and November 2023.
- could not be assessed in October 2023 and between December 2023 and May 2024, as CT records were "> 0.95 m".

TSS results for this monitoring period were always below detection limit, both upstream and downstream from the discharge. On most monitoring occasions, turbidity results were lower downstream of the discharge, including on the two occasions when visual clarity is estimated to have decreased by more than 20%. The discrepancy between the two sets of results (i.e., lower visual clarity would normally equate to higher turbidity) suggests that there may have been an error in the clarity measurements. Based on the turbidity measurements, the discharge does not appear to have had any significant effect on water clarity.

Table 8: SHMAK clarity tube horizontal visibility and estimated black disc values from samples collected in the Mangatainoka River, upstream (U/S – Reach B) and downstream (D/S – Reach C) from the Pahiatua WWTP discharge, along with TSS and turbidity measurements, and relative change from upstream to downstream, where that could be calculated. Red highlighted cells indicate relative decrease in visual clarity greater than 30%.

Date	Clarity tube (m)			Black Disc estimates* (m)			TSS		Turbidity		
	U/S	D/S	%Δ	U/S	D/S	%Δ	U/S	D/S	U/S	D/S	%Δ
18/07/2023	0.7	74	6%	0.96	1.11	16%	<3	<3	2.04	2.12	4%
15/08/2023	1	68	-32%	> 2	0.89	≤-55%	<3	<3	4.35	3.85	-11%
26/09/2023	1	79	-21%	> 2	1.34	≤-33%	<3	<3	1.54	1.32	-14%
10/10/2023	>0.95	>0.95	-	> 2	> 2	-	<3	<3	0.67	0.74	10%
14/11/2023	0.9	94	4%	2.01	2.32	16%	<3	<3	0.75	0.59	-21%
12/12/2023	>0.95	>0.95	-	> 2	> 2	-	<3	<3	1.13	0.9	-20%
16/01/2024	>0.95	>0.95	-	> 2	> 2	-	<3	<3	0.37	0.32	-14%
13/02/2024	>0.95	>0.95	-	> 2	> 2	-	<3	<3	0.8	0.41	-49%
12/03/2024	>0.95	>0.95	-	> 2	> 2	-	<3	<3	0.43	0.34	-21%
09/04/2024	>0.95	>0.95	-	> 2	> 2	-	<3	<3	0.49	0.32	-35%
14/05/2024	>0.95	>0.95	-	> 2	> 2	-	<3	<3	0.36	0.32	-11%
14/06/2024	77	75	-3%	1.24	1.15	-7.1%	<3	<3	0.44	0.48	9%

* Black disc estimates were derived using generalised equations in Kilroy and Biggs (2002).

3.3.4.2 W8(e) Ammoniacal nitrogen, W8(f) POM and W8(j) scBOD$_5$

Ammoniacal nitrogen

Ammoniacal-N concentrations did not exceed 2.1 g/m^3, or, as a rolling annual average, 0.4 g/m^3 on any sampling occasion.

POM

POM concentrations were always recorded as below the detection limit of 3 g/m^3 during the monitoring period, both upstream and downstream from the discharge, and the same was the case for most of the 2022–2023 period (Table 9). Consequently, the rolling annual average could not be calculated. However, assuming a very conservative and worst-case scenario, where the actual concentrations were always at the detection limit, the rolling annual average would still have not exceeded the condition W8(f) limit of 5 g/m^3 on any occasion.

$scBOD_5$

$ScBOD_5$ concentrations were recorded below the detection of 1 g/m^3 on most occasions, and once below a detection limit of 3 g/m^3. The same was the case for the 2022–2023 period, with the detection limits being even higher (most < 3 g/m^3, but also < 6 g/m^3). Consequently, the rolling annual average could not be calculated. Due to the large range of detection limits reported during these reporting periods, with many of them being higher than the condition W89(j) limit of 1.5 g/m^3, an approach similar to that followed for POM was not deemed meaningful.

Table 9: NH_4N, POM and $scBOD_5$ concentrations from samples collected from the Mangatainoka River, upstream (U/S – Reach B) and downstream (D/S – Reach C) from the Pahiatua WWTP discharge, along with average river flow on the day of sampling, and rolling annual average from upstream to downstream, where that could be calculated.

Date	Flow	NH_4N (g/m^3)			POM (g/m^3)			$scBOD_5$ (g/m^3)	
	m^3/s	U/S Reach B	D/S Reach C	Rolling Annual Average D/S	U/S Reach B	D/S Reach C	Rolling Annual Average D/S*	U/S Reach B	D/S Reach C
18/07/2023	15.9	0.005	0.018	0.015	< 3	< 3	3	<1	<1
15/08/2023	25.4	0.002	0.014	0.013	< 3	< 3	3	<1	<1
26/09/2023	19.3	0.011	0.023	0.012	< 3	< 3	3	<1	<1
10/10/2023	8.91	0.004	0.008	0.012	< 3	< 3	3	<1	1
14/11/2023	3.80	0.015	0.009	0.012	< 3	< 3	3	<1	<1
12/12/2023	9.92	0.002	0.006	0.011	< 3	< 3	3	<1	<1
16/01/2024	2.63	0.013	0.031	0.012	< 3	< 3	3	<1	<1
13/02/2024	1.79	0.011	0.009	0.012	< 3	< 3	3	<1	<3
12/03/2024	3.32	0.008	0.008	0.012	< 3	< 3	3	<1	<1
09/04/2024	1.45	0.009	0.014	0.013	< 3	< 3	3	2	<1
14/05/2024	1.66	<0.001	<0.001	0.012	< 3	< 3	3	<1	<1
14/06/2024	5.74	0.023	0.012	0.013	< 3	< 3	3	<1	<1

*POM rolling annual average calculated under the conservative assumption that all <DL records were equal to the detection limit.

3.3.4.3 W8(g) Periphyton biomass (chlorophyll *a*)

Conditions W8(g) and W9(i) require 36 periphyton biomass samples (collected under condition W23) to assess compliance with the limit of 120 mg/m^2 in condition W8(g). By the end of the reporting period, only 30 chlorophyll *a* results could be included in the analysis (Figure 5): 15 that came from samples and 15 that were assumed compliant as per condition W23. Consequently, compliance with the condition 8(g) standard of 120 mg/m^2 on no more than 8% of monitoring occasions could not be assessed during this reporting period.

Preliminary analysis of the results found chlorophyll *a* to exceed 120 mg/m^2 downstream from the current discharge (Reach C) three times since July 2021 (10% of occasions), once during each reporting period. However, only one of those exceedances (January 2022) was not matched by a similar or larger exceedance in at least one of the upstream sites. Concentrations in Reach A exceeded 120 mg/m^2 on five occasions (17%), and in Reach B on four (13%).

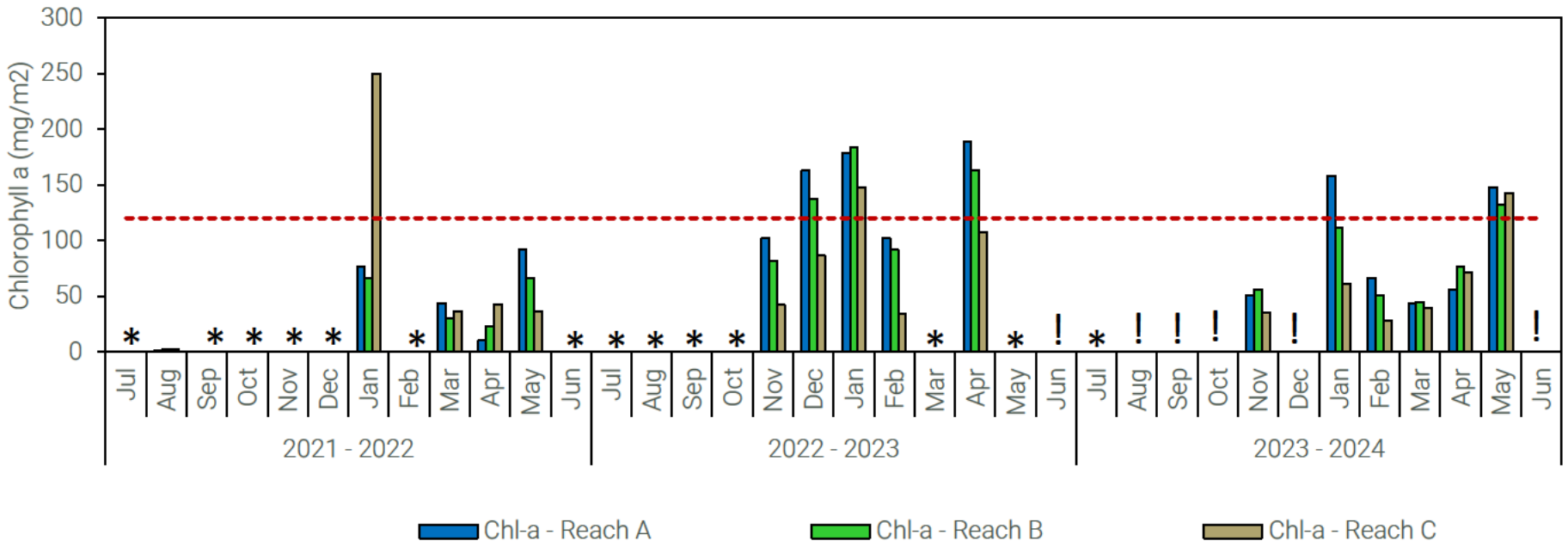


Figure 5: Mangatainoka River monthly chlorophyll *a* concentration upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP discharge, from the 2021/22 to the 2023/24 reporting periods. The red dashed line represents the consent limit of 120 mg/m^2. Asterisks denote occasions when sampling could not be undertaken due to flows over 55 m^3/s in the Mangatainoka River (compliance assumed), and exclamation marks denote occasions when sampling could not be undertaken due to flows below 55 m^3/s, but still too high to safely undertake sampling.

3.3.4.4 W8(h) Riverbed cover by filamentous algae (> 2 cm long) and algal mats (> 0.3 cm thick)

At the downstream site, the cover of filamentous mats greater than 2 cm long did not exceed the condition W8(h) limit of 30% on any of the monitoring occasions in 2023/24. Similarly, the cover by mats greater than 3 mm thick did not exceed the condition limit of 60% (Figure 6).

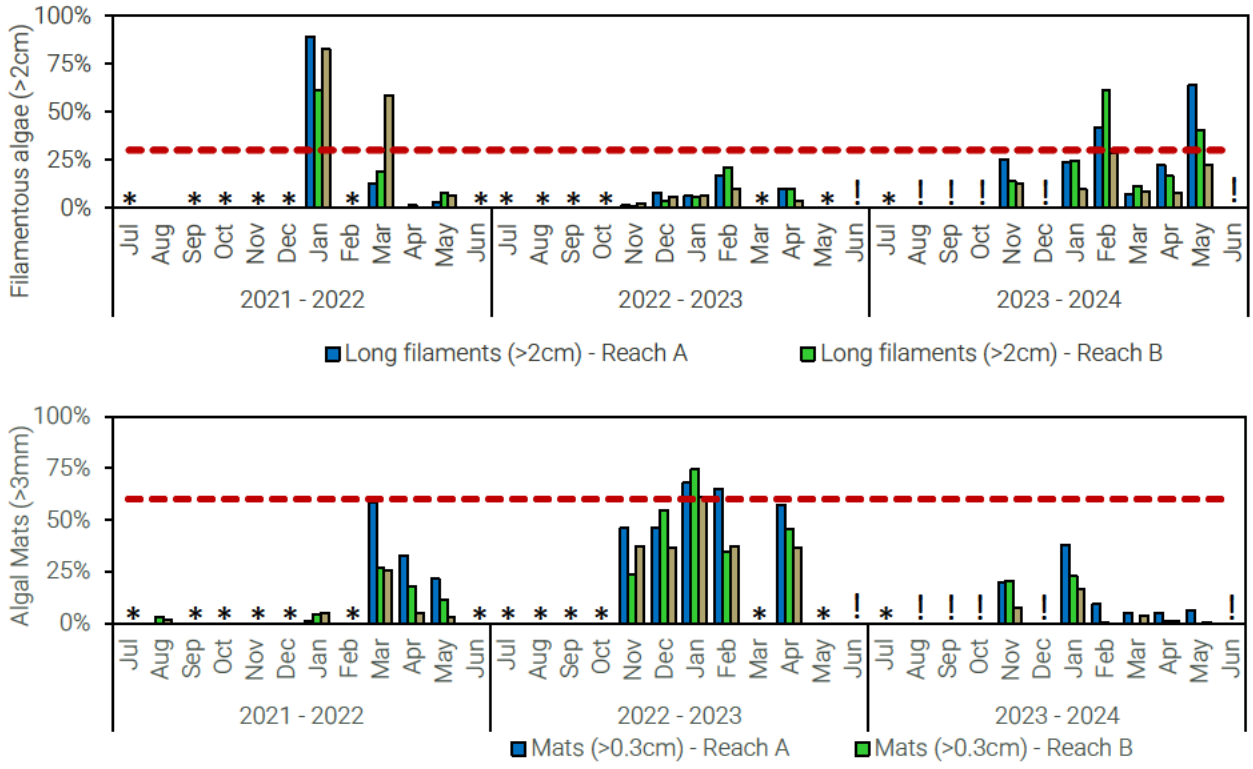


Figure 6: Riverbed periphyton cover as long filaments (top) and thick mats (bottom) in the Mangatainoka River upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP discharge from the 2021/22 to the 2023/24 reporting periods. Asterisks denote occasions when sampling could not be undertaken due to flows over 55 m^3/s in the Mangatainoka River, and exclamation marks denote occasions when sampling could not be undertaken due to flows below 55 m^3/s, but still too high to safely undertake sampling.

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Appendix A ATH-199501433.02 – W28 – Monitoring Report

See attached report.

Traverse Environmental

Pahiatua Wastewater Treatment Plant environmental monitoring report 2025

Discharge to Water Consent – ATH-199501433.02

Prepared for: Tararua District Council

September 2025

Pahiatua Wastewater Treatment Plant environmental monitoring report 2025: Discharge to Water Consent ATH-199501433.02

Prepared for:	Tararua District Council
Prepared by:	[redacted], Freshwater Scientist
Date of issue:	5 September 2025

Quality Assurance		
Reviewed by:	[redacted], Senior Freshwater Scientist	[redacted]
Approved for release by:	[redacted], Principal Scientist	[redacted]
Report status:	FINAL	

Cover photo: Mangatainoka River, upstream from the confluence with Town Creek, 11 February 2025 (B. Barnard).

Recommended citation: Rados D. (2025) Pahiatua Wastewater Treatment Plant environmental monitoring report 2025. Discharge to Water Consent – ATH-199501433.02. 30 p.

Executive summary

Tararua District Council (TDC) operates the Pahiatua Wastewater Treatment Plant (WWTP), from which treated wastewater is discharged to the Mangatainoka River via Town Creek. New consents were granted in July 2021 to allow the discharge to be moved from Town Creek to the Mangatainoka River (via wetland treatment). However, construction of the wetlands and the new discharge location infrastructure has not yet commenced.

This report has been prepared to fulfil the annual reporting of monitoring results required under condition W28. It summarises the findings from monitoring specified in conditions W17, W18, W20, W21, W23 and W24 for the July 2024 to June 2025 reporting period. Condition W22 is also included for completeness.

Over the July 2024 to June 2025 reporting period, wastewater and river water samples were collected monthly and analysed for the constituents required by condition W17, except for:

- 18 August 2024, when a severe weather event prevented sampling,
- Horizontal visibility, which was measured with a SHMAK (clarity) tube, instead of black disc.

Continuous dissolved oxygen monitoring required by condition W24 is not to be undertaken until the discharge relocation has occurred. Macroinvertebrates were not required to be sampled this year, but were nevertheless sampled at TDC's request, to establish a baseline record of the macroinvertebrate communities across the relevant sites.

Statistically significant increases were found in median nitrate nitrogen and total nitrogen concentrations upstream and downstream of the discharge. Significant differences were also found for median conductivity (increase) and pH (decrease). However, in all cases, the differences were numerically small.

Periphyton could not be monitored on six occasions within the reporting period due to high river flows in the Mangatainoka River. On the rest of the monitoring occasions, periphyton community assemblages at Reach C (downstream site) had generally equal or lower coverage by long filaments and thick algal mats than the two upstream sites (Reaches A and B).

On one occasion (March 2025), Reach C was dominated by sludge mats, which was not the case at the other two sites. This occurred shortly after flood mitigation work had been undertaken by Horizons in Reach C. The extent to which the river works might be related to the (short-term) accumulation of sludge mats is unknown. The sludge mats were not present on the next monitoring occasion.

Periphyton biomass at Reach C, as chlorophyll *a* and AFDW, was equal or lower to that recorded at one or both upstream sites on all occasions that it was assessed.

Macroinvertebrate community health metrics generally did not differ between sites, except for the QMCI between Reach A and Reach C, which was 13% higher (i.e. better) at the downstream site compared to upstream.

Overall, the results of the monitoring during 2024/25 indicate that the discharge did not appear to be adversely affecting water quality or aquatic life in the Mangatainoka River.

Contents

List of figures

List of tables

1 Introduction

The Tararua District Council (TDC) owns and operates the Pahiatua Wastewater Treatment Plant (WWTP), on the outskirts of Pahiatua. Wastewater from the township is collected in three oxidation ponds and is currently discharged into Town Creek, which subsequently flows into the Mangatainoka River.

A new consent to change the discharge location from Town Creek to the Mangatainoka River (via wetland treatment) was granted in July 2021 for a period of 12 years. However, the consent allows continued discharge of wastewater to Town Creek for a period of three years from the granting of the consent (i.e. until June 2024), while the wetlands and new discharge location infrastructure are being built. For this reporting period (1 July 2024 to 30 June 2025), our assessment is focused on compliance with the conditions related to the Town Creek discharge.

1.1 Scope

This report has been prepared to fulfil Condition W28 of discharge permit ATH-199501433.02, which requires an annual report to be prepared that summarises the findings of monitoring conducted to fulfil conditions W17, W18, W20, W21, W23 and W24, for the July 2024 to June 2025 reporting period.

- Condition W17 requires effluent and in-river samples to be collected monthly and analysed for a series of constituents.
- Condition W18 regulates the response following an exceedance of the dissolved aluminium limit in the river, downstream from the discharge, and requires an investigation into the risk of toxic effects.
- Conditions W20, W21 and W22 regulate monitoring of macroinvertebrates.
- Condition W23 requires monthly monitoring of periphyton biomass and cover.
- Condition W24 requires continuous monitoring of in-river dissolved oxygen in the first year after the discharge relocation.

Full wording of the conditions and TDC's assessment of compliance with each condition can be found in the report required under condition G11, *Pahiatua Wastewater Treatment Plant: Annual monitoring and compliance report 2025*.

2 Monitoring details

2.1 Sites monitored

2.1.1 Water quality

As the new discharge has not yet been commissioned, only two sites (Reach B and Reach C) are required to be monitored for water quality, as per condition W17 (Table 1, Figure 1). Reach B is located upstream of the Town Creek discharge to the Mangatainoka River, while Reach C is located 200 m downstream of the Town Creek confluence with the Mangatainoka River. Water quality monitoring has been undertaken by TDC since July 2024, while prior to that monitoring was undertaken by Horizons Regional Council (HRC).

2.1.2 Periphyton

Periphyton monitoring was undertaken by Traverse Environmental at Reach A (located upstream of Reach B and the Town Creek discharge), Reach B and Reach C, as per condition W23 (Table 1, Figure 1).

2.1.3 Macroinvertebrates

According to condition W21, macroinvertebrates were not required to be sampled in the 2024–2025 monitoring period because the discharge has not yet been relocated. Nevertheless, TDC contracted Traverse

to collect and process macroinvertebrate samples from all three sites. This initiative aims to establish a baseline record of the macroinvertebrate communities across the three reaches.

Macroinvertebrates were collected by Traverse at the same sites where periphyton was monitored.

Condition W22 requires that the physical characteristics of the upstream and downstream sites shall, as far as practicable, provide a similar/adequate match.

Table 1: Sites on the Mangatainoka River sampled for water quality and ecology (periphyton and macroinvertebrates) for the monitoring period July 2024 – June 2025.

Location	Sampling focus	Latitude (NZTM)	Longitude (NZTM)
Reach A – Future Upstream	Ecology	5519574.460	1840550.517
Reach B – Future Downstream – Current Upstream	Water quality and ecology	5519998.593	1841118.012
Reach C – Current Downstream	Water quality and ecology	5519857.522	1841405.019

Figure 1: Location of sites sampled on the Mangatainoka River for water quality and ecology (macroinvertebrates and periphyton), indicated by yellow dots, the WWTP (red placemark) and current (Town Creek) and future discharge points (orange placemarks).

Figure 2: Pahiatua WWTP Mangatainoka River monitoring sites: a) Reach A, upstream from the future discharge, b) Reach B, downstream from the future discharge and upstream from the current discharge, and c) Reach C, downstream from the current discharge. Photos taken 11 February 2025.

2.2 Timing of monitoring

2.2.1 Water quality

River water samples were collected by TDC between July 2024 and June 2025 except for 18 August 2024, when no samples were collected due to a severe weather event.

2.2.2 Periphyton

Periphyton was monitored monthly during the reporting period, as per condition W23. For consistency, the week in the middle of each month was selected for monitoring, to control for low flow bias. If the flow of the Mangatainoka River rendered monitoring unsafe and/or unfeasible, the maximum instantaneous flow at Horizons' flow monitoring site (Mangatainoka River at Pahiatua Town Bridge) in the preceding five days was assessed:

- if it exceeded 55 m^3/s, the occasion was included for compliance purposes and periphyton was assumed to have a biomass less than 120 mg/m^2.
- if it was below 55 m^3/s, monitoring was to be re-attempted within seven days, with the same flow criteria.

During the 2024 – 2025 period:

- monitoring was undertaken in January, February, March and May 2025 (Figure 3, Table 2) on the scheduled sampling occasions. The February 2025 monitoring coincided with macroinvertebrate sampling.
- in August and December 2024 flows exceeded 55 m^3/s on the scheduled sampling occasion and within a week from that date, and the periphyton biomass was assumed to be below 120 mg/m^2.
- in July and from September to November 2024, as well as April and June 2025, periphyton could not be assessed due to high flows (which remained below 55 m^3/s) on the scheduled dates and within a week from those dates, and so those dates were not taken into consideration during analysis of results.

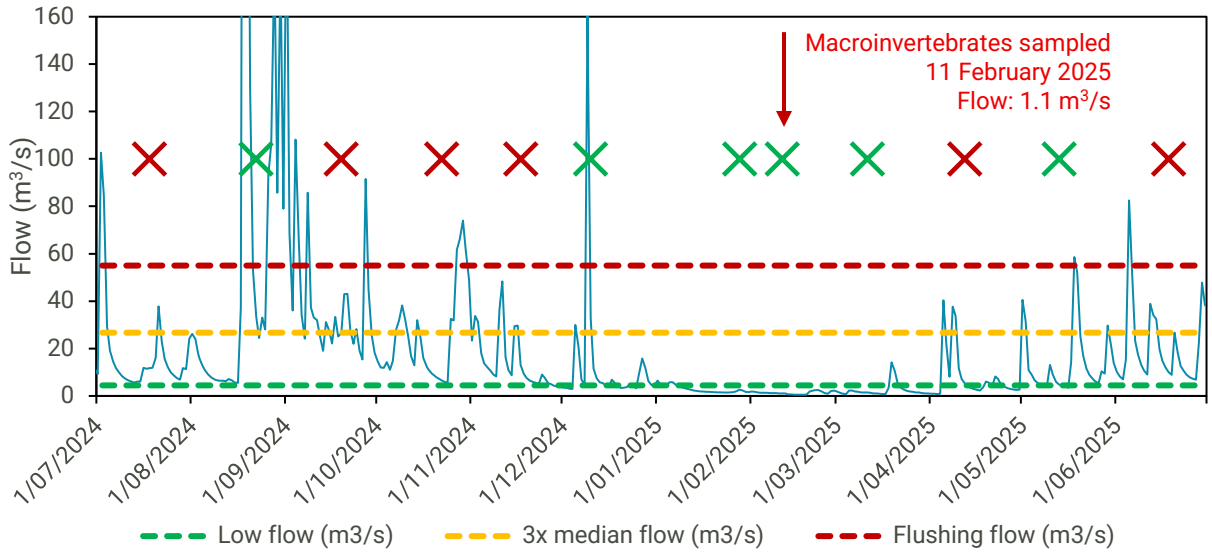

Figure 3: Flow in the Mangatainoka River, at Pahiatua Town Bridge flow monitoring station (data source: Horizons Environmental Data). Green crosses mark occasions when periphyton monitoring was completed or compliance was assumed due to flows >55 m^3/s, and red crosses mark occasions when monitoring could not be completed due to high flows <55 m^3/s.

Table 2: Periphyton monitoring occasions for the reporting period July 2024 – June 2025, with the average flow (m^3/s) on the day and the maximum instantaneous flow (m^3/s) in the preceding five days.

First attempt at monitoring			Repeat monitoring (where required)			
Date	Maximum instantaneous flow on scheduled sampling day	Maximum instantaneous flow in the preceding five days	Repeat monitoring Date	Maximum flow on scheduled sampling day	Maximum instantaneous flow in the preceding five days	Monitoring completed?
11/07/2024	6.59	14.5	19/07/2024	11.8	11.9	No
15/08/2024	5.69	7.18	23/08/2024	24.5	600	Assumed compliant
12/09/2024	25.4	85.7	20/09/2024	43	43	No
15/10/2024	25	32.5	23/10/2024	5.97	10.6	No
10/11/2024	36.4	36.4	18/11/2024	9.3	29.7	No
10/12/2024	32.9	162	-	-	-	Assumed compliant
28/01/2025	2.65	2.65	-	-	-	Yes
11/02/2025	1.08	1.28	-	-	-	Yes
11/03/2025	1.45	2.21	-	-	-	Yes
6/04/2025	22	40.4	13/04/2025	4.03	37.7	No
13/05/2025	4.79	13.12	-	-	-	Yes
11/06/2025	9.07	53.44	18/06/2025	10.1	34	No

2.2.3 Macroinvertebrates

Macroinvertebrates were sampled on 11 February 2025, two months since the last significant flood event (9 December 2024, 161 m^3/s), and after 35 days with flows below 4.45 m^3/s (Figure 3).

2.3 Sampling and sample processing protocols

2.3.1 Effluent and instream water quality

All constituents required by condition W17 were analysed for in the effluent and in-river samples, including aluminium (as the flocculent used in the Pahiatua WWTP is alum (PACL – Poly Aluminium Chloride), which contains aluminium), except for horizontal visibility using a black disc. For practical reasons, a clarity tube was used instead.

As the discharge has not yet been relocated, the requirement of condition W24 for a one-off continuous dissolved oxygen monitoring programme at Reaches A and B is not yet applicable.

Water quality datasets contained a small proportion of "censored" data (e.g. "less than detection limit"). To conduct statistical analyses, these censored data were replaced by numerical values. The "less than" values were replaced by half of the detection limit, consistent with the recommendations of Scarsbrook and McBride (2007).

2.3.2 Periphyton

Periphyton was monitored by Traverse Environmental as per condition W23. At each sampling site:

- Periphyton cover was visually assessed following the protocols in "A periphyton monitoring plan for the Manawatu-Wanganui Region" (Kilroy et al. 2008), as per condition W23d. An underwater viewer was used to estimate the percent cover of the different algal types along five equidistant points across each of four cross-sectional transects of the river, encompassing run habitat, and resulting in a total of 20 measurements.
- A periphyton biomass sample was taken at the same time, sites and transects as the visual monitoring, following the protocols of Biggs and Kilroy (2000) in the "Stream Periphyton Monitoring Manual" (Method QM-1b), as per condition W23e. Rock scrapings were collected and pooled from 10 stones at each site; samples were then frozen and sent to the Cawthron Institute for chlorophyll *a* and Ash-Free Dry Weight (AFDW) analysis.

2.3.3 Macroinvertebrates

Five replicate 0.1m² Surber samples were collected from riffle habitat at each site, following Protocol C3 (hard bottom, quantitative) of the Ministry for the Environment "Protocols for sampling macroinvertebrates in wadeable streams" (Stark et al. 2001), as required by condition W22a. Where riffle habitat was limited or absent, samples were also collected from run habitat.

Although not required by the consent, a rapid habitat assessment (RHA), following the national protocol of Clapcott (2015), was also conducted at each site. Additional environmental variables, water temperature, mean river width, depth, velocity, pH and conductivity, were also measured. These data are reported in Appendix B.

Macroinvertebrate sampling was undertaken by Traverse Environmental, with sample processing and identification carried out by Environmental Impact Assessments (EIA).

Macroinvertebrate taxa were fully counted within each replicate sample, to the taxonomic resolution level specified for use of the Macroinvertebrate Community Index, following P3 (full count with subsampling option) and QC3 (quality control for full count with subsampling option) of Stark et al. (2001), as required by condition W22b.

The following macroinvertebrate metrics were calculated for each site:

- **Number of taxa:** the total number of different groups of organisms (taxa) in a sample.
- **Macroinvertebrate Community Index (MCI):** based on the presence of macroinvertebrate taxa and their tolerance to pollution (1= highly tolerant, 10 = highly sensitive).
- **Quantitative Macroinvertebrate Community Index (QMCI)**: similar to the MCI but also takes into account the number of individuals of each taxon collected.
- **% EPT taxa**: the proportion of all taxa collected that belong to Ephemeroptera (mayflies), Plecoptera (stoneflies) and Trichoptera (caddisflies); these groups are generally sensitive to pollution.
- **% EPT individuals:** the proportion of all individuals collected that belong to the EPT taxa.

To support the assessment of the discharge's effects on ecological health, MCI and QMCI results were interpreted using the water quality classification of Stark and Maxted (2007) (Table 3). The One Plan "State of the Environment" ecosystem health target of MCI >120 for the Lower Mangatainoka Water Management Area (Mana_8c) was also used to assess the results.

Statistical differences between sites were assessed performing analysis of variance (ANOVA), followed by pairwise comparisons with the Tukey's Honestly Significant Difference test (Tukey's HSD), in Microsoft Excel using the Real Statistics Resource Pack input (Release 9.1.1). QMCI scores were also assessed for statistical equivalence within a ±20% margin with Equivalence Testing, using the TimeTrends software (v.10.0.0, Jowett, 2022). Values at $p < 0.05$ indicate a statistically significant change.

Table 3: Interpretation of MCI and QMCI values based on the quality classification proposed by Stark and Maxted (2007).

Interpretation	MCI	QMCI
Excellent / Clean water	> 119	> 5.99
Good / Mild pollution	100 – 119	5.00 – 5.99
Fair / Moderate pollution	80 – 99	4.00 – 4.99
Poor / Severe pollution	< 80	< 4.00

3 Monitoring results

3.1 Effluent and instream water quality

3.1.1 Effluent quality

Treated effluent quality data from the Pahiatua WWTP are summarised in Table 4. Raw data are provided in a spreadsheet in Appendix D of the *Annual monitoring and compliance report 2025*.

Table 4: Summary statistics for treated effluent from the Pahiatua WWTP prior to discharge into the Mangatainoka River, for the period 1 July 2023 to 30 June 2024. Note that *E. coli* was not detected in the discharge on any sampling occasion.

Statistic	$sCBOD_5$ (g/m^3)	Ammoniacal-N (g/m^3)	Nitrite-N (g/m^3)	Nitrate-N (g/m^3)	TN (g/m^3)	TSS (g/m^3)
Mean	1.9	3.22	0.351	2.24	8.36	13.6
Min	<1	0.04	<0.02	0.109	2.9	5
Median	2	1.40	0.065	0.488	7.4	10
95th %ile	3.5	8.39	1.62	7.05	13.5	32.5
Max	4	9.23	2	9.34	16	47
Std Dev.	1.1	3.42	0.653	2.96	3.66	11.8
95% C.I.	0.6	2.02	0.386	1.75	2.16	7.0
No. of samples	11	11	11	11	11	11

Statistic	POM (g/m^3)	DRP (g/m^3)	TP (g/m^3)	*E. coli* (MPN/100ml)	Aluminium (g/m^3)
Mean	12.8	0.006	0.282	-	0.066
Min	5	<0.005	0.08	<10	0.008
Median	10	0.006	0.33	<10	0.062
95th %ile	30	0.011	0.485	-	0.153
Max	45	0.011	0.56	<10	0.176
Std Dev.	11.2	0.004	0.152	-	0.053
95% C.I.	6.6	0.002	0.09	-	0.031
No. of samples	11	11	11	11	11

3.1.2 Surface water quality

Monthly water quality data for the Mangatainoka River, upstream (U/S – Reach B) and downstream (D/S – Reach C) of the Pahiatua WWTP discharge are summarised in Table 5. Raw data are provided in a spreadsheet in Appendix D of the *Annual monitoring and compliance report 2025*.

Results of Wilcoxon Signed Rank tests performed on the 11 upstream and downstream water quality datasets indicated statistically significant differences ($p < 0.05$) between the median values of some constituents (Table 5), as follows:

- Nitrate nitrogen concentration was higher downstream of the discharge (0.65 g/m^3) than upstream (0.61 g/m^3).
- Median total nitrogen concentration was higher upstream of the discharge (0.73 g/m^3) than downstream (0.72 g/m^3).
- Median pH was higher upstream of the discharge (7.6) than downstream (7.4).
- Median conductivity was higher downstream of the discharge (105 µS/cm) than upstream (102 µS/cm).

While statistically significant, these differences are numerically very small.

Table 5: Summary statistics for water quality in the Mangatainoka River, upstream (U/S – Reach B) and downstream (D/S – Reach C) of the Pahiatua WWTP, for the period 1 July 2024 to 30 June 2025, along with p-values from Wilcoxon Signed Rank tests between measurements from the two sites. p-values <0.05 (indicating a significant difference) are highlighted red.

Statistic	$sCBOD_5$ (g/m³)		DO (g/m³)		DO%		Ammoniacal-N (g/m³)		Nitrite-N (g/m³)		Nitrate-N (g/m³)		TN (g/m³)		TSS (g/m³)	
	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S
Mean	0.6	0.7	10.4	10.5	101	102	0.014	0.019	<0.005	<0.005	0.655	0.684	0.79	0.85	1.3	0.9
Min	<1	<1	8.9	8.7	88	87	<0.005	<0.005	<0.005	<0.005	0.449	0.462	0.56	0.56	<1	<1
Median	0.5	0.5	10.1	10.8	100	101	0.015	0.019	<0.005	<0.005	0.610	0.653	0.73	0.72	1	0.5
95th %ile	1	1	12	12	113	117	0.023	0.033	<0.005	<0.005	0.948	0.969	1.05	1.20	2.5	2
Max	1	1	12.4	12.2	115	120	0.025	0.039	<0.005	<0.005	0.948	0.979	1.10	1.20	3	2
Std Dev.	0.2	0.3	1	1.1	8	10	0.007	0.009	0	0	0.169	0.168	0.20	0.24	0.8	0.6
95% C.I.	0.1	0.1	0.6	0.7	5	6	0.004	0.005	0	0	0.100	0.099	0.12	0.14	0.4	0.3
No. of samples	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Wilcoxon	0.8		0.06		0.08		0.06		-		0.03		0.009		0.3	

Statistic	Visual clarity (cm)		POM (g/m³)		DRP (g/m³)		TP (g/m³)		*E.coli* (cfu/100mL)		pH		Conductivity (µS/cm)		Temperature (°C)		Aluminium (g/m³)	
	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S
Mean	84	85	0.9	0.7	0.006	0.006	0.024	0.015	170	159	7.5	7.4	107	111	14	14.1	0.022	0.023
Min	16	35	< 1	< 1	<0.005	<0.005	<0.01	<0.01	74	56	7.1	7	88	90	8.8	8.9	<0.016	<0.016
Median	92	88	1	0.5	0.006	0.005	0.02	0.01	178	135	7.6	7.4	102	105	15	15.2	0.008	0.018
95th %ile	97	96	1.5	1.5	0.011	0.011	0.065	0.030	309	295	8.0	7.7	131	143	18.2	18.2	0.049	0.049
Max	100	98	2	2	0.013	0.011	0.10	0.03	326	313	8.0	7.8	133	145	19	19.1	0.050	0.054
Std Dev.	23	17	0.4	0.5	0.003	0.003	0.026	0.009	87	91	0.4	0.3	14	18	3.4	3.4	0.017	0.016
95% C.I.	14	10	0.3	0.3	0.002	0.002	0.015	0.005	52	53	0.2	0.2	8	11	2.0	2.0	0.010	0.009
No. of samples	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Wilcoxon	1		0.3		0.7		0.4		0.5		0.009		0.004		0.051		0.6	

3.1.3 Aluminium assessment

Aluminium concentrations did not exceed 0.055 g/m^3 on any monitoring occasion (Figure 4), with the median concentration upstream from the discharge being 0.008 g/m^3, and downstream 0.018 g/m^3. The Wilcoxon Signed Rank test did not indicate a statistically significant difference in these median values (p-value = 0.6).

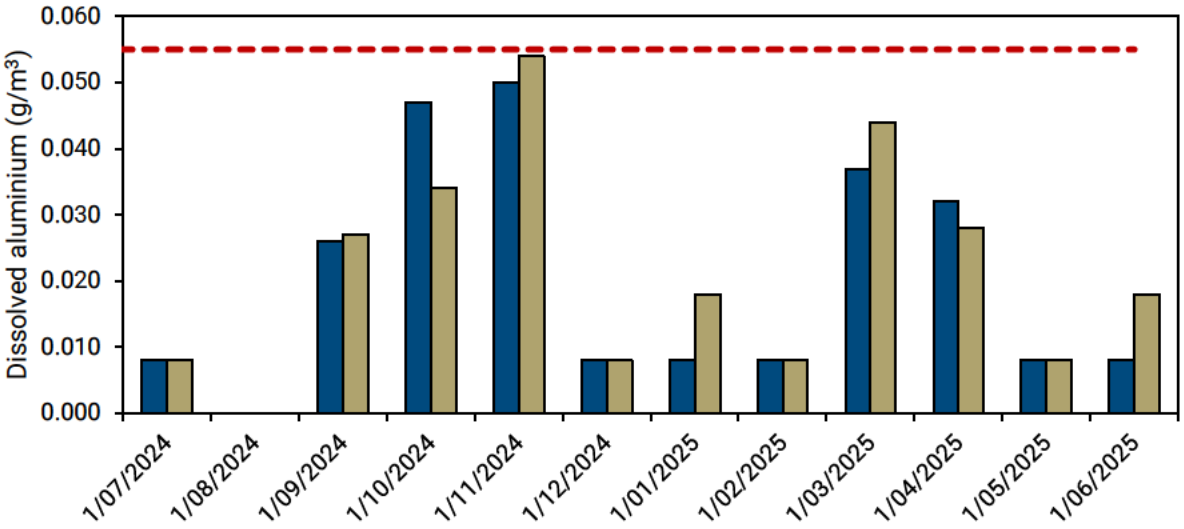

Figure 4: Dissolved aluminium concentration in the Mangatainoka River, upstream (Reach B) and downstream (Reach C) from the Pahiatua WWTP discharge, for the monitoring period July 2024 to June 2025.

3.2 Ecological monitoring site description and habitat

The Mangatainoka River is not always wadeable along the entire length of the three monitoring reaches (Appendix B – Table B1). The monitored areas at Reaches A and C are about 50% wadeable; Reach A from the true left bank and Reach C from the true right bank. Both sites have sections that are 80-100% wadeable; Reach A at the upstream end and Reach C at the downstream end. Reach B is generally wadeable, at 80-100%.

The overall habitat quality, based on the RHA scores, was highest at Reach C (69) and lowest at Reach A (54), with Reach B scoring 62 (Appendix B – Table B2).

At Reach C an island has been formed, which splits the Mangatainoka River into two channels, for approximately 200–300 m, with the true right channel receiving the entirety of the Town Creek inflow and the Pahiatua WWTP discharge. Over the years, willow trees had grown on the island. On the March 2025 monitoring occasion, it was noted that the willow trees had been removed. TDC was informed by Horizons that the tree removal was part of its flood mitigation work, in order for the island to be gradually flushed downstream. The riverbed at Reach C was less embedded, while the size variation of its substrate was visually assessed to differ from its usual state, with more gritty/sandy substrate and smaller cobbles and pebbles.

3.3 Periphyton communities

3.3.1 Periphyton coverage

The relative abundances of the different periphyton types covering the riverbed as percentage coverage are given in Table 6 and graphically presented in Figure 5.

The periphyton community covering the riverbed was similar across the three reaches, except for in March 2025, when Reach C was dominated by sludge mats (58%) while the other two reaches were characterised by thin mats (Reach A: 49%, Reach B: 43%), and May 2025, when Reach A was characterised by high presence of thick mats (49%), while the other two reaches were characterised by thin mats (Reach B: 67%, Reach C: 72%).

The extent to which the in-river works (which occurred between the February and March 2025 monitoring occasions) might be related to the substrate state and the dominance of sludge mats at Reach C on the March 2025 monitoring occasion is unknown; however, sludge mats were absent from the riverbed on subsequent monitoring occasions.

Table 6: Relative abundance of periphyton communities assessed at the three Mangatainoka River monitoring sites, upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP Town Creek discharge, for the July 2024 to June 2025 reporting period.

Date	Reach	Bacterial and/or fungal growths visible to the naked eye	Filamentous algae > 2 cm long	Diatoms or cyanobacteria mats > 0.3 cm thick	Diatoms < 0.3 cm thick	Clean substrate
19/07/2024	A, B, C	Monitoring not undertaken; excluded from analysis				
23/08/2024	A, B, C	Monitoring not undertaken; assumed compliant				
20/09/2024	A, B, C	Monitoring not undertaken; excluded from analysis				
23/10/2024	A, B, C	Monitoring not undertaken; excluded from analysis				
18/11/2024	A, B, C	Monitoring not undertaken; excluded from analysis				
11/12/2024	A, B, C	Monitoring not undertaken, assumed compliant				
29/01/2025	A	0%	10%	4%	77%	7%
	B	0%	11%	5%	74%	7%
	C	0%	10%	4%	76%	9%
11/02/2025	A	0%	38%	15%	41%	6%
	B	0%	28%	8%	55%	7%
	C	0%	29%	4%	53%	5%
12/03/2025	A	0%	34%	6%	49%	3%
	B	0%	38%	11%	43%	0%
	C	0%	26%	3%	4%	5%
14/04/2025	A, B, C	Monitoring not undertaken; excluded from analysis				
14/05/2025	A	0%	29%	49%	12%	3%
	B	0%	24%	8%	67%	1%
	C	0%	9%	10%	72%	0%
18/06/2025	A, B, C	Monitoring not undertaken; excluded from analysis				

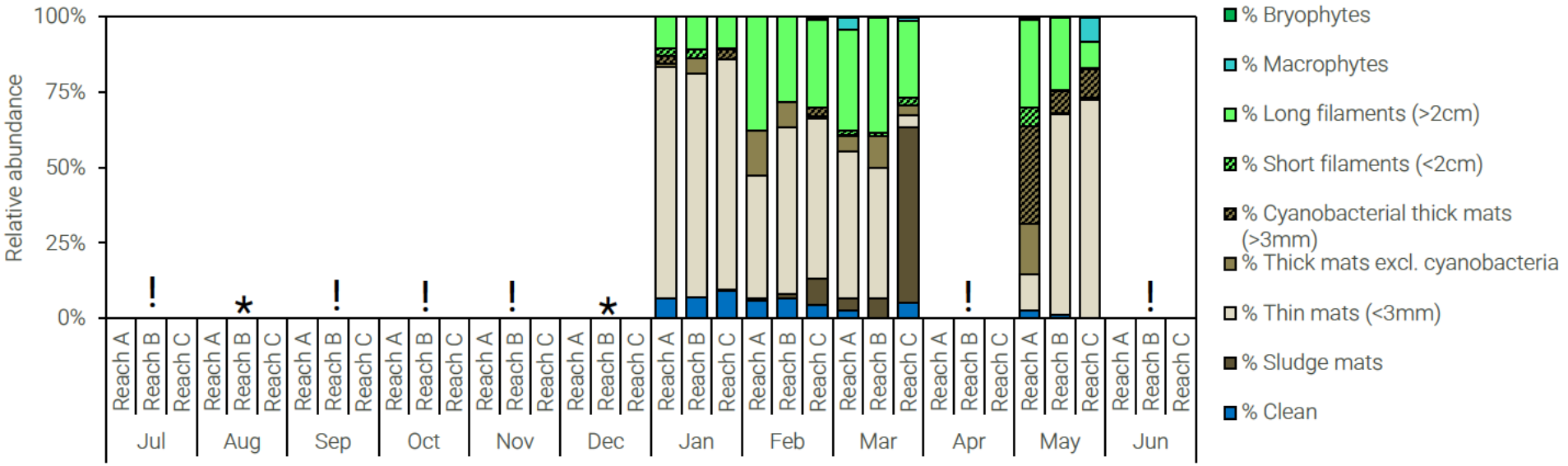

Figure 5: Relative abundance of the different periphyton types in the Mangatainoka River upstream (Reach A and Reach B) and downstream (Reach C) of the Pahiatua WWTP Town Creek discharge, for the monitoring period July 2024 to June 2025. Asterisks denote occasions when sampling could not be undertaken due to high flows over 55 m^3/s in the Mangatainoka River, and exclamation marks denote occasions when sampling could not be undertaken due to high flows below 55 m^3/s.

3.3.2 Periphyton biomass

Condition W8(g) states that the treated wastewater discharge should not cause periphyton biomass (measured as chlorophyll *a*) to exceed 120 mg/m^2 on more than 8% of occasions on the basis of the last 36 samples collected monthly. By the end of this reporting period, 36 samples had been collected. Compliance with this condition is assessed in the condition G11 report *Annual monitoring and compliance report 2025.*

Periphyton biomass as chlorophyll *a*, on the occasions when sampling was feasible during this reporting period, ranged at Reach A between 32 and 117 mg/m^2 (median = 76 mg/m^2), at Reach B between 21 and 107 mg/m^2 (median = 58 mg/m^2), and at Reach C between 33 and 51 mg/m^2 (median = 45 mg/m^2) (Figure 6).

Periphyton biomass as Ash-Free Dry Weight, on the occasions when sampling was feasible, ranged between 0.7 and 27 g/m^2 at Reach A (median = 12.2 g/m^2), 1.1 and 28.5 g/m^2 at Reach B (median = 14.8 g/m^2) and 1.1 and 21.4 g/m^2 at Reach C (median = 8.7 g/m^2) (Figure 6).

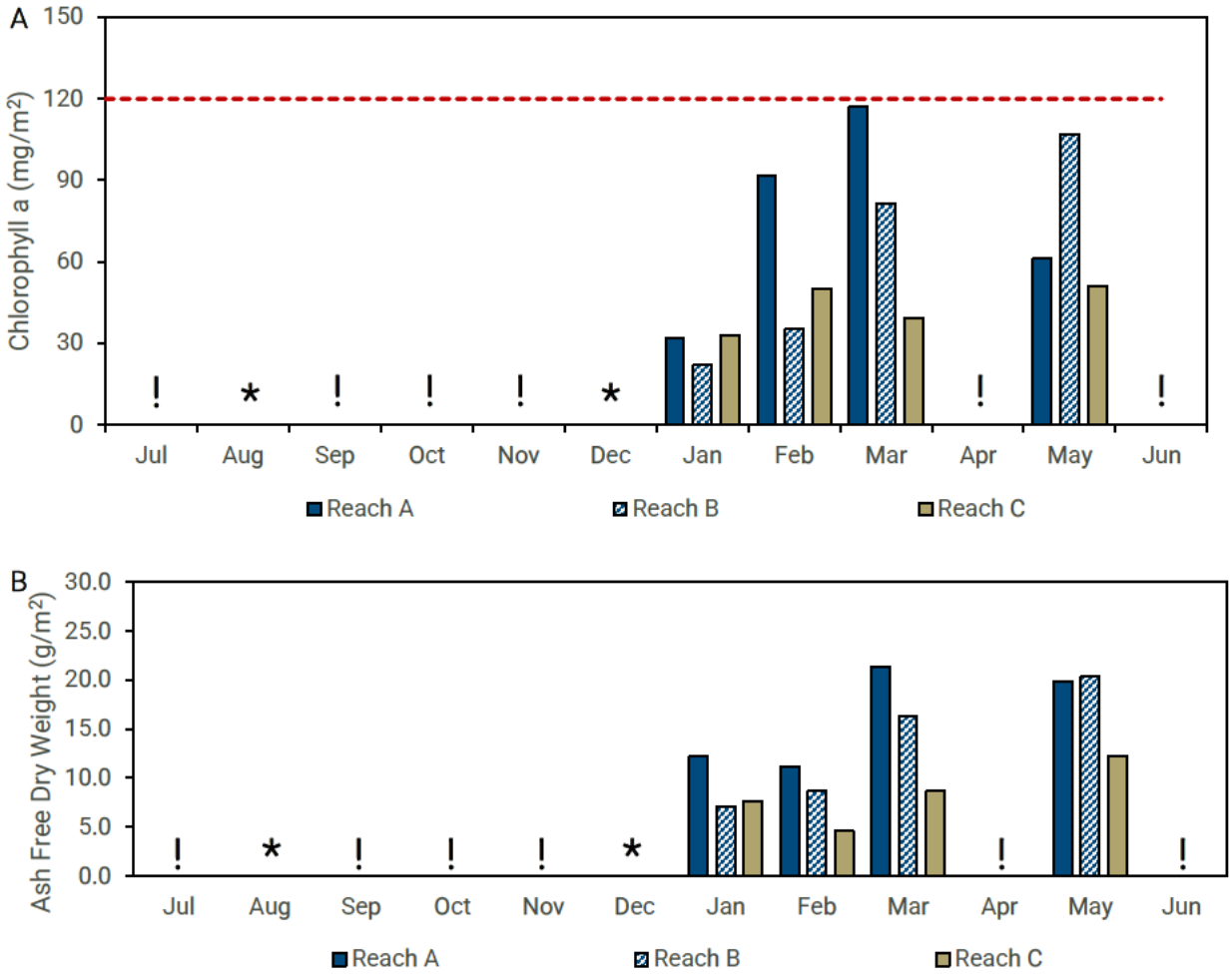

Figure 6: Concentrations of A) Chlorophyll a and B) Ash-Free Dry Weight in the Mangatainoka River upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP Town Creek discharge from July 2024 to June 2025. Asterisks denote occasions when sampling could not be undertaken due to high flows over 55 m^3/s in the Mangatainoka River, and exclamation marks denote occasions when sampling could not be undertaken due to high flows below 55 m^3/s.

3.4 Macroinvertebrate communities

The macroinvertebrate taxa collected at each site are presented in Table A1 and the relative abundances of the main groups of macroinvertebrates are shown in Figure 7.

The taxa that were dominant within each main group of macroinvertebrates were mostly similar across the three monitoring sites. The macroinvertebrate community structure at Reach A was characterised by caddisflies (35% - mostly of the genus *Aoteapsyche*), Chironomidae midges (21% - mostly of the Tanytarsini tribe) and crustacea of the genus Paracalliope (18%). The community at Reach B was also characterised by caddisflies (34), followed by beetles of the Elmidae family (25%), Chironomidae midges (19%) and mayflies (15% - mostly of the genus *Deleatidium*). The community at Reach C was dominated by Elmidae beetles (43%), with mayflies, caddisflies and Chironomidae midges comprising 16-19% each. All other groups at each site comprised less than 10%.

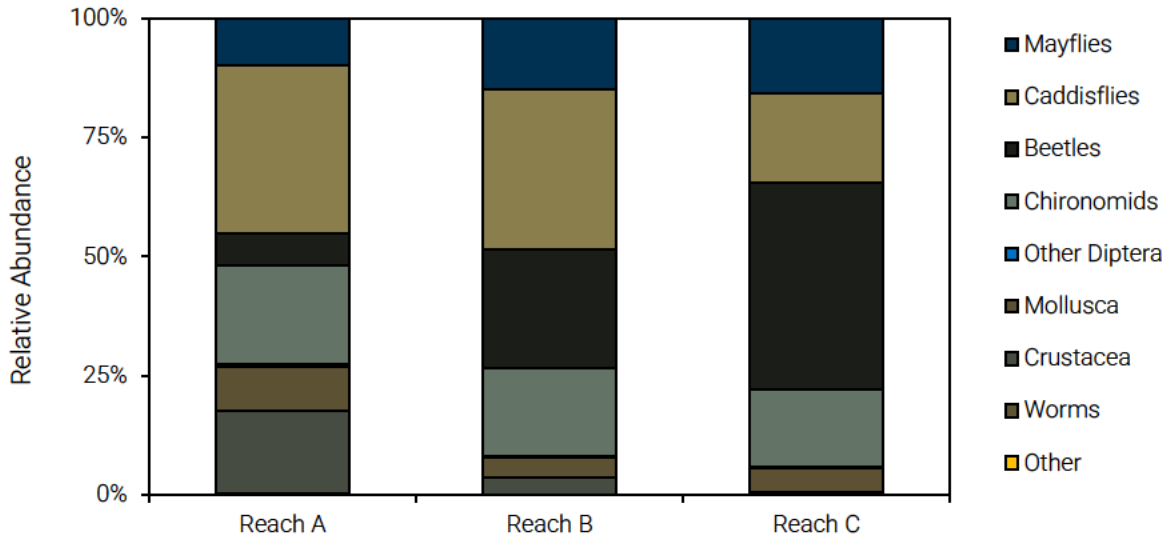

Figure 7: Relative abundance of the main taxonomic groups collected in February 2025 at sites sampled on the Mangatainoka River, upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP discharge to Town Creek.

Macroinvertebrate community metrics for the three monitoring sites are shown in

Table 7 and Figure 8.

- The **average number of taxa** did not differ significantly among sites and ranged between 19 (Reach C) and 21 taxa (Reach A).
- The **total number of taxa** followed a similar pattern and ranged between 28 (Reach C) and 32 taxa (Reach A).
- The **percentage of EPT taxa** did not differ significantly among sites and ranged between 46 and 47%.
- The **percentage of EPT individuals** was lower at Reach C (37%) than at Reaches A (45%) and B (47%), but these differences were not statistically significant.
- **MCI** scores did not differ significantly between sites and indicated "good" water quality at all three sites when assessed against the water quality categories of Maxted and Stark (2007). However, none of the sites met the One Plan target of 120, ranging between 106 and 108.
- **QMCI** scores increased from upstream to downstream, for both pairs of sites. They indicated fair water quality at Reach A (4.8), and good water quality at Reaches B (5.2) and C (5.4) when assessed against the water quality categories of Maxted and Stark (2007).

  Equivalence testing on the QMCI scores found moderate evidence that the QMCI scores at Reaches A and C were not statistically equivalent within the ±20% interval.

RHA parameters that are more relevant for macroinvertebrates, such as deposited sediment, invertebrate habitat diversity and invertebrate habitat abundance, showed similar overall scores between Reaches B and C, while Reach A scored lower than the other two (Appendix B – Table B2). Even though habitat might be playing a role in shaping the macroinvertebrate communities at the three reaches, it is unlikely to conceal potential effects by the discharge, when comparing communities in Reaches B and C. Consequently, the discharge does not appear to have had adverse effects on the macroinvertebrate communities.

Table 7: Macroinvertebrate metrics from samples collected in February 2025, at sites on the Mangatainoka River, upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP Town Creek discharge. ANOVA p-values are shown (except for the total number of taxa) and where ANOVA indicated significant differences, pairwise Tukey HSD p-values are also shown. Equivalence test results are shown for QMCI (colour-coded). Bold p-values indicate a statistically significant difference at the 0.05 level.

	Reach A	Reach B	Reach C	ANOVA p-value	Reach A vs Reach B	Reach A vs Reach C	Reach B vs Reach C
Number of taxa (average)	21	20	19	0.43	-	-	-
Number of taxa (total)	32	30	28	-	-	-	-
% EPT (taxa)	46	47	46	0.89	-	-	-
% EPT (individuals)	45	47	37	0.46	-	-	-
MCI	108	106	107	0.89	-	-	-
QMCI*	4.8	5.2	5.4	0.05	0.3	0.04 ↑	0.49

***Equivalence test results:** The arrow indicates that the difference in QMCI scores corresponds to an increase (↑). Cell colouring shows that there was 'moderate evidence' that the QMCI scores were not statistically equivalent within the 20% interval (light green), or if the test was inconclusive (no colour).

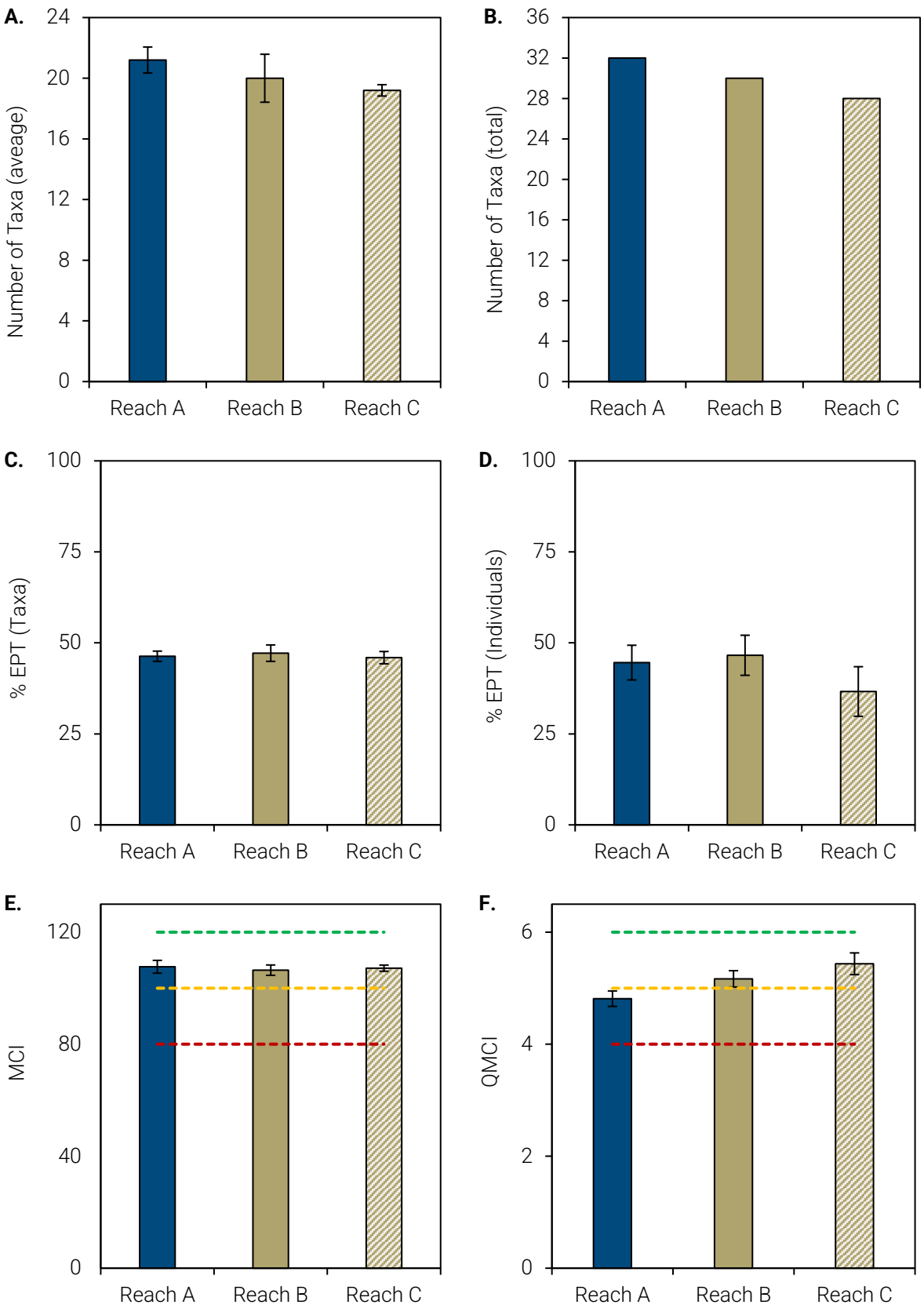

Figure 8: Mean (±SE) values of macroinvertebrate metrics for the sites sampled in February 2025 on the Mangatainoka River, upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP Town Creek discharge. The dashed coloured lines on the MCI and QMCI relate to the lower thresholds of quality classes proposed by Stark & Maxted (2004, 2007). The One Plan MCI target for the Mana_8c sub-catchment zone coincides with the green dashed line (120).

4 Conclusion

Over the July 2024 to June 2025 reporting period, wastewater and river water samples were collected monthly and analysed for the constituents required by condition W17, with a couple of minor exceptions. The results are used to assess compliance with the resource consent conditions that contain limits in the condition G11 report *Annual monitoring and compliance report 2025*.

Statistically significant increases were found in median nitrate nitrogen and total nitrogen concentrations upstream and downstream of the discharge. Significant differences were also found for median conductivity (increase) and pH (decrease). However, in all cases, the differences were numerically small.

Periphyton could not be monitored on six occasions within this reporting period due to high river flows in the Mangatainoka River. On the rest of the monitoring occasions, periphyton community assemblages at Reach C (downstream site) had generally equal or lower coverage by long filaments and thick algal mats than the two upstream sites (Reaches A and B).

On one occasion (March 2025), Reach C was dominated by sludge mats, which was not the case at the other two sites. This occurred shortly after flood mitigation work had been undertaken by Horizons in Reach C. The extent to which the river works might be related to the (short-term) accumulation of sludge mats is unknown. The sludge mats were not present on the next monitoring occasion.

Periphyton biomass at Reach C, as chlorophyll *a* and AFDW, was equal or lower to that recorded at one or both upstream sites on all occasions that it was assessed.

Macroinvertebrate community health metrics generally did not differ between sites, except for the QMCI between Reach A and Reach C, which was 13% higher (i.e. better) at the downstream site compared to upstream.

Overall, the results of the monitoring during 2024/25 indicate that the discharge did not appear to be adversely affecting water quality or aquatic life in the Mangatainoka River.

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Appendix A Macroinvertebrate monitoring inventory

Table A1: Mean density of invertebrates collected in 5 Surber samples (0.1 m^2) at sites sampled on the Mangatainoka River, upstream (Reaches A and B) and downstream (Reach C) of the discharge from the Pahiatua WWTP, in February 2025.

Taxa	MCI score	Reach A	Reach B	Reach C
Mayflies				
Austroclima sp.	9	14	31	25
Coloburiscus sp.	9	2	4	4
Deleatidium sp.	8	46	62	124
Zephlebia sp.	7	0	0	0.0
Caddisflies				
Aoteapsyche sp.	4	138	113	131
Costachorema sp.	7	0.8	0.2	1
Hudsonema sp.	6	1	0.2	0
Hydrobiosis sp.	5	24	23	31
Neurochorema sp.	6	19	17	11
Olinga sp.	9	0.2	0.6	0
Psilochorema sp.	8	2.0	0	6
Pycnocentria sp.	7	25	18	4
Pycnocentrodes sp.	5	12	40	3
Oxyethira sp.	2	1	8	1
Beetles				
Elmidae	6	42	161	423
Chironomidae				
Corynoneura	2	0	0	0
Maoridiamesa sp.	3	10	3	5
Orthocladiinae	2	9	5	17
Polypedilum sp.	3	0	0	0.0
Tanypodinae	5	0.6	2	1
Tanytarsini	3	112	111	136
Other Diptera				
Aphrophila sp.	5	2	1	2
Austrosimulium sp.	3	0	0	0.2
Empididae	3	1	0.2	0
Eriopterini	9	0.2	0.0	0.0
Muscidae	3	0	0	0.2
Crustacea				

Taxa	MCI score	Reach A	Reach B	Reach C
Ostracoda	3	0.0	0	0.4
Paracalliope	5	110.8	22	5
Mollusca				
Physa sp.	3	1	0	0
Potamopyrgus sp.	4	57	27	47
Worms				
Flatworms	3	0	0	0
Hirudinea	3	0.6	0	0
Nematophora	3	0	0.0	0
Oligochaetes	1	0	0	0
Other				
Acari	5	1	0.6	0
Archichauliodes diversus	7	9	3	5
Dolomedes sp.	5	0	0.2	0
Microvelia sp.	5	0	0.0	0

A.1 QMCI Equivalence Testing Results

Table A2: Equivalence testing results for pairwise comparisons of QMCI scores from five Surber samples (0.1 m^2) collected at sites on the Mangatainoka River, upstream and downstream of the discharge from the Pahiatua WWTP in February 2025.

QMCI	Reach A – Reach C		Reach B	Reach C
N	5	5	5	5
Means	4.81	5.44	5.17	5.44
SD	0.31	0.43	0.33	0.43
t, df (equal variance assumed)	2.62, 8		1.11, 8	
t, df (unequal variance assumed)	2.62, 7.22		1.11, 7.42	
Equivalence hypothesis tested	**Results and Inference**			
Test direction of change	**Yes, P=0.02**	**Change is positive**	No, P=0.15	Unsure about direction of change
Hi: difference lies beyond limits (inequivalence)	No, P=0.1	Cannot reject	**Yes, P=0.01**	**Difference lies within limits**
He: difference lies within limits (equivalence)	No, P=0.9	Cannot reject	No, P=0.99	Cannot reject
Bayesian posterior probability (%) that difference is within limits	90.37		99.28	
Overall Inference	**Moderate evidence for a practically important increase**		**No evidence for a difference**	

Appendix B Habitat characteristics

Table B1: Environmental characteristics of sites sampled on 11 February 2025, upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP discharge to Town Creek.

Test	Reach A	Reach B	Reach C
Temperature (°C)	19.5	20.2	19.9
pH	8.05	8.24	8.19
Conductivity (µS/cm)	152.3	153	160
Mean Width (m)	15	11	20
Mean Depth (cm)	30.1	19.2	44.3
Mean Velocity (m/s)	0.45	0.90	0.39
% wadeable width	60%	90%	60%

Table B2: Habitat Quality Scores based on the Rapid Habitat Assessments undertaken on 11 February 2025, at sites upstream (Reaches A and B) and downstream (Reach C) of the Pahiatua WWTP discharge to Town Creek.

Habitat parameter	Reach A	Reach B	Reach C
Deposited sediment	9	10	10
Invertebrate habitat diversity	7	8	10
Invertebrate habitat abundance	1	5	2
Fish cover diversity	8	6	8
Fish cover abundance	7	3	7
Hydraulic heterogeneity	1	2	5
Bank erosion	9.5	10	10
Bank vegetation	5	7	6
Riparian width	4	8	7
Riparian shade	2	3	4
Total (/100)	**53.5**	**62**	**69**

Traverse Environmental

Pahiatua Wastewater Treatment Plant

Annual monitoring and compliance report 2025

ATH-199501433.02: Discharge to water (W)

ATH-2016200747.00 and ATH-2017201544.00: Discharge to land (DL)

ATH-2016200772.00: Discharge to air (A)

ATH-2017201543.00: Earthworks (EW)

Prepared for: Tararua District Council

September 2025

Pahiatua Wastewater Treatment Plant: Annual monitoring and compliance report 2025

ATH-199501433.02: Discharge to water (W)

ATH-2016200747.00 and ATH-2017201544.00: Discharge to land (DL)

ATH-2016200772.00: Discharge to air (A)

ATH-2017201543.00: Earthworks (EW)

Prepared for:	Tararua District Council
Prepared by:	[redacted]
Date of issue:	8 September 2025

Quality Assurance		
Reviewed by:	[redacted] Senior Freshwater Scientist	[redacted]
Approved for release by:	[redacted] Principal Scientist	[redacted]
Report status:	FINAL	

Executive summary

Tararua District Council (TDC) operates the Pahiatua Wastewater Treatment Plant (WWTP). A new set of consents was granted on 26 July 2021, regulating the upgrades and the operation of the WWTP system, and associated discharges to air, water and land, subject to a suite of conditions. Discharge to water consent ATH-199501433.02, Discharge to air consent ATH-2016200747.00, and Discharge to land consents ATH-2016200772.00 and ATH-2017201544.00 were granted for a period of 12 years (expiring July 2033). Land use consent ATH-2017201543.00 expires on 30 November 2025.

This report has been prepared to meet the annual reporting requirements by 15 October each year (condition G11) and covers the period 1 July 2024 to 30 June 2025. During this period, wastewater and receiving water quality monitoring required by the consents was carried out by TDC staff and ecological monitoring was carried out by Traverse Environmental Ltd.

This report provides our assessment of compliance with consent conditions and comments on any non-compliance along with remedial actions undertaken or planned.

During the reporting period most consent conditions were complied with, including all conditions relating to monitoring, rates of discharge to water, effluent water quality, and receiving water quality. Most non-compliances were of a technical nature related to delays by TDC in completing some operational or reporting actions. Non-compliance was noted for the following:

General (applying to all consents):

- G9B: wetland construction and relocation of the discharge through the wetlands is yet to be undertaken.

Discharge to air (ATH-2016200772.00)

- A6: DO fell below 0.5 mg/L 27% of the time (data recorded at 15-minute intervals). However, aerators are programmed to start automatically on these occasions.

Discharge to land (ATH-2016200747.00 and ATH-2017201544.00)

- DL6: a wetland design construction plan was submitted to MWRC on 13 December 2024 (later than the revised due date of 29 April 2024).

Contents

List of figures

List of tables

1 Introduction

Tararua District Council (TDC) operates the Pahiatua Wastewater Treatment Plant (WWTP), located on the outskirts of Pahiatua. Wastewater from the township is collected in three oxidation ponds and is currently discharged into Town Creek, which subsequently flows into the Mangatainoka River.

New consents were granted in July 2021 to allow the discharge to be moved from Town Creek to the Mangatainoka River (via wetland treatment). While construction of the wetlands and the new discharge location infrastructure has not yet commenced, plant upgrades and wetland construction are expected to be completed towards the end of 2026.

1.1 Scope

Seven consents authorise the activities associated with the WWTP and its discharges: APP-1993001253.02 and APP- 017201372.00 (General Conditions), ATH-2016200772.00 (Discharge to Air), ATH-199501433.02 (Discharge to Water), ATH-2016200747.00 and ATH-2017201544.00 (Discharge to Land – Pond and Wetland Seepage) and ATH-2017201543.00 (Earthworks).

This report has been prepared to satisfy annual reporting by 15 October under Condition G11, which requires an environmental report to be submitted annually, summarising and assessing all monitoring undertaken as required by the consents, and a comment on consent compliance. It covers the period 1 July 2024 to 30 June 2025.

Monitoring of wastewater and receiving water quality for the Pahiatua WWTP was undertaken by TDC staff, while ecological monitoring was undertaken by Traverse Environmental Ltd (Traverse). This report is based on information and datasets provided by TDC (water quality: Water Outlook) and Traverse (ecology).

2 Consent conditions: requirements and compliance

The consent conditions and compliance (as assessed by TDC) during this reporting period are summarised in Tables 1 to 5. Further assessment of monitoring data against individual conditions that include limits is presented in Section 3.

- Table 1: General conditions
- Table 2: Discharge to Air
- Table 3: Discharge to Water
- Table 4: Discharge to Land
- Table 5: Earthworks

Table 1: Summary of compliance with general conditions of all consents ATH-2016200772.00 (Discharge to Air), ATH-199501433.02 (Discharge to Water), ATH-2016200747.00 and ATH-2017201544.00 (Discharge to Land – Pond and Wetland Seepage) and ATH-2017201543.00 (Earthworks) for the period 1 July 2024 to 30 June 2025.

Pahiatua WWTP- General conditions		Compliance (as assessed by TDC)	Notes
Descriptive Specification			
G1	The activity authorised by these consents shall be undertaken in general accordance with the application and Assessment of Environmental Effects received on 1 April 2015 and supplementary documents received: a. On 11 December 2015, being a response to the s92 further information request of June 2015; b. On 12 April 2017, being a response to the s92 further information request of November 2016; c. Further information received on 28 April 2017 included in the s41B hearing report; d. The revised wetland location plan tabled at the hearing on 23-25 May 2017; e. Information filed with the Environment Court detailing the wetland treatment system; and f. Further information provided through the Environment Court appeal process. Where the application is inconsistent with the requirements of the conditions, the conditions will prevail.	Compliant	Consented activities were generally carried out as per the consent application and supplementary documents.
G2	The wastewater discharge authorised by these consents shall be limited to: a. A 12-month rolling median daily (midnight to midnight) discharge volume no greater than 1,200 m^3/day; b. A 12 month 95th rolling percentile daily (midnight to midnight) discharge volume no greater than 2,000 m^3/day, at approximate map reference NZTopo50 BM35:409-193 (Town Creek) until the discharge point is relocated to approximate map reference NZTopo50 BM35:407-194 (Mangatainoka River) pursuant to condition **G9B**.	Compliant	Refer to Section 3.1.1.

Pahiatua WWTP- General conditions		Compliance (as assessed by TDC)	Notes
	ADVICE NOTE: For the purposes of compliance, 12-month rolling refers to any continuous 12-month period. The median (or 95th percentile) statistic will then be calculated on the 365 individual daily discharge volumes for that period. That is then compared to the discharge threshold to see if it is exceeded.		
G2A	The Consent Holder shall adopt the BPO when selecting new key elements of the overall wastewater treatment and wetland treatment systems.	Compliant	New key elements for the wetland treatment system selected during this reporting period followed BPO and are detailed in the report prepared by Tonkin & Taylor Ltd dated 11 December 2024.
Management and Operation			
G3	**Within one month** of commencement of these consents, the Consent Holder shall prepare a plan detailing the final plant Structured Optimisation Programme (SOP) for the Pahiatua Wastewater Treatment Plant and submit it to Manawatū-Whanganui Regional Council's (MWRC) Regulatory Manager. The SOP plan shall specify a suitably qualified operations technician who will implement the structured optimisation programme. The SOP plan shall describe the measures and steps required to optimise the treatment plant components so that the treatment plant is able to meet the conditions of this consent and shall specify a stepwise optimisation process of the Chemical dosing system, lamella clarifier operation (or alternative), micro-filter operation and UV disinfection, which shall be implemented as part of the optimisation programme and within the timeframes stipulated in the plan. The Treatment Plant will be optimised in accordance with the SOP within 12 months of commencement of these consents. For any additional upgrades, not listed above, the SOP shall be updated within one month of installation of new equipment and optimisation will be achieved within 18 months.	N/A	Originally required by 26 August 2021, subsequently followed by a request from MWRC to provide an updated copy by 29 March 2024. (Previously assessed as compliant, with an updated copy provided on 19 March 2024.)
G4	**WWTP Operations and Management Plan** Within six months of commencement of these consents, the Consent Holder shall prepare, and forward to MWRC's Regulatory Manager or their agent, an Operation and Management Plan (OMP). The OMP must be prepared by a by a suitably qualified expert acceptable to the Consent Authority. The OMP shall include but not be limited to: … ***(full wording of condition not copied here)***.	N/A	Originally required by 26 January 2022, subsequently followed by a request from MWRC to provide an updated copy by 31 July 2023. (Previously assessed as compliant, and current OMP technically certified by MWRC on 4 June 2024.)

Pahiatua WWTP- General conditions		Compliance (as assessed by TDC)	Notes
	ADVICE NOTE: Operational Management Plan (OMP) means at any time, the latest version of the OMP prepared under condition **G4,** including any changes or updates to the OMP made by the Consent holder, including under conditions **G7A**.		
G4A	Clauses (f), (k), and (l) of condition G4 must be technically certified by the MWRC's Regulatory Manager or their agent. The Consent Holder may, on an interim basis, implement those parts of the OMP if the Consent holder is not advised within 20 working days of MWRC's acknowledgement of receipt of the OMP that amendments are required, pursuant to conditions G5 or G7A.	Compliant	Latest revised version of OMP was technically certified by MWRC on 4 June 2024.
G4AA	The MWRC may appoint its own suitably qualified expert to undertake a peer review of the OMP, including any amendments, at any time. Should MWRC consider that amendments to the OMP are required, as a result of the peer review, then: a. in respect of amendments to the parts of the OMP covered by clauses (f), (k) and (l), MWRC will raise these amendments with the Consent Holder immediately so that the amendments may feed into the certification process under conditions G4A or G7A; or b. in respect of amendments to the remaining parts of the OMP, MWRC may discuss these with TDC for TDC's consideration. ADVICE NOTE: Any peer review shall be undertaken by a suitably experienced wastewater treatment plant operator. The intent of the review is to assess issues and develop specific measures to correct them.	Not Assessed	Latest revised version of the OMP was technically certified by MWRC on 4 June 2024. No other review has been undertaken.
G5	If MWRC's Regulatory Manager advises the Consent Holder that clauses (f), (k) and (l) do not achieve technical certification, the Consent Holder shall amend those parts of the OMP and re-submit the OMP to the Regulatory Manager within 20 working days of being advised of the reasons why technical certification was withheld.	Not Assessed	No amendments required. (Clauses (f), (k) and (l), included in the latest revised version of OMP, were technically certified by MWRC on 04 June 2024).
G6	The Consent Holder shall undertake all activities authorised by these consents in accordance with the OMP (certified as required by the conditions of these consents) and any amendments to the OMP in accordance with these conditions.	Compliant	Activities are being undertaken as per the current certified OMP.

Pahiatua WWTP- General conditions		Compliance (as assessed by TDC)	Notes
G7	The Consent Holder shall ensure that a copy of the OMP, including any amendments, is kept onsite. The OMP and any copy kept on-site shall be amended within 5 working days of any changes being made to the design, operation or management of the treatment system addressed by the OMP, with the exception of elements covered by clauses (f), (k) and (l) of condition **G4** which require technical certification under condition **G7A.** Subject to condition **G7A** below, any amendments to the OMP shall be forwarded to MWRC within two weeks of an amendment to the OMP.	Compliant	A copy of the latest certified version of the OMP is kept onsite (confirmed by Campbell Dodds, Senior Consents Monitoring Officer, MWRC, during site inspections on 5 May and 22 May 2025).
G7A	Any amendments to the OMP that relate to clauses (f), (k) and (l) of condition **G4** must be certified by the MWRC's Regulatory Manager or their agent, before the amendments are implemented. **ADVICE NOTE**: If, within **20 working days** of acknowledgement of receipt of the amended OMP, the Consent Holder is not advised to the contrary by the Regulatory Manager or their agent, the Consent Holder may operate in accordance with the amendment on an interim basis.	N/A	No amendments have been made to the OMP since June 2024.
G7B	A sludge management and disposal system must be installed and operated to ensure solids build-up in the main treatment plant does not compromise treatment plant performance. This system must be reflected, as necessary, in the Odour Operation and Management Plan (OOMP) required under condition **A1**.	Compliant	A sludge management and disposal system is installed and operated as required by this condition. (Confirmed by Campbell Dodds, Senior Consents Monitoring Officer, MWRC, during site inspections on 5 May and 22 May 2025.)
G8	Within one month of commencement of these consents, the Consent Holder shall install and thereafter maintain signage advising river users that treated wastewater is being discharged. Prior to the relocation of the discharge point in accordance with condition G9B, signage shall be installed at the following locations: a. At the current discharge location into Town Creek; a. At the confluence of Town Creek and the Mangatainoka River; b. 500m downstream of the confluence of Town Creek and the Mangatainoka River	Compliant	Signage is installed and maintained as required by this condition. (Confirmed by Campbell Dodds, Senior Consents Monitoring Officer, MWRC, during site inspections on 5 May and 22 May 2025 for sites as per parts (a) and (b) of this condition, and evidence for the site in part (c) was provided by Katrina Morgans (email to MWRC dated 09 July 2025).)

Pahiatua WWTP- General conditions		Compliance (as assessed by TDC)	Notes
	Following the relocation of the discharge in accordance with condition G9B, the signage above may be removed, and the Consent Holder shall install and thereafter maintain signage at the following locations: a. Approximately 300m upstream of the discharge location; b. Approximately 500m downstream of the discharge location.		
G9	The Consent Holder shall commence an investigation into alternative methods and treatment and discharge (Alternatives Investigation) on or before five years from the expiry of these consents (discharge permits). The Alternatives Investigation shall be undertaken in consultation with the relevant iwi authorities. The findings of the Alternatives Investigation shall be provided to the relevant iwi authorities, the Tararua District Wastewater Forum (TDWF), and the Regulatory Manager of MWRC	N/A	Required by July 2028 (5 years prior to expiry of consents in 2033).
G9AA	On or before three years from the expiry of these consents (discharge permits), the Consent Holder shall submit to the MWRC's Regulatory Manager, a Future Directions Report confirming the best practicable option for future management and treatment of wastewater discharged from the Pahiatua wastewater treatment plant and the proposed pathway for implementing the option. The Future Directions Report shall: a. be informed by the Alternatives Investigation undertaken in accordance with G9; b. specify a date by which a new application shall be lodged; c. be prepared in consultation with the relevant iwi authorities; and d. be provided to the relevant iwi authorities and the TDWF within two months of its completion. ADVICE NOTE: The intention of the Future Directions Report is to provide a pathway for implementing a long-term (35-year) solution for the treatment and management of wastewater discharged from the Pahiatua wastewater treatment plant.	N/A	Required by July 2030 (3 years prior to expiry of consents in 2033).

Pahiatua WWTP- General conditions		Compliance (as assessed by TDC)	Notes
G9B	Within three years following commencement of these consents: a. the wetland treatment system authorised by ATH-2017201543.00 shall be installed and operational; and b. treated wastewater shall flow through the wetland treatment system authorised by ATH-2017201543.00 and be discharged at the proposed discharge point and no longer into Town Creek.	Non-compliant	Required by 26 July 2024. Wetland construction and relocation of the discharge are yet to be undertaken.
G9C	Any consent(s) required for the outfall structure that will enable the treated wastewater to be discharged at the Mangatainoka River discharge point shall be sought within 3 months of commencement of these consents.	Compliant	Originally required by 26 October 2021; MWRC revised this date requiring a consent application to be lodged by 21 February 2025. An application was submitted on 21 February 2025 and consent ATH-2025207855.00 granted on 24 June 2025.
G10	Within six months of commencement of this consent, and at least three weeks prior to the first scheduled annual meeting of the TDWF following the completion of the report, the Consent Holder shall undertake a recreational use investigation of the reach of the Mangatainoka River from 500m upstream to 1000m downstream of the proposed discharge point referred to in condition G9B, and provide a report documenting the investigation to MWRC's Regulatory Manager and the TDWF. The investigation and subsequent report shall include but not be limited to the following: a. Identification of all public access points to the Mangatainoka River b. Identification of recreation activities that are undertaken, including existing use patterns and preferences, and any barriers to use.	N/A	Required and submitted prior to this reporting period. A Recreational Use Survey was submitted to MWRC on 2 April 2024 (prior to the agreed extension date of 31 May 2024).
G10A	**By 31 October** in the years 2021, 2023 and 2025 the Consent Holder shall provide to MWRC's Regulatory Manager details of inflow and infiltration investigations undertaken in the previous two financial years. Details of any forward works programme for repairs or upgrades to the Council network must be included. Any such works must be undertaken in general accordance with the principles of the Infiltration and Inflow Control Manual, Water New Zealand, 2015 (or relevant updates).	Compliant	TDC has a district wide wastewater inflow and infiltration (I&I) strategy as part of their 2021–2051 Infrastructure Strategy. Extracts from this and their Capital commitment 25/26 to I&I strategy and implementation, as shown in their Annual Plan 2025-2026, as well as from their Wastewater I&I project committee report (August 2025) are reproduced in Appendix A.

Pahiatua WWTP- General conditions		Compliance (as assessed by TDC)	Notes
	ADVICE NOTE: Extracts from appropriate Asset Management documents may be used to help form the basis of information to demonstrate compliance with this condition		With regards to any forward works programme, TDC has chosen Eketahuna township as the pilot site for implementing their I&I strategy in order to thoroughly assess the success of this project and capture key learnings before expanding the initiative to other townships.
G11	**By 15 October** of each year, the Consent Holder shall provide to MWRC's Regulatory Manager and the members of the TDWF, an Annual Environmental Report for the 12-month period ending 30 June of that year. The report shall include but not be limited to: a. A summary of analyses and records collected in accordance with conditions of these consents; b. An assessment of compliance against conditions of these consents; c. A comment on any non-compliance and any additional monitoring or remedial action undertaken or planned; d. A record of any complaints that are received relating to the operation of the Pahiatua WWTP and wetland treatment system; e. A copy of the full quality assured data set for the period; and f. A copy of the current OMP and the register of certified changes to the OMP. ADVICE NOTE: For remedial actions to be undertaken an overview on timing of actions, including reference to appropriate Asset Management Plans is required. This report shall be provided to members of the TDWF not less than 10 working days prior to any TWDF meeting.	Compliant	This report.
G12	Within 3 months of these consents commencing, the Consent Holder shall install a pond level sensor alarm on Pond 3. The sensor shall provide a continuous measure of pond level to the Supervisory Control and Data Acquisition (SCADA) system. The sensor shall provide the following alarm functions: a. Alert level at 500mm below overflow, b. High level at 300mm below overflow, and c. High-high level (Overflow imminent) at 100mm below overflow.	N/A	Historical condition Pond level sensors are installed; however, following a site inspection in May 2025 it was noted that the Pond 3 alarm level setpoint of 500 mm below overflow cannot be achieved as the outlet structure is higher than this level. Horizons have requested TDC remedy this.

Pahiatua WWTP- General conditions		Compliance (as assessed by TDC)	Notes
	ADVICE NOTE: In relation to the sensor, the measurement and poling rates need not be high and a poling rate of once per hour would be sufficient.		TDC's Operations Manager has advised that no further changes will be made at present as a new DAF unit, which will allow for better pond level control, will be installed as part of treatment plant and wetland upgrades planned for 2025-2026.
Tararua District Wastewater Forum (TDWF)			
G13	The Consent Holder shall initiate the inaugural meeting of the TDWF on or before 14 December in the year in which the resource consents authorising either or both of the Pahiatua or Eketāhuna Wastewater Treatment Plants commence. ADVICE NOTE: The inaugural TDWF meeting shall be initiated following commencement of the earliest application.	N/A	Historical condition (previously complied with). The inaugural TDWF meeting was held on 14 December 2021.
G14	The Consent Holder shall secure and pay for the services of an independent facilitator to facilitate discussions during TDWF meetings.	Compliant	TDC has employed an independent facilitator as required.
G15	The Consent Holder shall, for all TDWF meetings, provide the venue and administrative support, including but not limited to recording attendees and circulating notes and outcomes discussed at the forum meeting.	Compliant	Meetings are held at TDC Council chambers, with the December 2024 meeting held in Pahiatua. Minutes of the meetings are documented and circulated to required parties.
G16	At least two weeks prior to hosting any meeting of the TDWF, the Consent Holder shall by way of formal correspondence issue invitations to the following parties: a. Water & Environmental Care Assn. Inc, b. Water Protection Society Inc, c. MidCentral District Health Board, d. Manawatu Estuary Trust, e. Wellington Fish and Game, f. John Bent, g. Christina Paton, h. Corny and Charlotte Andrews, i. A representative of each relevant iwi organisation that submitted on the application; j. A representative of MWRC as the regulatory authority, and	Compliant	Invitations to the annual TDWF meeting held on 5 December 2024 were issued to all required parties on 30 October 2024.

Pahiatua WWTP- General conditions		Compliance (as assessed by TDC)	Notes
	k. A representative of the Tararua District Council as the Consent Holder. ADVICE NOTE: The parties listed in a – i above are the parties that submitted on the resource consent applications.		
G17	In addition to condition G16 above, at least 2 weeks prior to the meeting, the Consent Holder shall place in the Manawatu Standard and the Bush Telegraph a public notice advising of the date, time, location and purpose of the TDWF meeting.	Compliant	The 5 December 2024 meeting was notified in the Manawatu Standard on 20 November 2024 and the Bush Telegraph on 11 November 2025. Refer to Appendix B.
G18	The Consent Holder shall ensure that at least one TDWF meeting occurs annually between 30th October and 14th December.	Compliant	The annual TDWF meeting was held on 5 December 2024.
G18A	The functions and agenda of the TDWF shall, in respect of the performance of the WWTP and discharge facilities, include the following: a. Receiving the following documents and participating in informed discussions on: them, and also on the performance of the WWTP and the quality of the discharges the subject of these consent conditions: i. Optimisation Programme Plan (see condition G3) ii. WWTP Operations and Management Plan (see condition G4) iii. Annual Environmental Report (see condition G11) iv. Assessment of Environmental Effects arising from the pond and/or wetland (see condition DL2 and DL2A) v. Construction Design Plan (see condition DL6) vi. The Alternatives Investigation Report (see condition G9). b. Making suggestions during the annual forum to the Consent Holder as to any practical measures and other initiatives to address actual or potential adverse effects of the treated wastewater discharge; c. Making suggestions during the annual forum as to any additional investigations the Consent Holder might undertake in respect of actual or potential adverse effects of the treated wastewater discharge; and	Compliant	The TDWF operates as required.

Pahiatua WWTP- General conditions		Compliance (as assessed by TDC)	Notes
	d. Considering during the annual forum any other issues of concern to TDWF attendees relating to the WWTP treated wastewater discharge. ADVICE NOTE: The members of the TDWF shall be entitled to have their own experts present at the forum meetings and to provide advice or recommendations to the forum. The Consent Holder is not obliged to pay for the attendance or advice provided by experts engaged by TDWF members.		
G18B	The Consent Holder shall provide minutes and a report of each TDWF meeting to MWRC and the members of the TDWF within four weeks of each meeting. The minutes and report shall include: a. A record of discussions and attendance at the meeting; b. A record of any suggestions provided or issues raised by the members of the TDWF including: i. What actions are proposed by the Consent Holder to respond to suggestions made or issues raised by the TDWF as they relate to functions of the TDWF as set out in condition G18A (and a timeframe for implementing those actions); and ii. Where no actions are proposed to respond to suggestions or issues, the reasons why not.	Compliant	Agenda and minutes for the annual TDWF meeting held on 5 December 2024 were forwarded to MWRC and members of the TDWF on 19 December 2024.
G18C	The TDWF forum may be terminated following a majority vote of parties listed in G16. The Regional Council shall be advised in writing within 10 working days should termination occur. ADVICE NOTE: Should the forum be terminated compliance with condition G18 is no longer required.	N/A	The TDWF remains operational.
G18D	The involvement of a TDWF party, as identified in G16, may be terminated at the discretion of the independent facilitator or following a majority vote of the other parties. Grounds for termination include continued unreasonable or disruptive behaviour.	N/A	No terminations of TDWF parties involved.

Pahiatua WWTP- General conditions		Compliance (as assessed by TDC)	Notes
Duration and Reviews			
G19	The MWRC may, pursuant to section 128 of the Act, initiate a review of any conditions of these consents annually in the month of July. Without limiting section 128 (1)(a)(i)-(ii) of the Act, any review shall be for the following specified purposes: a. Assessing the adequacy of the monitoring programme; and/or b. Assessing the effectiveness of the conditions in these consents in avoiding, remedying or mitigating any more than minor unanticipated adverse effects on the environment; and/or c. Modification of the monitoring programme; and/or d. Deletion, addition or changes to the conditions of these consents; and/or e. Incorporating minimum standards of water quality or air quality from an operative rule in a MWRC Regional Plan.	N/A	MWRC has not initiated a review of conditions.
G20	Discharge to water consent ATH-199501433.02, Discharge to air consent ATH-2016200747.00, and Discharge to land consents ATH-2016200772.00 and ATH-2017201544.00 shall expire twelve years from commencement	N/A	Relates to consent term. Consent due to expire in July 2033.
G21	Land use consent ATH-2017201543.00 shall expire on 30 November 2025.	N/A	Relates to consent term. Consent ATH-2017201543.00 authorising earthworks relating to the construction of the wetlands is due to expire in November 2025. However, as no earthworks have yet commenced, an application for new land use consents for the construction of the wetlands was submitted on 12 June 2025. Decision pending.

Table 2: Summary of compliance with conditions of consent ATH-2016200772.00 (Discharge to Air) for the period 1 July 2024– 30 June 2025.

Pahiatua WWTP- Discharge to Air		Compliance (as assessed by TDC)	Notes
Pre-Development assurance			
A1	Within two months of the commencement of this consent, the Consent Holder shall provide an Odour Operation and Management Plan (OOMP) for certification to the Regulatory Manager of the MWRC as part of the Operation and Management Plan required by condition G4. The purpose of the OOMP shall be to detail the measures the Consent Holder intends to take to avoid and mitigate the potential for odour from the wastewater treatment plant and ponds. The OOMP shall include but not be limited to the following: .... ***(full wording not copied here)*** **...** ADVICE NOTE: The OOMP may be included in the Operations Management Plan provided for in condition G4 of these consents, and sludge management required by condition G7B.	Compliant	Latest version of OOMP was technically certified by MWRC on 4 June 2024.
Environmental Standards			
A2	The discharge to air authorised by this consent shall not cause the emission of odour that, in the opinion of the MWRC's Consents Monitoring Officer, is offensive or objectionable at or beyond the property boundary of the Pahiatua Wastewater Treatment Plant site. ADVICE NOTE: When considering if an odour is objectionable or offensive, the MWRC will take into consideration the FIDOL factors: frequency, intensity, duration, offensiveness and location.	Compliant	No complaints relating to "emission of offensive or objectionable odour" were received by TDC in relation to the Pahiatua WWTP during this reporting period.
A3	The Consent Holder shall keep a complaints register to record complaints relating to discharges of odour or contaminant gases to air arising from the Wastewater Treatment Plant. The register shall include: a. The details of the complainant if given; b. The location of where the contaminant, e.g. odour, was detected; c. A description of the wind speed and direction when the alleged adverse effect was detected by the complainant; d. The date and time of the detection;	Compliant	TDC maintains a Customer Request Management (CRM) system to record all complaints. This register contains all the required information as per condition A3 and records mitigation measures undertaken by council officers in relation to any complaints received. Copy attached as Appendix C.

Pahiatua WWTP- Discharge to Air		Compliance (as assessed by TDC)	Notes
	e. The most likely cause of the discharge detected; f. The dissolved oxygen levels in the ponds up to and including the 24 hours period prior to when the odour was detected; and g. If applicable, any corrective action undertaken by the Consent Holder to avoid, remedy or mitigate the adverse environmental effect detected by the Complainant. A comment regarding when and what feedback was provided to the Complainant to explain the odour.		
A4	The Consent Holder shall advise the MWRC's Regulatory Manager within 24 hours of any complaints relating to air discharges being received.	N/A	No complaints relating to air discharges were received by TDC in relation to the Pahiatua WWTP during this reporting period.
A5	A copy of information recorded in the complaints register shall be included in the Annual Environmental Report required by condition G11 of the General Conditions.	N/A	No complaints were received by TDC in relation to the Pahiatua WWTP during this reporting period.
A6	The Consent Holder shall continuously monitor Dissolved Oxygen in the wastewater treatment pond 1, near the discharge, and ensure that the Dissolved Oxygen concentration is at or above 0.5 mg/L. An information poling rate of once per 15 minutes or less, out to the SCADA and data storage systems, shall be adopted.	Non-compliant	Refer to Section 3.2

Table 3: Summary of compliance with conditions of consent ATH-199501433.02 (Discharge to Water) for the period 1 July 2024– 30 June 2025.

Pahiatua WWTP- Discharge to Water		Compliance (as assessed by TDC)	Notes
Descriptive Specification			
W1	Until 24 months following commencement of these consents, the treated wastewater shall meet the following standards: a. The concentration of ammoniacal-nitrogen (NH4-N) shall not exceed 10 g/m3 in more than 8 out of 12 consecutive samples, and no more than 18 g/m3 in more than 2 out of 12 consecutive samples; b. The concentration of soluble carbonaceous BOD5 (scBOD5) shall not exceed 23 g/ m3 in more than 8 out of 12 consecutive samples; and no more than 31 g/ m3 in more than 2 out of 12 consecutive samples; and c. The concentration of total suspended solids shall not exceed 41 g/m3 in more than 8 out of 12 consecutive samples, and no more than 65 g/m3 in more than 2 out of 12 consecutive samples. Compliance shall be based on grab samples taken from the discharge monitoring point immediately downstream of the UV treatment plant as shown indicatively on Plan ATH-199501433.02A.	N/A	Condition applied UNTIL 25 July 2023.
W2	Until 24 months following commencement of these consents, the treated wastewater discharge shall meet the following standards when flow in the Mangatainoka River as measured at "Mangatainoka at Pahiatua Town Bridge" flow recording station is at or below the 20th flow exceedance percentile flow: a. The concentration of E.coli shall not exceed 600MPN/100ml in more than 8 out of 12 consecutive samples, and no more than 2000MPN/100ml in more than 2 out of 12 consecutive samples; and b. The concentration of DRP shall not exceed 1 g/m3 in more than 8 out of 12 consecutive samples, and no more than 2 g/m3 in more than 2 out of 12 consecutive samples. Compliance shall be based on grab samples taken from the discharge monitoring point immediately downstream of the UV treatment plant as shown indicatively on Plan ATH-199501433.02A.	N/A	Condition applied UNTIL 25 July 2023.

Pahiatua WWTP- Discharge to Water		Compliance (as assessed by TDC)	Notes
W3	From 24 months following commencement of these consents, the treated wastewater shall meet the following standards: a. The concentration of ammoniacal-nitrogen (NH4-N) shall not exceed 10 g/m^3 in more than 8 out of 12 consecutive samples, and no more than 18 g/m^3 in more than 2 out of 12 consecutive samples; b. The concentration of soluble carbonaceous BOD5 (scBOD5) shall not exceed 5 g/m^3 in more than 8 out of 12 consecutive samples; and no more than 8 g/m^3 in more than 2 out of 12 consecutive samples; and c. The concentration of total suspended solids shall not exceed 15 g/m^3 in more than 8 out of 12 consecutive samples, and no more than 30 g/m^3 in more than 2 out of 12 consecutive samples. Compliance shall be based on grab samples taken from the discharge monitoring point immediately downstream of the UV treatment plant as shown indicatively on Plan ATH-199501433.02A.	Compliant	Condition applied FROM 25 July 2023. Refer to Section 3.3.1.
W4	From 24 months following commencement of these consents, the treated wastewater discharge shall meet the following standards when flow in the Mangatainoka River as measured at "Mangatainoka at Pahiatua Town Bridge" flow recording station is at or below the 20th flow exceedance percentile flow: a. The concentration of *E. coli* shall not exceed 260 MPN/100 ml in more than 8 out of 12 consecutive samples, and no more than 2000 MPN /100ml in more than 2 out of 12 consecutive samples; and b. The concentration of DRP shall not exceed 0.5 g/m3 in more than 8 out of 12 consecutive samples, and no more than 1.0 g/m3 in more than 2 out of 12 consecutive samples. Compliance shall be based on grab samples taken from the discharge monitoring point immediately downstream of the UV treatment plant as shown indicatively on Plan ATH-199501433.02A. Compliance with conditions W2 and W4 will be based on the flow at the "Mangatainoka at Pahiatua Town Bridge" flow recording station being less than 23.3 m^3/s.	Compliant	Condition applied FROM 25 July 2023. Refer to Section 3.3.2.

Pahiatua WWTP- Discharge to Water		Compliance (as assessed by TDC)	Notes
W5	The UV disinfection unit shall be equipped with a UV sensor to monitor UV transmission or intensity through the wastewater during operation.	Compliant	The Pahiatua WWTP is equipped with a UV disinfection unit.
W5A	The UV sensor shall be monitored continuously and shall be programmed with an alarm notifying the Consent Holder if the applied UV dose decreases below the manufacturer's recommended dose for a period of more than 24 hours. ADVICE NOTE: It is expected that this alarm setting will be of the order of 30 mJ/cm^2.	Compliant	The UV sensor is monitored continuously and is programmed with an alarm which is activated when intensity drops (confirmed by Campbell Dodds during a site inspection visit on 5 May 2025).
Receiving Water Quality			
W8	The treated wastewater discharge shall not cause any of the following in the Mangatainoka River at the river flows outlined in Table 1 and, after reasonable mixing, at the monitoring point 200m downstream from the discharge in accordance with condition W17 a. the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials; or b. bacterial and / or fungal slime growths visible to the naked eye as plumose growths or mats; or c. any emission or of objectionable odour; or d. a reduction in horizontal visibility, defined as the horizontal sighting range of a black disc, by more than 20%; or e. the ammoniacal nitrogen (NH4-N) concentration to exceed 2.1 g/m^3 at any time, or to exceed 0.4 g/m^3 as a rolling annual average; or f. the rolling annual average particulate organic matter concentration to exceed 5 g/m^3 at flows below median flow; or g. the Chlorophyll a. to exceed 120 mg/m^2 on more than 8% of occasions on the basis of the last 36 samples collected monthly in accordance with condition W23; or h. the cover of filamentous mats greater than 2 cm long to exceed 30% or cover of mats greater than 3mm thick to exceed 60%; or i. a reduction in Quantitative Macroinvertebrate Community Index (QMCI) of greater than 20%; or	Compliant for: a, b, c, d, e, f, g, h, i, j	Refer to Section 3.3.3.

Pahiatua WWTP- Discharge to Water		Compliance (as assessed by TDC)	Notes
	j. the rolling annual average scBOD5 concentration to exceed 1.5 g/m3 at flows below the 20th FEP. The River Flows in Table 1 (***not reproduced here***) are in the Mangatainoka River as measured at "Mangatainoka at Pahiatua Town Bridge" water level recording station.		
W9	Compliance with condition **W8** shall be assessed as follows: (***full wording of subparts (a) to (h) not copied here***)	Compliant	Compliance was assessed as per the requirements of condition W9.
W10	**Wastewater monitoring** To enable sampling of the treated wastewater the Consent Holder shall establish and maintain safe access to a sampling port as close as is practicable to the end of the wastewater treatment system post UV. The sampling port location shall be identified in the OMP required under condition G4.	Compliant	Safe access to sampling locations was maintained.
W11	The Consent Holder shall take monthly grab samples of the treated wastewater at the sampling port referred to in condition W10. The samples shall be analysed for the constituents and at the frequencies listed in Table 2 to assess compliance with conditions W1 to W4 of this consent.	Compliant	TDC undertake the required monthly monitoring of both the Mangatainoka River and the treated wastewater in accordance with this condition. Water quality data are attached as Appendix D.
W12	The Consent Holder must ensure that a flow meter is located and maintained on each of the inflow and outflow lines to and from the treatment plant for the duration of the consent. The flow meter on the outflow line must be positioned to measure the entire volume of treated sewage wastewater discharged into the surface water of the Mangatainoka River/or into wetland as authorised by this consent. The inflow meter must be positioned prior to the inlet screen so as to measure the entire wastewater volume entering the plant.	Compliant	Flow meters are installed on both inflow and outflow lines.
W13	The flow meters required by condition W12 shall be verified by a registered verifier upon installation and every five (5) years following commencement of this consent to ensure compliance with condition W12. The Consent Holder shall provide evidence of the verification in writing to MWRC's Regulatory Manager within one month of the verification being completed.	Compliant	Flow meters were last verified by ABB Ability as follows: • Inflow and outflow meters were verified on 8 May 2025, • The new Pond 3 overflow meter was verified on 31 January 2025. Refer to Appendix E.

Pahiatua WWTP- Discharge to Water		Compliance (as assessed by TDC)	Notes
	ADVICE NOTE: Written verification can be sent to the Regulatory Manager via email compliance.shared@horizons.govt.nz –OR– via mail addressed to: C/- The Regulatory Manager, Horizons Regional Council, Private Bag 11025, Manawatu Mail Centre, Palmerston North 4442.		The next verification will be due by January 2030.
W14	The Consent Holder shall, for the duration of this consent, maintain in a fully operational condition, a GPRS data logger / telemetry unit compatible with the MWRC's Telemetry system on the discharge line traceable to +/- 5 % or better. ADVICE NOTE: This unit, which is attached to the pulse counter output, will be monitored by the MWRC to ensure compliance with the resource consent conditions.	Compliant	A data logger/telemetry system that meets these requirements is in place.
W15	Where telemetry equipment fails for reasons other than fair wear and tear, replacement or repair and recalibration will be at the Consent Holder's expense. Replacement or repair and recalibration will be within five working days.	N/A	There was no failure of telemetry equipment.
W16	With the exception of network power failure or network maintenance the Consent Holder shall ensure that power supply is maintained at the site at all times. ADVICE NOTE: If power supply is lost at the site due to Consent Holder negligence or abuse and telemetry units require recalibration by MWRC staff the costs associated will be recovered from the Consent Holder.	Compliant	Power supply to the site was consistently maintained.
River and Wastewater Monitoring			
W17	Prior to the relocation of the discharge point, the Consent Holder shall take samples from the Mangatainoka River at Reach B and Reach C. Once the discharge point has been relocated, the Consent Holder shall take samples from the Mangatainoka River at Reach A and Reach B as shown on Plan ATH-199501433.02A attached to and forming part of these consent conditions. The river samples shall be analysed for the constituents and at the frequency listed in Table 2 to assess compliance with conditions W8 and W9 of this consent. The wastewater samples shall be analysed for the constituents and at the frequency listed in Table 2 to assess compliance with conditions W1-W4 of this consent. ADVICE NOTE: pH, temperature, horizontal visibility and dissolved oxygen shall be measured on site, directly in the river.	Compliant	TDC undertake the required monthly monitoring of both the Mangatainoka River and the treated wastewater in accordance with this condition, noting that the discharge has not yet been relocated. Water quality data are attached as Appendix D.

Pahiatua WWTP- Discharge to Water		Compliance (as assessed by TDC)	Notes
	ADVICE NOTE: It is preferable that the downstream sample is collected before the upstream sample so that disturbed sediment does not impact the downstream sampling result. ADVICE NOTE: Testing for Dissolved Aluminium is only required if Alum is used as the flocculent. **Table 2: Wastewater and River Monitoring (*table not reproduced here*)**		
W18	Should a flocculent involving Aluminium be used, then from the date this consent commences: a. The Consent Holder shall assess annually for the first three years of this consent, and thereafter once every three years, the dissolved aluminium in-river monitoring results against a trigger concentration of 0.055 g/m^3 and run a Wilcoxon Signed Rank test on the last 12 consecutive monthly samples to determine if there are any significant increases in dissolved aluminium concentration between upstream and downstream results. The results shall be interpreted in light of the wastewater dissolved aluminium results, to evaluate whether the discharge is a likely cause of any increase between upstream and downstream in-stream results. b. In the event that the median dissolved aluminium concentration exceeds the trigger concentration of 0.055 g/m^3, and that a significant increase is detected between upstream and downstream results, and that the discharge is a likely cause of that increase, an investigation into the risk of toxic effects due to dissolved aluminium shall be undertaken within one month of detecting the significant increase. The findings shall be reported in the annual report required by condition G11 of the general conditions. c. If the investigation in b. shows a likelihood of toxic effects then measures to address that situation shall be proposed by the Consent Holder and implemented subject to certification by the MWRC Regulatory Manager. ADVICE NOTE: To perform the statistical test, analysis needs to be against a minimum of 12 upstream and downstream paired results from the monthly sampling, accordingly no statistical test shall be performed until 12 samples have been collected.	Compliant	Dissolved aluminium concentrations in the Mangatainoka River remained below 0.055 g/m^3 both upstream and downstream on all sampling occasions during this reporting period. A Wilcoxon Signed Rank Test showed no significant differences between upstream and downstream median values (W=10, P=0.6).

Pahiatua WWTP- Discharge to Water		Compliance (as assessed by TDC)	Notes
W19	All wastewater and river water quality analyses shall be undertaken by an appropriate accredited laboratory. All methodologies adopted shall be appropriate for either wastewater or river water analyses respectively and the soluble $cBOD_5$ shall be GF/C filtered. The methodologies shall be determined in consultation with the MWRC's Regulatory Manager.	Compliant	Water samples were analysed by TDC's contracted laboratory, Central Environmental Laboratories (CEL), Palmerston North. All water samples collected by TDC were sent to Central Environmental Laboratories (CEL), Palmerston North, an IANZ accredited laboratory, and analysis methodologies agreed upon with MWRC.
W20	The Consent Holder shall have an appropriately experienced and qualified freshwater ecologist undertake macroinvertebrate sampling in the Mangatainoka River. The macroinvertebrate sampling shall be undertaken following a period of at least three weeks without a significant flood event (defined as an instantaneous river flow exceeding three times the median flow, defined as 26.7 m^3/s in the Mangatainoka River at Pahiatua Town Bridge) and during a period of low flow (at least one week below ½ median flow in the Mangatainoka River at Pahiatua Town Bridge defined as 4.45 m^3/s).	Compliant	Refer to Appendix F.
W21	Macroinvertebrate sampling referred to in condition W20 is to be undertaken: a. once prior to the commissioning of the new discharge location, between January and April inclusive, at Reach A, Reach B and Reach C; b. following commissioning of the new discharge location, annually between January and April inclusive for three years at Reach A and Reach B. Should flow conditions defined in condition W20 not be met, monitoring shall occur in the following year until three monitoring rounds are completed; c. Thereafter, every three years at Reach A and Reach B between January and April inclusive and in any other year if one or more of the parameters of condition W8 are exceeded.	Compliant with a N/A for b and c	Macroinvertebrate sampling was undertaken at Reaches A, B and C in January 2022, April 2023, March 2024 and February 2025, all prior to the commissioning of the new discharge location (satisfies sub-part a.). As the discharge has not yet been relocated, no further macroinvertebrate monitoring is required at present (not applicable for sub-parts b and c). However, TDC contracted Traverse to continue with annual macroinvertebrate monitoring to establish a baseline record of the macroinvertebrate communities across the three reaches. Results from the February 2025 monitoring are attached as Appendix F.

Pahiatua WWTP- Discharge to Water		Compliance (as assessed by TDC)	Notes
W22	The macroinvertebrate sampling shall follow Protocols C3 (Hard-bottomed quantitative), P3 (full count with subsampling option) and QC3 (Quality control for full count with subsampling option) from the Ministry for the Environment's "protocols for sampling macroinvertebrates in wadeable streams" (Stark et al. 2001). This shall involve: (***full wording of condition not copied here***).	N/A	Although not required during this reporting period, TDC contracted Traverse to continue to undertake annual macroinvertebrate monitoring to establish a baseline record of the macroinvertebrate communities, as per the methodology specified in condition W22. Refer to Appendix F.
W23	The Consent Holder shall have an appropriately experienced and qualified freshwater ecologist undertake monthly assessments of periphyton in each month of the year. The assessments shall be undertaken: a. prior to the commissioning of the new discharge location, regardless of river flow, Reach A, Reach B and Reach C approximately 200m downstream of Town Creek; and a. following commissioning of the new discharge location, regardless of river flow, for three years at Reach A and Reach B; and b. Thereafter, for twelve months, once every three years at Reach A and Reach B. The periphyton assessment is to include: (***full wording not copied here***)	Compliant	Periphyton was monitored monthly throughout this reporting period at all three Mangatainoka River reaches. Refer to Appendix F.
W24	In the first year after relocation of the discharge, the Consent Holder shall have an appropriately experienced and qualified person undertake a one off continuous dissolved oxygen monitoring programme at the points upstream and downstream of the new discharge location (Reaches A and B). This is to be undertaken following a period of at least three weeks without a significant flood event (defined as an instantaneous river flow exceeding three times the median flow, defined as 26.7 m3/s in the Mangatainoka River at Pahiatua Town Bridge) and during a period of low flow (at least one week below ½ median flow in the Mangatainoka River at Pahiatua Town Bridge defined as 4.45 m3/s). Monitoring is to occur for no less than 11 days in the period of November to April in the first year where flows in the Mangatainoka River are suitable. ADVICE NOTE: The 11 days during which monitoring takes place need not be consecutive days.	N/A	The relocation of the discharge has not yet been commissioned.

Pahiatua WWTP- Discharge to Water		Compliance (as assessed by TDC)	Notes
W25	The continuous dissolved oxygen monitoring is to be undertaken in accordance with the National Environmental Monitoring Standards document for Measuring, Processing and Archiving of Dissolved Oxygen Data (version 2, dated July 2016). The monitoring results shall be compared against the thresholds for Dissolved Oxygen in the latest National Policy Statement for Freshwater Management. The results shall be summarised in a short report to be provided to the MWRC's Regulatory Manager within three months of the monitoring taking place. The report shall include but is not limited to: (***full wording not copied here***).	N/A	The relocation of the discharge has not yet been commissioned.
Post-development assurance			
W25A	At least once every five years, or earlier if there is an unexplained increase in flows, the Consent Holder must review records of wastewater flows received at the treatment plant to ensure there has been no unexplained increase in flows (based on a five-year running average) that could adversely affect treatment plant performance. The results of the review must be included in the next annual monitoring report to the Regulatory Manager as required by condition G11. In the event that the review shows that unexplained increased flows could result in adverse effects on treatment plant performance, the permit holder must investigate the reasons for the unexplained increased flows and put in place remedial works as necessary. In the event there is disagreement between the Consent Holder and MWRC in relation to the need for investigations and/or remedial works, the Consent Holder must commission an independent review by a suitably qualified expert acceptable to the Consent Authority.	N/A	Required by July 2026.
W26	The Consent Holder shall notify the MWRC's Regulatory Manager within two working days of any non-compliance occurring or when it becomes certain that a breach of consent conditions is about to occur. For conditions requiring compliance with a particular water quality standard, notification is required within two working days of receipt of the water quality analysis from the laboratory.	Compliant	TDC has implemented CS-Vue and Water Outlook and non-compliances are being notified to MWRC as required.

Pahiatua WWTP- Discharge to Water		Compliance (as assessed by TDC)	Notes
W27	The Consent Holder shall make results of monitoring undertaken required by conditions W17 and W18 of these consents available to the MWRC's Regulatory Manager on request, and data records for each three-month period ending March, June, September and December shall be forwarded to MWRC's Regulatory Manager in a suitable electronic format, within 14 days after the end of each three-monthly period.	Compliant	TDC supplied monitoring results to MWRC by email: • July–Sept 2024 – emailed 18/10/2024 • Oct–Dec 2024 – emailed 08/01/2025 • Jan–Mar 2025 – emailed 07/04/2025 • Apr–Jun 2025 – emailed 09/07/2025
W28	By 31 October each year, the Consent Holder shall prepare a report that summarises and assesses all of the monitoring information required under conditions W17, W18, W20, W21, W23 and W24 of these consents. This report should be included in the Annual Environmental Report required by condition G11 of the general conditions	Compliant	Refer to Appendix F.

Table 4: Summary of compliance with conditions of consent ATH-2016200747 and ATH-2017201544.00 (Pond & Wetland Seepage) for the period 1 July 2024– 30 June 2025.

Pahiatua WWTP- Pond & Wetland Seepage		Compliance (as assessed by TDC)	Notes
Descriptive Specification			
DL1	**Permeability Investigations** **Within six months** of commencement of this consent, the Consent Holder shall submit to the MWRC's Regulatory Manager a plan to investigate the rate of leakage of all the existing treatment ponds. The plan shall include but not be limited to a methodology for a water balance to be undertaken for each of the ponds. As a minimum inflows and outflows from the treatment system shall be recorded over a 12-month period, as shall local daily rainfall. The methodology shall also include a representative exercise for measuring pond levels and for the measurement and recording of representative evaporation rates; or other suitable method to determine rate of leakage of each of the treatment ponds. a. The methodology proposed shall be peer reviewed by an independent and suitably qualified expert. a. Results from the water balance undertaken in accordance with the peer reviewed methodology shall be submitted to the MWRC's Regulatory Manager and the TDWF within six months of the completion of the 12-month monitoring period.	Compliant (with revised reporting timeframes)	As discussed in MWRC's review of the 2023/24 annual report, the reporting date required by this condition was revised to 19 October 2024 and then subsequently to 29 July 2025. A report prepared by WSP to satisfy this condition was submitted to MWRC on 29 July 2025.
DL2	**By 1 February 2023**, the Consent Holder shall submit a report to the MWRC's Regulatory Manager and TDWF, prepared by an independent and suitably experienced and qualified water quality scientist(s), which shall include but not be limited to: a. An assessment of the effects of the discharge through the base and walls of the ponds on both groundwater and surface water as is able to be determined from the analyses and records collected in accordance with conditions of these consents;	Compliant (with revised reporting timeframes)	Following MWRC's review of the 2023/24 annual report, the reporting date required by this condition was revised to 29 August 2025. A report prepared by Traverse to satisfy this condition was submitted to MWRC on 29 August 2025.

Pahiatua WWTP- Pond & Wetland Seepage		Compliance (as assessed by TDC)	Notes
	b. A comment on the extent to which the discharge from the existing ponds and/or constructed wetland is causing, or contributing to, (outside the uncertainty of measurement for the sample) any exceedance of One Plan Schedule E targets in the Mangatainoka River. Should more than minor effects of pond seepage on surface and/or groundwater quality be identified, an assessment of options (BPO) to mitigate any more than minor adverse effects, including an assessment from an independent IPENZ Chartered geotechnical engineer as to whether relining existing wastewater ponds to a permeability standard of 1x10-9 m/s is practicable (this shall include an economic assessment).		
DL2A	**18 months after** the wetland treatment system is fully established, but no later than 1 January 2029, the Consent Holder shall submit a report to MWRC's Regulatory Manager and TDWF prepared by an independent and suitably experienced and qualified water quality scientist(s), which shall include but not be limited to comments on the extent to which the discharge from the constructed wetland treatment system is causing, or contributing to, (outside the uncertainty of measurement for the sample) any exceedance of One Plan Schedule E targets in the Mangatainoka River.	N/A	Required 18 months after the establishment of the wetlands, but no later than 1 January 2029. The wetland treatment system is not yet in place.
DL3	**Groundwater monitoring** **Within three months** of the date of commencement of this consent, the Consent Holder shall install three groundwater monitoring wells on the site at or as near as practicable to the locations specified on Plan ATH-199501433.02 A and to the following specifications: a. The monitoring wells shall have a diameter of a sufficient size (i.e. approximately 50mm) to enable sampling for the analysis of water quality. b. The wells shall be screened from approximately 1 m above to approximately 2 m below the level of the bed of the Mangatainoka River. c. The wells shall be constructed of polyvinyl chloride (PVC) or a similar inert material and shall be capped and secured to prevent entry of surface water.	Compliant (with revised reporting timeframes)	Groundwater monitoring wells were installed on 15 April 2024 (meeting the extended timeframe previously agreed to by MWRC).

Pahiatua WWTP- Pond & Wetland Seepage		Compliance (as assessed by TDC)	Notes
	d. The well head should be located within a 'toby', set in concrete, to prevent damage e. A concrete pad at least 0.3 metres radius shall be constructed around the well head and 'toby' to prevent leakage around the casing. The concrete pad shall slope away from the bore. The wells shall be installed by a suitably qualified person(s) and constructed in accordance with the New Zealand Standard for Drilling Rock and Soil NZS 4411:2001.		
DL4	The Consent Holder shall take samples from all bores identified in condition DL3 in accordance with the most recent version of the MfE Groundwater sampling protocols (2006). Sampling shall be undertaken quarterly in the months of January, April, July and October for a period of two years following commencement of consent, thereafter reducing to six-monthly in January and July.	Compliant	Monthly groundwater monitoring has been undertaken since 30 April 2024. Data are attached as Appendix G.
DL5	Samples collected under condition DL4 shall be analysed for the following: a. Total Phosphorus (TP) b. Dissolved Reactive Phosphorus (DRP) c. Total Nitrogen (TN) d. Nitrate Nitrogen (NO3-N) e. Nitrite Nitrogen (NO2-N) f. Escherichia coli (E. coli) g. Dissolved oxygen (field measurements) h. Electrical Conductivity (EC) (field measurements) i. Chloride j. Static water level k. pH (field measurement and laboratory measurement)	Compliant	Samples are analysed for all parameters required. Data are attached as Appendix G.

Pahiatua WWTP- Pond & Wetland Seepage		Compliance (as assessed by TDC)	Notes
DL6	**Wetland Design, Development and Construction** **Within 12 months** of commencement of this consent, the Consent Holder shall submit to the MWRC Regulatory Manager, a construction design plan for the development phase of both the wetland treatment system and biodiversity wetlands (together making up the "wetlands"). The wetlands are to be designed by an appropriately qualified and experienced expert, and in consultation with relevant iwi authorities and located in general accordance with Plan ATH-199501433.02 A attached to and forming part of this consent, with necessary modifications. The construction design plan shall include but not be limited to information demonstrating the following matters – **Construction and Establishment phase of wetland treatment system wetland** **... (*full wording not copied here*)** Construction and Establishment phase of biodiversity wetland **... (*full wording not copied here*)**	Compliant (with revised reporting timeframes)	As discussed in MWRC's review of the 2023/24 annual report, the reporting date required by this condition was revised to 14 December 2024. The wetland design construction plan was submitted to MWRC on 13 December 2024.
DL6A – DL10F	Relates to planting, maintenance and monitoring of the wetlands **... (*full wording not copied here*)**	N/A	The wetland treatment system is not yet in place.
DL10G	For the purpose of condition DL10F or for assessing compliance with any future SIN removal requirements resulting from a plan change, the baseline will be the annual average SIN load discharged to the wetland treatment system, as calculated: a. on the basis of 36 monthly samples collected from consent commencement; and b. using a methodology prepared by a suitably qualified and independent expert appointed by the Consent Holder.	Compliant	Methodology (prepared by Traverse Environmental Ltd) was submitted to MWRC on 2 July 2025.
DL10H	The methodology required by **DL10G (b)** must be sent to the MWRC's Regulatory Manager for certification within 30 months of consent commencement.	Compliant	The methodology required by condition DL10G(b) (prepared by Traverse Environmental Ltd and submitted to MWRC on 2 July 2025) was certified by MWRC on 12 August 2025.

Pahiatua WWTP- Pond & Wetland Seepage		Compliance (as assessed by TDC)	Notes
DL11	**Management of the biodiversity wetland** a. Weed removal shall be undertaken annually within the biodiversity wetland to prevent the establishment of invasive weed species including, but not confined to, willows. b. In-fill planting shall be undertaken annually for at least the first 3 years following planting to replace plants that have died.	N/A	The wetland treatment system is not yet in place.
DL12	All wastewater and bore water quality analyses shall be undertaken by an appropriate accredited laboratory.	Compliant	All water samples collected by TDC were sent to Central Environmental Laboratories (CEL), Palmerston North, an IANZ accredited laboratory.
DL13	Results of the monitoring required by condition **DL5** of this consent shall be transferred within ten working days of their receipt to the MWRC in a format compatible with the MWRC systems.	Compliant	Monthly bore monitoring data were submitted to MWRC as required.
DL14	The results from the monitoring required by condition DL5 of this consent shall be collated, analysed and interpreted and included in the Annual Report, as required by condition G11 in the General Conditions to these consents	Compliant	Analysis of results from groundwater monitoring required by condition DL5 were included in reports prepared by WSP, LEI and Traverse to satisfy conditions DL1 and DL2 respectively, submitted separately on 29 August 2025.

Table 5: Summary of compliance with conditions of consent ATH-2017201543.00 (Earthworks) for the period 1 July 2024– 30 June 2025.

Pahiatua WWTP- Earthworks	Compliance (as assessed by TDC)	Notes
EW1 – EW30	N/A	No earthworks have been undertaken during this reporting period.

3 Assessment against condition limits

3.1 General conditions

3.1.1 Condition G2 – discharge volumes

Figure 1 shows the daily discharge volumes from the WWTP.

- The 12-month median daily discharge for the period 1July 2024 to 30 June 2025 was 1,091 m^3/day, and during the reporting period the 12-month rolling median remained below the condition G2 limit of 1,200 m^3/day at all times.
- The 12-month 95th percentile daily discharge for the period 1 July 2024 to 30 June 2025 was 1,649 m^3/day, and during the reporting period the 12-month rolling 95th percentile remained below the condition G2 limit of 2,000 m^3/day at all times.

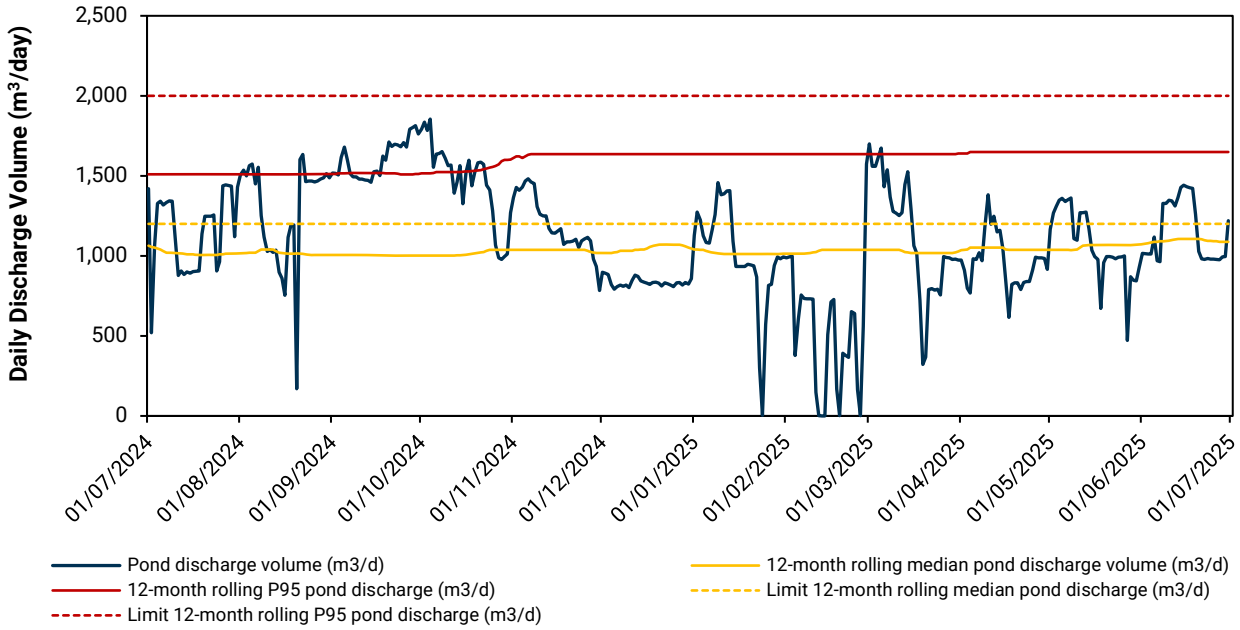

Figure 1: Total daily discharge volumes (dark blue trace) for the Pahiatua WWTP, 1 July 2024 to 30 June 2025. The solid orange trace indicates the 12-month rolling median volume, while the solid red trace indicates the 12-month rolling 95th percentile volume (dashed lines, coloured accordingly, indicate the maximum allowable for each respectively).

3.2 Discharge to Air conditions

3.2.1 Condition A6: Dissolved oxygen monitoring

Figure 2 shows the dissolved oxygen (DO) concentrations at 15-minute intervals in Pond1 at the Pahiatua WWTP.

DO fell below the condition A6 lower limit of 0.5 mg/L 27% of the time (9,582 times out of 34,933 15-minute interval records) between 1 July 2024 and 30 June 2025. However, the aerators are programmed to start automatically when DO falls below 0.5 mg/L.

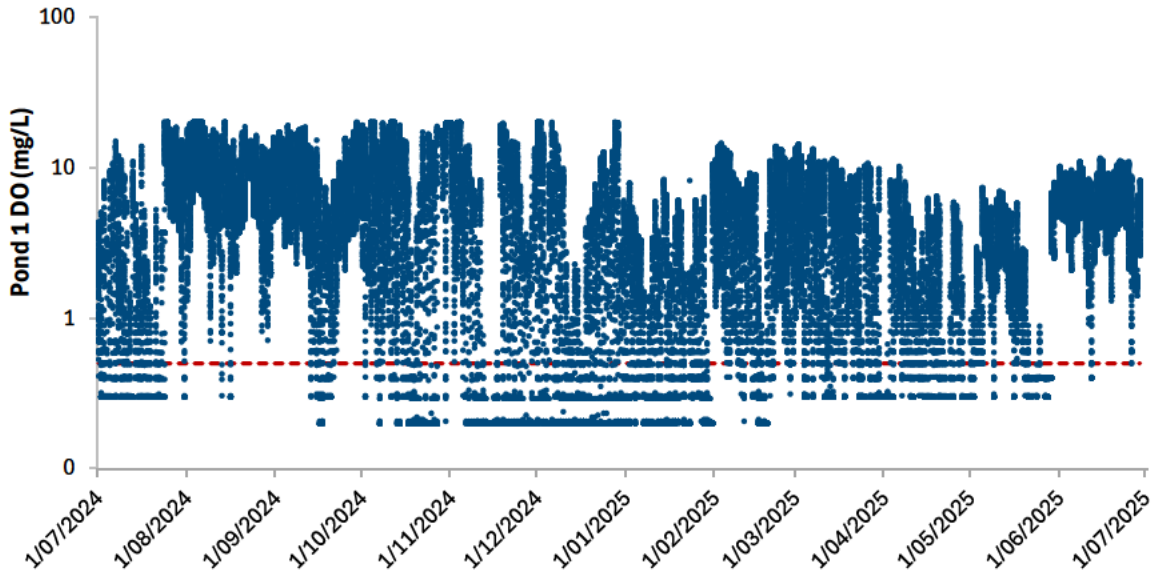

Figure 2: Dissolved oxygen (DO) concentrations (at 15-minute intervals, log scale) in Pond 1 of the Pahiatua WWTP, 1 July 2024 to 30 June 2025. The dashed red line indicates the minimum concentration required by condition A6.

3.3 Discharge to Water conditions

3.3.1 Condition W3: effluent water quality (ammoniacal-N, $ScBOD_5$, TSS)

Condition W3 has three parts (a to c) and restricts the number of exceedances that are allowed over various limits for ammoniacal nitrogen, $ScBOD_5$ and TSS. Data are presented in Table 6 and assessed based on the last 12 consecutive samples (June 2024 to June 2025, noting June 2024 data relates to the previous reporting period and there was no sampling undertaken in August 2024 due to an extreme weather event).

a. Ammoniacal nitrogen concentrations did not exceed 10 g/m^3 on any sampling occasion during this reporting period - **compliant**.
b. $ScBOD_5$ concentrations remained below 5 g/m^3 on all sampling occasions - **compliant**.
c. TSS concentrations exceeded 15 g/m^3 on three sampling occasions, and exceeded 30 g/m^3 on one occasion, remaining within the allowable 8 out of 12 exceedances and 2 out of 12 exceedances, respectively - **compliant**.

Table 6: Ammoniacal nitrogen (ammoniacal-N), $ScBOD_5$ and total suspended solids concentrations in the treated wastewater prior to discharge from the Pahiatua WWTP, 1 July 2024 to 30 June 2025. ND indicates no data collected due to a severe weather event in August 2024. Shaded cells indicate exceedances of condition limits.

Condition W3	Ammoniacal-N (g/m^3)	$ScBOD_5$ (g/m^3)	TSS (g/m^3)
*14/06/2024***	*3.67*	*<1*	*26*
25/07/2024	0.065	1	47
18/08/2024	ND	ND	ND
25/09/2024	3.97	3	11
17/10/2024	6.55	1	8
19/11/2024	5.22	4	9
12/12/2024	7.54	<1	16
15/01/2025	9.23	1	10
05/02/2025	1.02	2	18
13/03/2025	0.146	1	8
15/04/2025	0.193	2	5
15/05/2025	1.4	2	5
17/06/2025	0.04	3	13
Condition limit	*< 10 g/m^3*	*< 5 g/m^3*	*No more than 8 out of 12 > 15 g/m^3 and*	*No more than 2 out of 12 > 30 g/m^3*
No. of exceedances	0	0	4	1
Condition limit met?	√	√	√	√

** June 2024 data, while collected during the previous reporting period, have been included here to allow 12 consecutive samples for assessment.

3.3.2 Condition W4: effluent water quality (*E. coli*, DRP)

Condition W4 has two parts (a and b), with condition limits only applicable when the flow in the Mangatainoka River (at the Pahiatua Town Bridge flow recording station) is at or below the 20th flow exceedance percentile (FEP) (i.e. ≤ 23,300 L/s). Flows in the Mangatainoka River remained below this limit on all sampling occasions between July 2024 and June 2025.

a. *E. coli* concentrations in the treated wastewater prior to discharge were mostly below the detection limit (<10 MPN/100mL) and met the condition limits - **compliant**.
b. DRP concentrations were also often below the detection limit (<0.005 g/m^3) and met condition limits - **compliant**.

Table 7: *E. coli* and dissolved reactive phosphorus (DRP) concentrations in the treated wastewater prior to discharge from the Pahiatua WWTP, 1 July 2024 to 30 June 2025. ND indicates no data collected due to a severe weather event in August 2024. River flows from the Mangatainoka River at Pahiatua town bridge, reported to nearest 10 L/s.

Condition W4	Average daily flow (L/s)	*E. coli* (MPN/100mL)	DRP (g/m^3)
*14/06/2024***	*5,740*	*<4*	*0.008*
25/07/2024	9,260	<10	0.010
18/08/2024	333,820	ND	ND
25/09/2024	17,470	<1	0.007
17/10/2024	11,560	<10	<0.005
19/11/2024	6,950	<10	<0.005
12/12/2024	6,400	<10	0.006
15/01/2025	1,900	<1	<0.005
05/02/2025	1,300	2	0.011
13/03/2025	1,010	<1	0.011
15/04/2025	2,750	<1	<0.005
15/05/2025	3,700	<1	<0.005
17/06/2025	9,260	<1	0.006

Condition limit	*No more than 8 out of 12 > 260 MPN/100 mL*	*No more than 2 out of 12 > 2,000 MPN/100 mL*	*No more than 8 out of 12 > 0.5 g/m^3*	*No more than 2 out of 12 > 1 g/m^3*
No. of exceedances	0	0	0	0
Condition limit met?	√	√	√	√

** June 2024 data, while collected during the previous reporting period, have been included here to allow 12 consecutive samples for assessment.

3.3.3 Condition W8: effects on the Mangatainoka River (receiving water)

Condition W8 has 10 parts (a to i).

a. No "oil or grease films, scums or foams, or floatable or suspended materials" were observed in the Mangatainoka River downstream of the discharge during this reporting period (no observations recorded with water quality or ecological monitoring) – **compliant**.

b. No "bacterial and/or fungal slime growths visible to the naked eye as plumose growths or mats" were observed in the Mangatainoka River downstream of the discharge during this reporting period (no observations recorded with water quality or ecological monitoring) – **compliant**.

c. There were no occurrences of "emission of objectionable odour" during this reporting period (based on assessment of TDC's Customer Request Management (CRM) system). No complaints were received by TDC in relation to the Pahiatua WWTP during this reporting period – **compliant**.

d. Horizontal visibility was measured using a clarity (SHMAK) tube; however, Condition W8(d) specifies that visual clarity change be assessed based on the black disk method. Therefore, the clarity tube readings were converted to black disk measurements as per Kilroy and Biggs (2002)[1]. Where horizontal visibility measured using a clarity tube is less than 50 cm, the clarity tube measurement can be considered approximately equivalent to black disk readings. Where the clarity tube measurement is greater than 50 cm, a conversion can be applied using the formula below. The conversions provide approximate black disk values only, as this formula was derived using data solely from Canterbury streams and its applicability to the Mangatainoka River is unknown.

$$Y_{BD} = 7.28 \times 10^{(Y_{CT}/62.5)}$$

where: Y_{BD} = horizontal distance of the black disk (in cm)

Y_{CT} = distance of the clarity tube (in cm).

Horizontal visibility did not decrease by more than 20% (the condition limit) between sites upstream and downstream of the discharge on any monitoring occasion during this reporting period– **compliant**.

Table 8: Visual clarity and colour observed in the Mangatainoka River upstream (U/S) and downstream (D/S) of the discharge from the Pahiatua WWTP, July 2024–June 2025. Clarity tube measurements have been converted to black disk measurements to allow assessment. ND indicates no data collected due to a severe weather event in August 2024.

Condition W8d	Clarity tube (cm)		Water clarity (equivalent black disk) (m)		% change	Observed colour	
	U/S	D/S	U/S	D/S		U/S	D/S
25/07/2024	16	35	0.2	0.4	119%	Clear	Light Brown
18/08/2024	ND	ND	ND	ND	ND	ND	ND
25/09/2024	100	98	>2.9	2.7	NA	Clear	Clear
17/10/2024	94	94	2.3	2.3	0%	Clear	Clear
19/11/2024	94	94	2.3	2.3	0%	Clear	Clear
12/12/2024	93	93	2.2	2.2	0%	Clear	Clear
15/01/2025	93	93	2.2	2.2	0%	Clear	Clear
05/02/2025	84	86	1.6	1.7	8%	Clear	Clear
13/03/2025	90	84	2.0	1.6	-20%	Clear	Clear
15/04/2025	92	88	2.2	1.9	-14%	Clear	Clear
15/05/2025	83	84	1.5	1.6	4%	Clear	Clear
17/06/2025	85	87	1.7	1.8	8%	Clear	Clear

e. Ammoniacal nitrogen concentrations did not exceed 2.1 g/m^3 downstream of the discharge on any sampling occasion during this reporting period or exceed 0.4 g/m^3 as a rolling annual average (Table 9) – **compliant.**

[1] Kilroy C, Biggs BJF. 2002. Use of the SHMAK clarity tube for measuring water clarity: Comparison with the black disk method, *New Zealand Journal of Marine and Freshwater Research*, 36:3, 519-527, DOI: 10.1080/00288330.2002.9517107

f. Particulate organic matter concentrations downstream of the discharge were mostly below detection limits during this reporting period and did not exceed 5 g/m^3 as a rolling annual average on any sampling occasion when flows were at or below median flow (8,900 L/s), (Table 9) – **compliant.**

Table 9: Ammoniacal nitrogen (ammoniacal-N) and particulate organic matter (POM) concentrations in the Mangatainoka River upstream (U/S: Reach B) and downstream (D/S: Reach C) of the Pahiatua WWTP discharge, July 2024–June 2025. ND indicates no data collected due to a severe weather event in August 2024. Flow data in red indicate flows below median flow (<8,900 L/s); all flows reported to nearest 10 L/s.

Conditions W8e & W8f	Ammoniacal -N (g/m3)		Ammoniacal-N Rolling annual average (g/m^3)		Flow (Mangatainoka at Pahiatua Town Bridge) (L/s)	POM (g/m^3)		POM Rolling annual average (g/m^3)	
	U/S	D/S	U/S	D/S		U/S	D/S	U/S	D/S
25/07/2024	0.025	0.019	0.010	0.013	9,260	< 1	2	1.4	1.5
18/08/2024	ND	ND	0.011	0.013	333,820	ND	ND	1.4	1.5
25/09/2024	0.020	0.026	0.012	0.013	17,470	1	1	1.4	1.5
17/10/2024	< 0.005	0.016	0.012	0.014	11,560	< 1	< 1	1.3	1.4
19/11/2024	0.019	0.014	0.012	0.014	6,950	1	< 1	1.2	1.3
12/12/2024	0.015	0.021	0.013	0.016	6,400	1	< 1	1.2	1.2
15/01/2025	0.015	0.039	0.013	0.016	1,900	1	< 1	1.1	1.1
05/02/2025	0.018	0.020	0.014	0.017	1,300	2	< 1	1.2	1.0
13/03/2025	0.014	0.024	0.015	0.019	1,010	< 1	1	1.1	1.0
15/04/2025	< 0.005	< 0.005	0.014	0.018	2,750	1	< 1	1.0	< 1
15/05/2025	0.011	0.013	0.015	0.019	3,700	< 1	< 1	1.0	< 1
17/06/2025	0.012	0.019	0.014	0.019	11,040	1	< 1	< 1	< 1

Results of ecological (periphyton and macroinvertebrate) monitoring are provided in a separate report prepared by Traverse (copy attached as Appendix F).

g. Chlorophyll *a* concentrations did not exceed 120 mg/m^2 downstream of the discharge on any sampling occasion during this reporting period. Furthermore, based on the last 36 samples (19 of which were collected and 17 assumed compliant as per condition W23), chlorophyll *a* concentrations downstream at Reach C exceeded 120 mg/m^2 on only three occasions (8.3% of the time). These exceedances occurred in January 2022 (249.6 mg/m^2), January 2023 (147.7 mg/m^2) and May 2024 (142.6 mg/m^2), with concentrations upstream on the latter two occasions also elevated (Figure 3) – **compliant.**

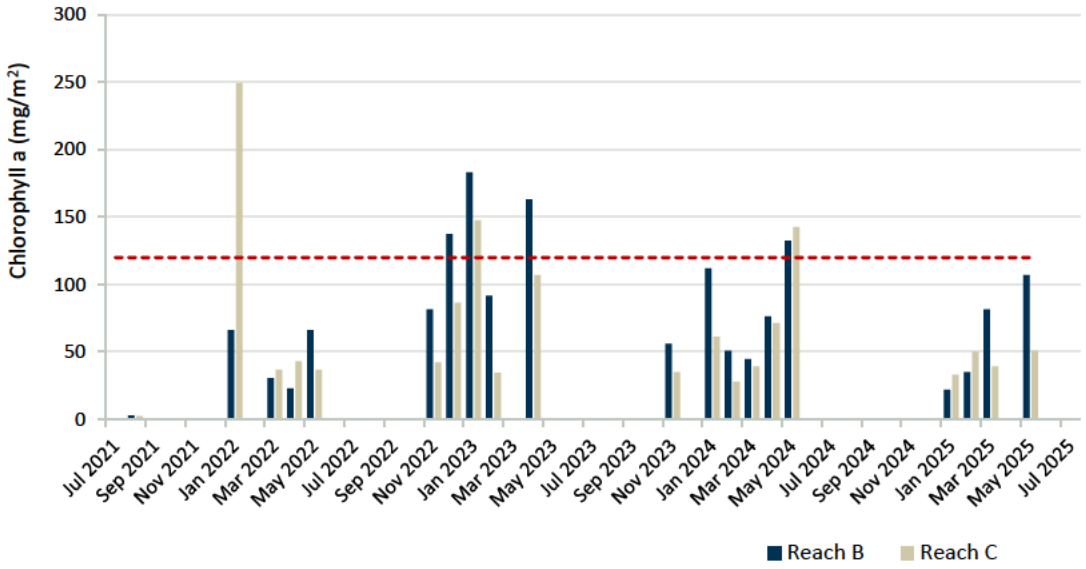

Figure 3: Periphyton biomass (measured as chlorophyll *a*) recorded at sites in the Mangatainoka River upstream (Reach B) and downstream (Reach C) of the Pahiatua WWTP discharge, July 2021–June 2025.

h. Filamentous algae greater than 2 cm long covered between 9 and 29% of the substrate downstream of the discharge; and thick mats (> 3 mm thick) covered between 3 and 10% of the substrate downstream at Reach C (refer Table 6 of the Appendix F report) - **compliant.**

i. QMCI scores were highest downstream of the discharge (Reach A: 4.8, Reach B: 5.2, Reach C: 5.4) – **compliant.**

j. $ScBOD_5$ concentrations were mostly below detection limits during this reporting period and did not exceed 1.5 g/m^3 as a rolling annual average downstream of the discharge on any sampling occasion when flows were at or below the 20th FEP (< 23,340 L/s), (Table 10) – **compliant.**

Table 10: $ScBOD_5$ concentrations in the Mangatainoka River upstream (U/S: Reach B) and downstream (D/S: Reach C) of the Pahiatua WWTP discharge, July 2024–June 2025. ND indicates no data collected due to a severe weather event in August 2024. River flows for Mangatainoka at Pahiatua Town Bridge, reported to nearest 10 L/s.

Condition W8j	Average daily flow (L/s)	$ScBOD_5$ (g/m3)		$ScBOD_5$ Rolling annual average (g/m^3)	
		U/S	D/S	U/S	D/S
*14/06/2024***	*5,740*	*< 1*	*< 1*	*0.63*	*0.63*
25/07/2024	9,260	< 1	< 1	0.63	0.63
18/08/2024	21,940	ND	ND	0.64	0.64
25/09/2024	17,470	< 1	< 1	0.64	0.64
17/10/2024	11,560	1	1	0.68	0.64
19/11/2024	6,950	< 1	1	0.68	0.68
12/12/2024	6,400	< 1	< 1	0.68	0.68
15/01/2025	1,900	< 1	1	0.68	0.73
05/02/2025	1,300	1	< 1	0.73	0.64
13/03/2025	1,010	< 1	< 1	0.73	0.64
15/04/2025	2,750	< 1	< 1	0.59	0.64
15/05/2025	3,700	< 1	< 1	0.59	0.64
17/06/2025	11,040	1	1	0.64	0.68

** June 2024 data, while collected during the previous reporting period, have been included here to allow 12 consecutive samples for assessment.

Appendix A Inflow and Infiltration

A.1 Annual Plan 2025-2026

Extracts below from TDC's 2021-2051 Infrastructure Strategy, and Capital commitment 25/26 to I&I strategy and implementation, as shown in their 2025-2026 Annual Plan.

Principal Options	Implications of Option	Linkage to...			Indicative Timeframe	Indicative Cost
		Asset Type	Key Challenge	Management Principle		
Water Treatment Plant Upgrades	Upgrades required to meet NZ Drinking Water Standards requirements. Projects will be focused around improving treatment processes and monitoring.				Years 1-4	$1.17M
Route 52 Upgrade	Upgrade of Route 52 between Central Hawke's Bay and Weber (Years 0-2), Weber to Pongaroa (Years 4-6) and Weber to Dannevirke (Years 6-10) to addressing changing function and use, improving safety, resilience and reliability.				Ongoing from Year 1	Average of $3M per year
Inflow and infiltration minimisation	Development and implementation of strategy to address current inflow and infiltration issues.				Ongoing from Year 1	Average of $310K per year
Water backflow prevention improvements	Assessment and rectification of properties requiring water backflow prevention, addressing potential health risks and meeting our obligations as a water supplier.				Years 1-5	$250K
Water storage increase	Increase water storage capacity to 3-days at Akitio and Pongaroa				Years 1-4	$340K
Minor infrastructure network extensions	Minor extension of water, wastewater and/or stormwater networks where required to enable growth within existing service zones				Ongoing from Year 1	Average of $550K per year
Treatment plant telemetry improvements	Upgrade of our water and wastewater treatment telemetry to enable resource consent and NZ Drinking Water Standards requirements to be met.				Ongoing from Year 1	Average of $70K per year
Water supply and demand management improvements	Development and implementation of strategy to address current water supply and demand				Year 1, then ongoing	$150K, then staff time

ENVIRONMENTAL MANAGEMENT - WASTEWATER - CAPITAL EXPENDITURE

	LTP Year 2 2025/2026 $000's	Annual Plan 2025/2026 $000's	Variance $000's
Renewal			
District Wastewater Infiltration and Inflow Strategy Implementation	629	629	-
District Wastewater Manhole Replacements	49	49	-
District Wastewater Network Renewals	1,619	1,619	-
District Wastewater Network Unplanned Renewals	29	29	-
District Wastewater Ponds Perimeter Safety Fencing	79	79	-
District Wastewater Pump Station Renewals	59	59	-
District Wastewater SCADA	142	274	132
District Wastewater Treatment Unplanned Renewals	52	52	-
Pahiatua Wastewater Aerators (replacement blowers)	-	110	110
Woodville Wastewater Pond 2 Liner Renewal	66	66	-
Total Capital Expenditure for Renewal	**2,724**	**2,966**	**242**
Total Capital Expenditure for Wastewater	**8,506**	**8,765**	**259**

A.2 Wastewater I&I project committee report, August 2025

Copy attached.

Appendix B TDWF meeting notification

Notice advertising the annual Tararua District Wastewater Forum (TDWF) held on 5 December 2024.

Tararua District Wastewater Forum

The Tararua District Council welcomes interested and affected parties to attend the Tararua District Wastewater Forum.

This forum provides the opportunity to discuss current and future measures to improve our District's wastewater performance and the mitigation of actual or potential adverse effects of treated wastewater discharge on the environment.

Please register your attendance by emailing our 3-Waters Administrator at: info@tararuadc.govt.nz.

Virtual attendance can also be arranged through Microsoft Teams - please email RSVP for an online invite to be sent.

Date: Thursday 5th December 2024

Time: 3:00pm – 5pm

Location: Council Chambers, Tararua District Council, 136 Main Street, Pahiatua

Appendix C Complaints Register

Customer Request Management (CRM) system to record all complaints as kept by TDC for the period 1 July 2024 to 30 June 2025.

TDC recorded three CRM matters for the 2024/2025 year on 19/12/2024, 29/03/2025 and 03/06/2025, all relating to private property issues (no odour complaints).

Group

Community Facilities and Services | Economic and Community Development | Environmental Management | Governance & Community Engagement | Regulatory Compliance | Stormwater | Transportation | **Wastewater**

Financial Year (Display)

2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 | 2021/22 | 2022/23 | 2023/24 | **2024/25**

Report Attribute

Mandatory | N/A | Survey

Financial Period

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12

Financial Year / Group	2024/25 1	2	3	4	5	6	7	8	9	10	11	12
Wastewater												
Wastewater												
The number of dry weather sewerage overflows from the wastewater system per 1,000 connections	0.00	0.20	0.82	0.82	0.82	0.82	1.23	1.43	1.64	1.64	2.04	2.04
Percentage of residents rating wastewater management as "fairly satisfactory" or "very satisfactory" in the community survey.	0.00	0.00	76.00	76.00	76.00	67.00	67.00	67.00	67.00	67.00	67.00	67.00
Number of enforcement actions against Council for not meeting resource consent conditions for sewage schemes relating to: Abatement Notices	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Number of enforcement actions against Council for not meeting resource consent conditions for sewage schemes relating to: Infringement notices	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Number of enforcement actions against Council for not meeting resource consent conditions for sewage schemes relating to: Enforcement orders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Number of enforcement actions against Council for not meeting resource consent conditions for sewage schemes relating to: Convictions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Median time to attend a sewage fault, measured from the time Council receives notification to the time that service personnel reach the site	0.00	30.00	30.00	32.00	31.00	34.00	41.00	41.00	40.00	38.00	40.00	40.00
Median time to resolve a sewage fault, measured from the time Council receives notification to the time that service personnel confirm resolution of the fault	0.00	105.00	105.00	105.00	105.00	105.00	102.00	101.00	101.00	98.00	102.00	103.00
Number of complaint received about wastewater per 1,000 connections for: Sewerage odour	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.20	0.41	0.41	0.41	0.61
Number of complaint received about wastewater per 1,000 connections for: Sewerage system faults	0.00	1.84	2.66	2.86	2.86	2.86	3.27	3.48	3.88	3.88	4.50	4.50
Number of complaint received about wastewater per 1,000	0.00	0.41	0.82	1.02	1.64	1.84	2.04	2.04	2.45	2.66	2.66	2.66

Appendix D Water quality data

Water quality data collected under conditions of Resource Consents ATH-199501433.02 Discharge to Water, as supplied by TDC (Water Outlook: 1 July 2024–30 June 2025 data).

Copy attached.

Appendix E Flow meter verification

ABB Ability meter calibration certificates for:

- E1: Pahiatua wastewater inflow, dated 08/04/2024.
- E2: Pahiatua wastewater outflow, dated 08/05/2024.
- E3: Pahiatua wastewater Pond 3, dated 31/01/2025.

Copies attached.

Appendix F Ecological monitoring report

Source: Traverse Environmental Ltd.

Copy attached.

Appendix G Bore water quality data

Bore water quality data collected under conditions of Resource Consents ATH-2016200747.00 and ATH-2017201544.00 Discharge to Land- Pond and wetland seepage, as supplied by TDC (Water Outlook: 1 July 2024–30 June 2025 data).

Copy attached.