

Warkworth Wastewater Treatment Plant 2024-2025 Annual Report

Final - September 2025

QUALITY INFORMATION

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Name and position of originator	Laurent Daghdvirenian, Senior Environmental Scientist

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1	23/09/09	Michiel Jonker	Environmental Care Manager	
3	30/09/2025	Jonathan Piggot	Head of Wastewater	

Approved


Date	Name	Position	Signature
30/09/2025	Michiel Jonker	Environmental Care Manager	

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LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviation	Description
cBOD ₅	5-day carbonaceous biochemical oxygen demand
DO	Dissolved oxygen
DRP	Dissolved reactive phosphorus or dissolved soluble phosphorus (synonyms)
E. coli	<i>Escherichia coli</i>
NH ₃	Ammonia and ammonium, reported in milligrams nitrogen
NO ₂	Nitrite, reported in milligrams nitrogen
NO ₃	Nitrate, reported in milligrams nitrogen
TIN	Total inorganic nitrogen
TN	Total nitrogen
TP	Total phosphorus
TSS	Total suspended solids
UV	Ultra-violet
Watercare	Watercare Services Limited
WWTP	Wastewater treatment plant

EXECUTIVE SUMMARY

This report presents the compliance assessment for the Warkworth Wastewater Treatment Plant (WWTP) for the period from 1 July 2024 to 30 June 2025. The WWTP is operated by Watercare Services Limited and is governed by resource consents regulating effluent discharge to the Mahurangi River and air emissions. The plant uses activated sludge treatment, UV disinfection, and various other processes to ensure effective wastewater treatment.

Key findings from the reporting year include:

- **Effluent volumes and quality:** The WWTP remained compliant with its effluent discharge volume limits, discharging a total of 521,349 m³ of treated wastewater, in line with the previous year. The average dry-weather flow of 1,219 m³/day was well within the consented limit of 1,600 m³/day. The plant also complied with all effluent quality standards, including parameters such as biochemical oxygen demand, total suspended solids, faecal coliforms, ammoniacal nitrogen, and total inorganic nitrogen.
- **Viral monitoring:** Viral monitoring results, specifically for bacteriophages and adenoviruses, demonstrated that the plant achieved the required 4-log reduction in virus concentrations, confirming effective treatment processes.
- **Receiving environment monitoring:** The monitoring of the Mahurangi River and surrounding environment showed no significant adverse effects attributed to the plant's discharges. Naturally elevated levels of arsenic in sediments were noted, but no clear trends linked to WWTP discharges were identified.
- **Air quality:** The plant was fully compliant with its air discharge consent, with no detectable odour or dust issues reported, and all emissions were maintained at acceptable levels.
- **Complaints and incidents:** No complaints or incidents were recorded during the reporting period, indicating stable and effective operation.

Overall, the Warkworth WWTP operated within its consented limits during the 2024-2025 period. The plant successfully met its discharge and monitoring obligations.

1 Introduction

1.1 Outline

This report covers resource consent compliance for the Warkworth wastewater treatment plant (WWTP) from 1 July 2024 to 30 June 2025. The report includes:

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

1.2 Consents and plans

Table 1 lists the active resource consents for the WWTP. One consent permits the discharge of effluent to the Mahurangi River, the other permits discharges to air.

DIS60050164/DIS603386349 and DIS60386547 were varied in 2021,2022 and 2024 to extend the period for the short-term discharges through to 31 December 2025 (Table 1).

Table 1 Warkworth WWTP Resource Consents

Consent type	Consent number	Expiration date (Short-term discharges)
Discharge to Air	DIS60386547 REG-67903	December 2025
Discharge to Water	DIS60050164/DIS603386349 REG-67905	December 2025

The Warkworth WWTP has four management plans that relate to its active resource consents. Table 2 lists these plans.

Table 2 Warkworth WWTP Management Plans

Plan	Revision Date
Operations Management Plan	September 2017
Receiving Environment Monitoring Plan	August 2017
Ecological Monitoring Plan	August 2017
Air Quality Management Plan	July 2017

2 Treatment Plant

2.1 Current operation

The WWTP is in Alnwick Street in Warkworth. This plant is an activated sludge plant and makes use of the following:

- Screen
- Oxidation ditch
- Two clarifiers
- Pebble filter
- Effluent balancing tank
- UV disinfection
- Peak flow plant (Actiflo™)
- Sludge dewatering (centrifuge)
- Biofilter for treatment of air discharges from screening and biosolids processing areas
- Membrane Bio-Reactor (MBR).

Treated effluent discharges to the Mahurangi River. Dewatered biosolids go to a permitted solid waste landfill.

2.2 Changes in 2024-2025

Watercare did not make any changes to the WWTP in 2024-2025.

2.3 Future changes

All wastewater from the Warkworth area was redirected to the new Snells Wastewater Treatment Plant in September 2025 as part of an infrastructure upgrade. The Warkworth facility will be fully decommissioned soon.

A final round of environmental monitoring will be conducted during the 2025-2026 reporting period.

3 Compliance

3.1 Introduction

The assessment of WWTP performance considers:

- Results of required WWTP monitoring
- Recorded incidents and complaints
- Receiving environment monitoring results for Warkworth and annual receiving environment monitoring

Watercare assesses compliance with consent using the same compliance rating system utilised by the Auckland Council (Table 3).

Table 3: Compliance assessment criteria

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

3.2 Plant performance

3.2.1 Effluent volumes

Figure 3 shows the daily discharge volumes. The average daily dry weather flow for the 2024-2025 reporting year was 1,426 m³/day, below the maximum consented value of 1,600 m³/day. The maximum daily treated wastewater discharge was 4,013 m³/day, below the maximum consented value of 8,000 m³/day. The total effluent discharge recorded for the reporting year was 521,349 m³, in line with the total discharge in the previous year (503,587 m³).

Table 4 provides summaries of effluent monitoring for the current and previous reporting years.

Overall, the WWTP met the effluent volume discharge limits for the reporting year during both wet and dry weather conditions.

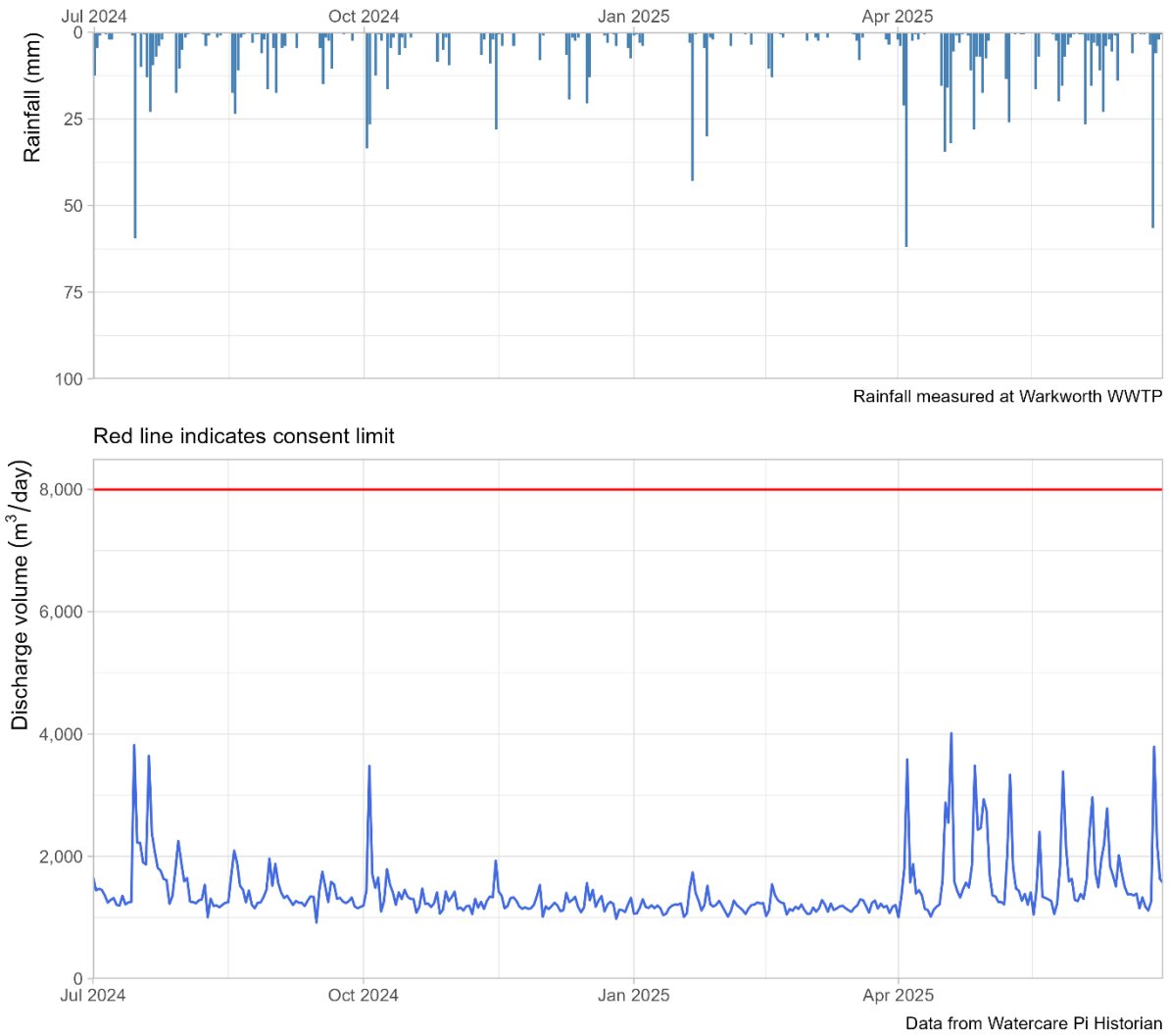


Figure 3 Warkworth effluent volumes and rainfall (July 2024-June 2025).

Table 4: Warkworth WWTP – Effluent monitoring summary, for 2023-2024 and 2024-2025

Date	n	Min (m ³ /day)	Max (m ³ /day)	Average (m ³ /day)	Median (m ³ /day)	92%ile (m ³ /day)	Sum (m ³)
Current (2024-2025)	365	919	4,013	1,428	1,272	2,000	521,349
Previous (2023-2024)	366	849	4,636	1,376	1,265	1,739	503,587

Data from Watercare Pi Historian

3.2.2 Effluent quality

Table 5 provides summaries of effluent quality standards monitoring for the reporting year. Results of monitoring indicate that the WWTP met its effluent discharge standards for biochemical oxygen demand, total suspended solids, faecal coliforms, ammoniacal nitrogen and total inorganic nitrogen. Table 6 provides summaries of viral monitoring for the reporting year. Results indicate that the WWTP met its viral discharge standards in 2024-2025.

Table 7 provides summaries of monitoring for which there are no consent limits.

Appendix A includes the data, along with discharge quality monitoring for organo-chlorines, metals and metalloids, and total oil and grease.

All the results were below any detection limits for all the parameters, a part of oil and grease at 7.0 mg/l and 5.2 mg/l respectively in the July 2024 and January 2025.

Results of monitoring indicate no significant differences in effluent quality compared to the previous monitoring period 2023-2024 (Table 7).

Table 5: Summary of effluent quality standards monitoring for the Warkworth WWTP (2024-2025)

Parameter	Units	n	Minimum	Maximum	Average	Median	Consented Median	92 nd Percentile	Consented 92 nd Percentile	Compliant
Discharge volume	m ³ /day	365	919	4,013	1,428	1,272		2,000		Yes
Average daily dry-weather flow	m ³ /day	219	978	1,630	1,219	1,207				Yes
cBOD ₅	mg O ₂ /L	52	0.5	2.8	1.3	1.2	≤2	2.0	≤20	Yes
TSS	mg/L	52	1.0	5.8	2.8	2.8	≤5	5.0	≤30	Yes
Faecal coliforms	cfu/100 mL	52	1.6	8.2	2.1	1.6	≤7	3.3	≤200	Yes
TIN	mg/L	52	2.1	11.0	6.5	6.3	≤8	9.1		Yes
NH ₄ -N	mg/L	52	0.1	6.7	1.3	0.6	≤2	3.2	≤10	Yes

Table 6: Summary of effluent viral monitoring for the Warkworth WWTP (2024-2025)

Date	Raw Influent		Final Effluent		Virus Removal		Compliant
	Bacteriophage	Adenoviruses	Bacteriophage	Adenoviruses	Bacteriophage	Adenoviruses	
	pfu/L	MPN/L	pfu/L	MPN/L	% removal	% removal	
2 July 2024	1,300,000	5,100	10	5	99.99	97.50	Yes
1 October 2024	6,200,000	100	20	5	99.99	95.00	Yes
7 January 2025	3,500,000	200	10	5	99.99	97.50	Yes
1 April 2025	4,000,000	100	98	5	99.99	95.00	Yes

Table 7: Summary of effluent monitoring for the Warkworth WWTP (2024-2025)

Parameter	Units	n	Minimum	Maximum	Average	Median	92 nd Percentile
						Actual/Previous 2024-2025/2023-2024	
pH	-	366	6.7	7.7	7.2	7.3/7.4	7.42
Temperature	°C	366	15.5	23.9	19.8	19.1/19.3	22.9
DO	mg O ₂ /L	366	5.4	8.8	6.9	6.7/6.9	8.24
Conductivity	mS/cm	52	50.0	96.0	76.8	79.2/80.8	87.08
Enterococci	cfu/100 mL	52	1.6	4.9	1.9	1.6/1.6	3.3
NO ₂ -N	mg/L	52	0.02	0.40	0.08	0.05/0.2	0.19
NO ₃ -N	mg/L	52	0.93	9.80	5.10	4.86/4.5	8.29
TN	mg/L	52	3.20	15.00	8.08	8.30/7.8	11.00
DRP	mg/L	12	3.0	6.7	4.6	4.2/5.3	6.2
TP	mg/L	12	3.5	6.8	5.0	4.9/5.9	6.8

3.3 Air quality

Watercare met all its air quality monitoring requirements. The WWTP was fully compliant with its air discharge consent.

3.4 Receiving environment monitoring

This section presents the summary of findings from Watercare Services' Mahurangi River monitoring programme, which evaluates the impact of the WWTP on river water quality, sediment quality, shellfish, benthic ecology, and macroalgae, as required by the discharge consent. Details of the receiving environment water quality monitoring report is available in Appendix B, while details of the ecological monitoring report is available in Appendix C. Key parameters influencing water quality and ecology are monitored on a weekly to biannual basis.

3.4.1 Water quality monitoring:

- Downstream from the WWTP, both turbidity and total suspended solids concentrations increased relative to upstream levels. However, there is no evidence directly linking these increases to WWTP discharge or operations.
- In the 2024-2025 period, Mahurangi River was within Attribute Band A for nitrate (concentrations consistently below 1.0 mg/L) and Attribute Band B for ammoniacal nitrogen (consistently below 0.24 mg/L) as defined in the National Policy Statement for Freshwater Management. The river, however, did not meet the national bottom line for phosphorus at any site, with median concentrations exceeding 0.018 mg/L.
- Faecal coliforms, enterococci, and dissolved oxygen exhibited statistically significant trends; however, the amplitude of the observed variations suggests statistical artefacts rather than indications of concerning changes. Chlorophyll A levels declined, but overall variation over time remains minimal, and the underlying drivers behind this trend have yet to be determined.
- Statistically significant long-term trends were identified for dissolved reactive phosphorus, pH, and conductivity. In contrast to previous monitoring periods, dissolved reactive phosphorus concentrations are now decreasing, indicating an overall improvement in water quality. Variations in pH and conductivity are most likely attributable to freshwater inputs. It should be noted that the 2021-2022 reporting period was influenced by the Auckland flood events, which may continue to affect long-term trend analyses at these monitoring locations.

3.4.2 Ecological monitoring

Sediment quality reveals naturally elevated arsenic levels, along with minor nutrient and organic matter fluctuations. Ecological variations reflect the natural dynamics of estuarine species, with no clear evidence of WWTP influence. Additionally, no increase in nuisance macroalgae was observed.

3.5 Complaints and incidents

The WWTP did not receive any complaints and no incidents occurred in 2024-2025.

3.6 Summary of compliance

Appendix D, Table 8 (air) and Table 9 (water) list condition-by-condition assessments of compliance for the WWTP. Across both consents, the plant was **Category 1** in 2024-2025.

4 Conclusion

The Warkworth WWTP has demonstrated effective compliance with all resource consent conditions for the 2024-2025 reporting period. The plant consistently operated within its permitted discharge limits for both effluent quality and volumes. All effluent monitoring results, including those for key parameters such as biochemical oxygen demand, total suspended solids, and viral load reductions, remained within consented standards.

The receiving environment monitoring programme further confirmed that the WWTP's discharges had no discernible negative effects on the river's water quality or ecological health. Air quality assessments also showed full compliance with consent conditions, with no odour or emission issues reported.

Appendix A. Effluent Quality Data

Date	Dissolved Oxygen	pH	Temperature
	g O ₂ /m ³	-	°C
1/07/2024	6.9	7.2	16.4
2/07/2024	6.4	7.3	16.9
3/07/2024	6.7	7.2	16.3
4/07/2024	6.2	7.1	15.5
5/07/2024	6.6	7.1	14.8
6/07/2024	5.9	7.1	15.1
7/07/2024	6.3	7.1	14.4
8/07/2024	6.8	7.1	15.7
9/07/2024	6.9	7.2	16.0
10/07/2024	6.8	7.3	16.1
11/07/2024	7.1	7.2	15.6
12/07/2024	6.7	7.2	15.9
13/07/2024	7.1	7.1	14.5
14/07/2024	6.8	7.2	15.8
15/07/2024	6.7	7.3	16.2
16/07/2024	6.7	7.0	15.7
17/07/2024	6.6	7.1	16.6
18/07/2024	6.9	7.1	16.0
19/07/2024	6.1	7.2	16.9
20/07/2024	5.7	7.1	16.9
21/07/2024	6.2	7.1	16.9
22/07/2024	5.9	7.1	16.3
23/07/2024	6.1	7.1	16.2
24/07/2024	6.7	7.1	17.2
25/07/2024	6.2	7.1	16.4
26/07/2024	6.4	7.2	16.3
27/07/2024	7.5	7.3	16.3
28/07/2024	7.5	7.4	16.8
29/07/2024	6.4	7.3	16.6
30/07/2024	6.5	7.3	16.6
31/07/2024	6.3	7.3	16.4
1/08/2024	6.5	7.2	16.3
2/08/2024	6.5	7.1	16.7
3/08/2024	6.4	7.3	16.2
4/08/2024	7.2	7.4	15.8
5/08/2024	7.3	6.3	15.9
6/08/2024	6.4	7.3	15.5
7/08/2024	7.1	7.4	15.6
8/08/2024	6.3	7.3	15.4
9/08/2024	6.4	7.4	15.2
10/08/2024	6.9	7.4	15.6
11/08/2024	6.8	7.3	15.8

Date	Dissolved Oxygen	pH	Temperature
	g O ₂ /m ³	-	°C
12/08/2024	6.8	7.3	15.8
13/08/2024	7.0	7.4	16.2
14/08/2024	6.7	7.4	15.8
15/08/2024	7.0	7.3	15.8
16/08/2024	6.8	7.3	16.4
17/08/2024	6.5	7.4	16.7
18/08/2024	6.0	7.4	17.5
19/08/2024	6.5	7.3	16.1
20/08/2024	6.7	7.3	16.2
21/08/2024	6.4	7.3	15.9
22/08/2024	6.9	7.3	15.7
23/08/2024	6.6	7.3	15.7
24/08/2024	6.9	7.3	17.0
25/08/2024	6.7	7.3	16.3
26/08/2024	6.7	7.3	16.4
27/08/2024	6.7	7.4	17.4
28/08/2024	6.0	7.3	17.4
29/08/2024	6.4	7.4	17.3
30/08/2024	6.3	7.3	17.0
31/08/2024	5.9	7.3	17.7
1/09/2024	5.8	7.4	18.3
2/09/2024	6.8	7.4	17.1
3/09/2024	6.4	7.3	18.0
4/09/2024	6.2	7.3	17.9
5/09/2024	6.4	7.3	16.5
6/09/2024	5.9	7.3	17.2
7/09/2024	6.8	7.3	18.0
8/09/2024	7.0	7.3	18.1
9/09/2024	7.3	7.3	16.4
10/09/2024	6.6	7.4	17.8
11/09/2024	6.0	7.4	17.8
12/09/2024	6.8	7.4	16.8
13/09/2024	6.6	7.4	17.4
14/09/2024	6.5	7.4	18.0
15/09/2024	5.9	7.4	18.5
16/09/2024	6.0	7.3	17.6
17/09/2024	6.5	7.3	16.6
18/09/2024	6.7	7.2	15.8
19/09/2024	6.6	7.3	16.4
20/09/2024	6.8	7.4	17.2
21/09/2024	7.2	7.3	18.2
22/09/2024	7.1	7.4	18.7

Date	Dissolved Oxygen	pH	Temperature
	g O ₂ /m ³	-	°C
23/09/2024	6.2	7.3	18.8
24/09/2024	6.7	7.5	18.4
25/09/2024	6.0	7.4	18.0
26/09/2024	6.5	7.3	17.7
27/09/2024	6.5	7.4	18.7
28/09/2024	6.1	7.3	17.4
29/09/2024	6.2	7.3	17.8
30/09/2024	6.9	7.7	18.1
1/10/2024	6.7	7.4	18.4
2/10/2024	6.1	7.4	19.0
3/10/2024	6.1	7.2	18.3
4/10/2024	6.8	7.2	17.0
5/10/2024	6.9	7.3	18.0
6/10/2024	5.9	7.3	18.0
7/10/2024	5.6	7.3	19.4
8/10/2024	6.6	7.3	19.1
9/10/2024	6.6	7.4	19.8
10/10/2024	6.5	7.3	17.6
11/10/2024	6.7	7.3	17.9
12/10/2024	6.2	7.3	18.3
13/10/2024	6.4	7.4	18.7
14/10/2024	6.5	7.3	18.4
15/10/2024	6.5	7.3	18.2
16/10/2024	No events found.	No events found.	No events found.
17/10/2024	6.4	7.4	18.7
18/10/2024	5.5	7.3	18.7
19/10/2024	6.9	7.3	19.2
20/10/2024	6.7	7.3	18.9
21/10/2024	6.6	7.3	18.8
22/10/2024	6.6	7.3	18.8
23/10/2024	6.5	7.4	19.5
24/10/2024	6.0	7.4	19.1
25/10/2024	6.0	7.4	19.2
26/10/2024	6.9	7.5	21.1
27/10/2024	5.8	7.4	20.4
28/10/2024	5.8	7.4	19.6
29/10/2024	6.5	7.4	18.9
30/10/2024	5.7	7.5	19.1
31/10/2024	5.8	7.4	19.2
1/11/2024	6.5	7.4	19.5
2/11/2024	6.2	7.4	20.2
3/11/2024	6.3	7.4	20.3

Date	Dissolved Oxygen	pH	Temperature
	g O ₂ /m ³	-	°C
4/11/2024	6.4	7.4	19.1
5/11/2024	6.5	7.4	18.7
6/11/2024	6.2	7.4	19.9
7/11/2024	6.3	7.4	20.4
8/11/2024	5.6	7.4	21.0
9/11/2024	5.9	7.5	21.9
10/11/2024	6.0	7.5	21.6
11/11/2024	6.1	7.3	20.8
12/11/2024	6.1	7.3	20.8
13/11/2024	6.2	7.4	21.8
14/11/2024	5.9	7.4	21.2
15/11/2024	6.1	7.4	21.4
16/11/2024	6.7	7.4	21.2
17/11/2024	6.7	7.4	20.2
18/11/2024	6.2	7.3	19.9
19/11/2024	6.4	7.3	19.7
20/11/2024	6.3	7.4	20.7
21/11/2024	5.7	7.3	20.8
22/11/2024	5.9	7.3	19.8
23/11/2024	5.6	7.4	20.6
24/11/2024	6.2	7.2	19.5
25/11/2024	6.8	7.7	20.4
26/11/2024	6.3	7.4	21.4
27/11/2024	6.2	7.4	21.7
28/11/2024	6.1	7.4	22.4
29/11/2024	5.8	7.4	22.3
30/11/2024	6.2	7.4	22.7
1/12/2024	6.0	7.4	22.0
2/12/2024	5.8	7.4	21.8
3/12/2024	6.0	7.4	22.6
4/12/2024	5.6	7.4	23.2
5/12/2024	6.0	7.4	23.2
6/12/2024	6.7	7.4	22.9
7/12/2024	5.7	7.4	22.3
8/12/2024	6.2	7.5	22.4
9/12/2024	6.1	7.4	23.0
10/12/2024	6.1	7.4	22.8
11/12/2024	5.7	7.4	22.8
12/12/2024	6.1	7.4	23.0
13/12/2024	5.4	7.4	22.8
14/12/2024	6.4	7.6	24.5
15/12/2024	6.4	7.6	25.2

Date	Dissolved Oxygen	pH	Temperature
	g O ₂ /m ³	-	°C
16/12/2024	5.9	7.4	24.5
17/12/2024	5.8	7.3	22.8
18/12/2024	5.7	7.3	22.4
19/12/2024	6.3	7.3	22.5
20/12/2024	6.0	7.4	23.1
21/12/2024	6.0	7.3	22.4
22/12/2024	6.4	7.4	23.1
23/12/2024	6.4	7.4	23.1
24/12/2024	6.7	7.4	22.9
25/12/2024	6.4	7.4	23.6
26/12/2024	6.4	7.4	23.4
27/12/2024	6.6	7.4	23.0
28/12/2024	6.8	7.4	23.5
29/12/2024	6.2	7.6	23.5
30/12/2024	6.7	7.5	23.3
31/12/2024	5.5	7.3	22.7
1/01/2025	6.6	7.5	22.3
2/01/2025	6.8	7.5	22.5
3/01/2025	7.0	7.4	22.4
4/01/2025	5.9	7.4	21.8
5/01/2025	5.9	7.5	22.3
6/01/2025	7.0	7.6	21.6
7/01/2025	7.0	7.4	22.3
8/01/2025	7.0	7.5	22.8
9/01/2025	6.0	7.4	22.7
10/01/2025	5.7	7.5	23.2
11/01/2025	6.7	7.6	23.7
12/01/2025	6.8	7.6	22.7
13/01/2025	No events found.	No events found.	No events found.
14/01/2025	6.1	7.5	22.7
15/01/2025	6.0	7.4	22.2
16/01/2025	6.0	7.4	23.1
17/01/2025	7.7	7.3	23.5
18/01/2025	6.7	7.4	23.2
19/01/2025	6.5	7.3	23.0
20/01/2025	6.7	7.4	22.7
21/01/2025	7.7	7.3	22.2
22/01/2025	6.7	7.2	22.0
23/01/2025	6.7	7.2	23.3
24/01/2025	7.8	7.3	23.5
25/01/2025	7.7	7.2	23.9
26/01/2025	7.6	7.2	23.7

Date	Dissolved Oxygen	pH	Temperature
	g O ₂ /m ³	-	°C
27/01/2025	7.9	7.2	23.1
28/01/2025	8.1	7.2	22.6
29/01/2025	7.1	7.2	22.7
30/01/2025	6.6	7.2	23.1
31/01/2025	6.3	7.3	24.0
1/02/2025	6.9	7.4	24.3
2/02/2025	6.7	7.4	24.4
3/02/2025	6.5	7.3	24.3
4/02/2025	7.6	7.3	23.6
5/02/2025	7.7	7.2	23.2
6/02/2025	6.3	7.3	23.4
7/02/2025	No events found.	No events found.	No events found.
8/02/2025	7.5	7.4	24.0
9/02/2025	7.5	7.4	24.1
10/02/2025	6.6	7.4	23.7
11/02/2025	7.8	7.2	23.8
12/02/2025	6.4	7.3	24.2
13/02/2025	6.3	7.3	24.2
14/02/2025	6.6	7.3	24.3
15/02/2025	6.1	7.3	24.0
16/02/2025	6.6	7.3	23.4
17/02/2025	6.1	7.3	23.2
18/02/2025	5.4	7.4	23.9
19/02/2025	7.6	7.2	23.4
20/02/2025	6.2	7.2	23.9
21/02/2025	7.7	7.2	23.5
22/02/2025	7.5	7.2	23.4
23/02/2025	7.5	7.2	23.4
24/02/2025	6.2	7.3	22.8
25/02/2025	7.7	7.2	22.8
26/02/2025	7.7	7.2	23.1
27/02/2025	7.2	7.4	23.2
28/02/2025	7.8	7.1	22.6
1/03/2025	7.4	7.4	24.1
2/03/2025	7.4	7.4	23.7
3/03/2025	7.3	7.5	22.7
4/03/2025	7.7	7.2	22.9
5/03/2025	6.8	7.2	22.7
6/03/2025	7.0	7.2	22.2
7/03/2025	7.1	7.3	20.8
8/03/2025	6.4	7.1	21.7
9/03/2025	7.0	7.2	21.3

Date	Dissolved Oxygen	pH	Temperature
	g O ₂ /m ³	-	°C
10/03/2025	6.9	7.2	21.3
11/03/2025	7.7	7.1	22.2
12/03/2025	7.7	7.1	22.1
13/03/2025	7.7	7.2	22.0
14/03/2025	7.2	7.3	21.7
15/03/2025	7.0	7.2	21.4
16/03/2025	7.7	7.2	22.4
17/03/2025	7.6	7.2	22.9
18/03/2025	5.8	7.4	23.2
19/03/2025	6.3	7.2	22.4
20/03/2025	6.7	7.0	21.4
21/03/2025	7.6	7.1	22.0
22/03/2025	7.7	7.2	22.4
23/03/2025	7.7	7.2	22.5
24/03/2025	7.1	7.2	22.0
25/03/2025	8.0	7.2	22.3
26/03/2025	6.9	7.1	22.8
27/03/2025	7.2	7.8	22.6
28/03/2025	7.1	7.2	22.2
29/03/2025	7.6	7.1	22.3
30/03/2025	7.7	7.2	22.1
31/03/2025	7.4	7.8	21.9
1/04/2025	6.9	7.7	21.8
2/04/2025	6.8	7.7	22.4
3/04/2025	7.4	7.5	21.8
4/04/2025	5.6	7.2	21.7
5/04/2025	7.8	7.1	20.9
6/04/2025	7.4	7.2	21.8
7/04/2025	7.6	6.6	21.5
8/04/2025	6.5	7.1	21.1
9/04/2025	8.1	7.2	20.4
10/04/2025	7.8	7.3	19.4
11/04/2025	6.8	7.3	20.2
12/04/2025	8.2	7.3	20.4
13/04/2025	7.6	7.2	20.2
14/04/2025	6.9	7.3	21.3
15/04/2025	7.9	7.3	21.7
16/04/2025	6.7	7.3	21.5
17/04/2025	8.1	7.2	21.1
18/04/2025	8.2	7.0	21.1
19/04/2025	7.9	7.0	21.7
20/04/2025	8.0	7.1	21.9

Date	Dissolved Oxygen	pH	Temperature
	g O ₂ /m ³	-	°C
21/04/2025	8.1	7.1	21.9
22/04/2025	8.3	7.1	21.3
23/04/2025	6.8	7.1	20.9
24/04/2025	8.7	7.1	20.0
25/04/2025	8.2	7.3	20.9
26/04/2025	8.4	7.4	20.7
27/04/2025	8.2	7.0	20.7
28/04/2025	6.9	6.9	20.8
29/04/2025	8.3	6.9	21.0
30/04/2025	6.8	7.0	21.3
1/05/2025	6.6	7.1	20.6
2/05/2025	6.3	7.1	19.6
3/05/2025	8.3	7.1	19.5
4/05/2025	8.0	7.2	19.7
5/05/2025	6.6	7.1	18.7
6/05/2025	8.8	7.0	18.3
7/05/2025	7.1	7.0	19.0
8/05/2025	6.2	7.1	19.7
9/05/2025	7.8	7.2	20.6
10/05/2025	8.2	7.0	20.3
11/05/2025	7.9	7.1	19.2
12/05/2025	6.2	7.1	19.0
13/05/2025	6.7	7.0	19.1
14/05/2025	6.9	6.4	19.4
15/05/2025	6.5	7.0	19.0
16/05/2025	8.6	7.1	18.6
17/05/2025	8.6	7.1	18.7
18/05/2025	8.4	7.1	19.8
19/05/2025	6.7	6.9	19.3
20/05/2025	8.6	6.7	17.9
21/05/2025	6.9	6.8	17.7
22/05/2025	8.9	6.9	17.6
23/05/2025	8.0	7.1	18.0
24/05/2025	6.9	7.2	18.2
25/05/2025	6.9	7.2	18.1
26/05/2025	6.9	7.0	18.1
27/05/2025	8.6	7.0	19.0
28/05/2025	6.4	7.0	18.9
29/05/2025	8.2	6.9	19.1
30/05/2025	8.1	7.0	18.5
31/05/2025	8.6	7.0	18.8
1/06/2025	8.0	7.2	18.5

Date	Dissolved Oxygen	pH	Temperature
	g O ₂ /m ³	-	°C
2/06/2025	8.0	7.2	18.5
3/06/2025	7.1	6.7	17.8
4/06/2025	8.5	7.1	18.5
5/06/2025	6.0	7.0	18.8
6/06/2025	5.4	7.0	18.8
7/06/2025	7.6	7.0	18.7
8/06/2025	6.3	7.2	16.8
9/06/2025	8.3	6.9	17.0
10/06/2025	6.7	7.0	17.5
11/06/2025	6.7	6.9	18.0
12/06/2025	5.9	7.1	18.0
13/06/2025	6.1	7.1	17.1
14/06/2025	8.6	6.9	17.6
15/06/2025	8.5	6.9	17.3
16/06/2025	6.7	7.2	17.2
17/06/2025	6.8	7.0	16.6
18/06/2025	7.0	7.0	15.9
19/06/2025	6.6	7.1	16.1
20/06/2025	6.5	7.1	17.4
21/06/2025	8.3	7.4	17.0
22/06/2025	6.5	7.1	16.1
23/06/2025	6.4	7.3	16.5
24/06/2025	6.6	7.1	16.7
25/06/2025	8.8	7.1	16.4
26/06/2025	8.6	7.0	17.5
27/06/2025	5.8	7.2	18.6
28/06/2025	7.4	7.1	17.7
29/06/2025	7.4	7.1	18.0
30/06/2025	8.6	6.9	16.6

Data from Watercare Pi Historian

Date	Enterococci	Conductivity	Nitrite	Nitrate	Total Nitrogen	Phosphorus	Total Phosphorus
	cfu/100mL	mS/m 25°C	mg N/L	mg N/L	mg/L	mg P/L	mg/L
2/07/2024	6.4	7.3	16.9	1.6	79.4	0.1	3.8
9/07/2024	6.9	7.2	16.0	1.6	85.7	0.0	6.1
16/07/2024	6.7	7.0	15.7	1.6	50.0	0.0	7.6
23/07/2024	6.1	7.1	16.2	1.6	61.0	0.2	2.5
30/07/2024	6.5	7.3	16.6	4.9	74.0	0.1	1.1
6/08/2024	6.4	7.3	15.5	1.6	77.0	0.4	4.6
13/08/2024	7.0	7.4	16.2	1.6	80.0	0.3	7.4
20/08/2024	6.7	7.3	16.2	3.3	60.0	0.2	1.6
27/08/2024	6.7	7.4	17.4	1.6	82.0	0.1	2.2
3/09/2024	6.4	7.3	18.0	1.6	67.0	0.1	1.5
10/09/2024	6.6	7.4	17.8	1.6	80.0	0.1	4.5
17/09/2024	6.5	7.3	16.6	4.9	80.0	0.1	6.7
24/09/2024	6.7	7.5	18.4	1.6	79.0	0.1	4.2
1/10/2024	6.7	7.4	18.4	1.7	85.0	0.1	7.0
8/10/2024	6.6	7.3	19.1	1.6	79.0	0.0	5.3
15/10/2024	6.5	7.3	18.2	1.7	81.0	0.1	8.3
22/10/2024	6.6	7.3	18.8	1.6	90.0	0.2	6.6
29/10/2024	6.5	7.4	18.9	3.3	83.0	0.2	9.8
5/11/2024	6.5	7.4	18.7	1.6	93.0	0.1	3.2
12/11/2024	6.1	7.3	20.8	1.6	96.0	0.1	7.3
19/11/2024	6.4	7.3	19.7	1.6	77.9	0.1	4.4
26/11/2024	6.3	7.4	21.4	1.6	85.4	0.1	4.2
3/12/2024	6.0	7.4	22.6	1.6	81.2	0.0	2.8
10/12/2024	6.1	7.4	22.8	1.6	85.3	0.1	3.5
17/12/2024	5.8	7.3	22.8	1.6	78.8	0.0	7.2
24/12/2024	6.7	7.4	22.9	3.3	83.3	0.0	2.2
31/12/2024	5.5	7.3	22.7	1.6	84.3	0.0	0.9
7/01/2025	7.0	7.4	22.3	3.3	86.9	0.1	1.1
14/01/2025	6.1	7.5	22.7	1.6	87.1	0.1	2.3
21/01/2025	7.7	7.3	22.2	1.6	88.5	0.0	1.8
28/01/2025	8.1	7.2	22.6	3.3	72.8	0.0	6.0
4/02/2025	7.6	7.3	23.6	1.6	82.2	0.0	5.0
11/02/2025	7.8	7.2	23.8	1.6	75.6	0.0	6.5
18/02/2025	5.4	7.4	23.9	3.3	73.3	0.0	4.1
25/02/2025	7.7	7.2	22.8	1.6	84.4	0.0	9.4
4/03/2025	7.7	7.2	22.9	1.6	85.1	0.1	6.7
11/03/2025	7.7	7.1	22.2	1.6	84.7	0.0	8.4
18/03/2025	5.8	7.4	23.2	1.6	77.6	0.0	6.8
25/03/2025	8.0	7.2	22.3	1.7	76.3	0.0	7.9
1/04/2025	6.9	7.7	21.8	1.6	80.6	0.0	6.0
8/04/2025	6.5	7.1	21.1	1.7	72.9	0.1	4.4
15/04/2025	7.9	7.3	21.7	1.6	80.6	0.0	3.6

Date	Enterococci	Conductivity	Nitrite	Nitrate	Total Nitrogen	Phosphorus	Total Phosphorus
	cfu/100mL	mS/m 25°C	mg N/L	mg N/L	mg/L	mg P/L	mg/L
22/04/2025	8.3	7.1	21.3	1.7	66.5	0.0	8.8
29/04/2025	8.3	6.9	21.0	1.6	56.2	0.0	7.9
6/05/2025	8.8	7.0	18.3	1.6	73.0	0.0	8.1
13/05/2025	6.7	7.0	19.1	1.6	69.1	0.1	5.6
20/05/2025	8.6	6.7	17.9	1.7	59.3	0.0	8.0
27/05/2025	8.6	7.0	19.0	1.6	56.9	0.1	3.1
3/06/2025	7.1	6.7	17.8	1.7	72.1	0.1	2.2
10/06/2025	6.7	7.0	17.5	1.6	58.5	0.1	4.7
17/06/2025	6.8	7.0	16.6	1.7	60.7	0.0	2.2
24/06/2025	6.6	7.1	16.7	1.6	72.1	0.3	8.1

Date	cBOD5	Faecal Coliforms	Ammonia	TSS	TIN
	mg/L	cfu/100mL	mg N/L	mg/L	mg N/L
2/07/2024	1.5	1.6	6.7	2.0	11.0
9/07/2024	0.5	1.6	0.4	1.0	6.1
16/07/2024	1.1	6.5	0.4	4.2	7.6
23/07/2024	0.5	1.6	3.2	4.0	5.8
30/07/2024	1.8	3.3	6.6	2.2	7.8
6/08/2024	1.2	1.6	0.9	5.0	5.8
13/08/2024	1.4	1.6	0.5	4.8	8.3
20/08/2024	2.8	1.6	2.7	1.0	4.5
27/08/2024	2.0	4.9	1.7	5.4	4.1
3/09/2024	1.6	1.6	0.5	1.0	2.1
10/09/2024	1.4	1.6	1.9	1.0	6.5
17/09/2024	1.8	4.9	0.4	3.6	6.8
24/09/2024	1.5	1.6	0.5	2.8	4.7
1/10/2024	1.2	1.6	0.4	3.2	7.5
8/10/2024	1.4	1.6	0.2	4.4	5.6
15/10/2024	1.4	1.6	1.2	1.0	9.6
22/10/2024	2.6	1.6	1.2	2.4	8.0
29/10/2024	1.1	1.6	1.1	2.4	11.0
5/11/2024	0.8	3.3	5.2	1.0	8.5
12/11/2024	0.8	8.2	0.6	2.8	8.2
19/11/2024	0.9	3.3	0.8	1.6	5.3
26/11/2024	1.0	1.6	0.9	2.4	5.2
3/12/2024	1.3	1.6	0.6	1.0	3.5
10/12/2024	1.7	1.6	1.6	1.2	5.2
17/12/2024	2.1	1.6	1.3	3.2	8.6
24/12/2024	0.8	1.7	1.6	1.0	3.8
31/12/2024	1.5	1.6	2.8	4.2	3.7
7/01/2025	1.0	1.6	2.1	3.6	3.2
14/01/2025	0.7	1.6	1.0	3.6	3.3
21/01/2025	1.4	1.6	2.9	2.4	4.7
28/01/2025	0.9	1.6	0.1	3.8	6.1
4/02/2025	1.6	1.7	0.3	5.8	5.4
11/02/2025	0.9	1.6	0.2	4.4	6.7
18/02/2025	2.6	1.6	0.2	4.0	4.3
25/02/2025	1.2	1.6	0.5	4.2	9.9
4/03/2025	1.0	1.6	0.4	4.6	7.1
11/03/2025	1.1	1.6	0.6	3.2	9.0
18/03/2025	1.1	1.6	0.2	5.2	7.0
25/03/2025	0.7	1.7	0.1	3.4	8.0
1/04/2025	0.8	1.6	0.4	1.0	6.5
8/04/2025	1.1	1.7	1.8	4.0	6.2
15/04/2025	0.6	1.7	0.3	1.0	3.8

Date	cBOD5	Faecal Coliforms	Ammonia	TSS	TIN
	mg/L	cfu/100mL	mg N/L	mg/L	mg N/L
22/04/2025	0.8	1.7	0.2	1.8	9.1
29/04/2025	1.6	1.6	0.1	4.2	8.0
6/05/2025	0.9	1.6	0.6	1.0	8.8
13/05/2025	1.0	1.6	3.4	1.0	9.0
20/05/2025	1.2	1.7	0.1	1.0	8.2
27/05/2025	1.9	1.6	0.7	5.2	3.9
3/06/2025	0.5	1.7	3.0	3.0	5.2
10/06/2025	1.4	1.6	0.6	1.0	5.4
17/06/2025	1.4	1.7	3.2	2.8	5.4
24/06/2025	1.4	1.6	0.6	1.4	8.9

Appendix B. Warkworth - Water quality environmental monitoring report 2024-2025

**Warkworth Wastewater Treatment Plant
Water Quality Monitoring Report 2024-2025
Final - September 2025**


QUALITY INFORMATION

Document	Annual Report
Date	30 September 2025
Name and position of originator	Laurent Daghdvirenian – Senior environmental scientist

REVISION HISTORY

Rev	Revision Date	Name	Position	Signature
1	23/09/2025	Michiel Jonker	Environmental Care Manager	

APPROVED

Date	Name	Position	Signature
30/09/2025	Michiel Jonker	Environmental Care Manager	

EXECUTIVE SUMMARY

Watercare Services Limited (Watercare) discharges treated wastewater from its Warkworth Wastewater Treatment Plant (WWTP) into the Warkworth river. The permit for this discharge requires receiving environment monitoring, including water quality and shellfish quality. This report summarises the results of this programme for the July 2022 to June 2025 operating years.

In 2022-2023, due to complications arising from the Auckland flood events, this report was initially rescheduled to 2023-2024 and subsequently to 2024-2025.

- Downstream of the WWTP, both turbidity and total suspended solids concentrations increased relative to upstream levels. However, there is no evidence directly linking these increases to WWTP discharge or operations.
- In the 2024-2025 period, Mahurangi River was within Attribute Band A for nitrate (concentrations consistently below 1.0 mg/L) and Attribute Band B for ammoniacal nitrogen (consistently below 0.24 mg/L) as defined in the National Policy Statement for Freshwater Management. The river, however, did not meet the national bottom line for phosphorus at any site, with median concentrations exceeding 0.018 mg/L.
- Faecal coliforms, enterococci, and dissolved oxygen exhibited significant trends; however, the amplitude of the observed variations suggests statistical artefacts rather than indications of concerning changes. Chlorophyll A levels declined, but overall variation over time remains minimal, and the underlying drivers behind this trend have yet to be determined.
- Statistically significant long-term trends were identified for dissolved reactive phosphorus, pH, and conductivity. In contrast to previous monitoring periods, dissolved reactive phosphorus concentrations are now decreasing, indicating an overall improvement in water quality. Variations in pH and conductivity are most likely attributable to freshwater inputs. It should be noted that the 2021-2022 reporting period was influenced by the Auckland flood events, which may continue to affect long-term trend analyses at these monitoring locations.

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1 INTRODUCTION

1.1 Background

Watercare Services Limited (Watercare) runs a wastewater treatment plant at Warkworth. This plant, the Warkworth Wastewater Treatment Plant, services approximately 4,200 people and discharges treated wastewater to the lower reaches of the Mahurangi River. Discharge Permit REG-67905 (“the consent” enables this discharge.

1.2 Monitoring Requirements

The consent has requirements for weekly and monthly analysis of treated effluent. The suite of parameters includes nutrients (nitrogen and phosphorus), physicochemistry, and biological parameters, but the consent only has limits for:

- Discharge volume (average 1,600 m³/day in dry weather; 8,000 m³/day at peak wet weather);
- Carbonaceous 5-day biochemical oxygen demand (92 %ile ≤20 mg O₂/L);
- Total suspended solids (92%ile ≤30 mg/L);
- Ammoniacal nitrogen (92%ile ≤10 mg/L);
- Faecal coliforms (92 %ile ≤200 cfu/100 mL).

The consent also requires Watercare to develop and implement a receiving environment water quality program (WQMP). The resource consent also asks for ecological and sediment-quality assessments in the receiving environment. However, such programs are separate from this report.

1.3 Scope

The purpose of this report is to provide the results of the WQMP for July 2022 to June 2025 inclusive and review any long-term trends in the data. In doing so, this report includes:

- A description of the WQMP
- A summary of effluent volumes and quality for the previous reschedule reports (2022-2023, 2023-2024 and 2024-2025)
- An assessment of receiving environment water quality results for 2020-2025
- A comparison to Auckland Council monitoring.

In 2022-2023 due to complication arising from the Auckland flood events, this report was rescheduled first to 2023-2024 and then to 2024-2025.

2 SAMPLING PLAN

2.1 Locations

Figure 1 shows the treatment plant and the upstream and downstream sampling locations. The consent specifies two upstream sampling points, one immediately upstream of the wastewater treatment plant (“Upstream”) and one approximately 600 m further upstream (“Control”). There are tidal influences at all three sites.

An Auckland Council reference site is at Dawson’s Creek in the upper Mahurangi Harbour, 2 km downstream. This site is a proxy for the “Hamilton Landing” site referenced in the consent.



Figure 1 Sampling locations.

2.2 Parameters

Table 2-1 lists the parameters that Watercare measures in WQMP water samples. Field staff measure temperature, conductivity, pH, and dissolved oxygen *in situ* using calibrated hand-held meters. Watercare Laboratories Services analyse the rest of the parameters in their laboratory.

Table 2-1 Water quality parameters measured for the Warkworth WQMP

Parameter	Relevance
Physicochemical	
Temperature	Ecological health
Conductivity/Salinity	Wastewater/seawater indicator
pH	Ecological health
Dissolved oxygen	
Carbonaceous 5-day biochemical oxygen demand (cBOD ₅)	Sewage fungus indicator/Ecological health
Total suspended solids	Ecological health/Recreational contact
Turbidity	
Nutrients	
Ammoniacal nitrogen	Ecological health
Nitrite	
Nitrate	Eutrophication
Dissolved reactive phosphorus	
Total phosphorus	
Metals and metalloids – dissolved and total fractions	
Arsenic	Ecological health
Cadmium	
Chromium	
Copper	
Lead	
Nickel	
Zinc	
Organic contaminants	
Polycyclic aromatic hydrocarbons (PAHs)	Ecological health
Organochlorine pesticides (OCs)	
Polychlorinated biphenyls (PCBs)	
Biological indicators	
Chlorophyll <i>a</i>	Eutrophication
<i>Escherichia coli</i>	Human health
<i>Enterococci spp.</i>	Human health
Faecal coliforms	Human health

2.3 Frequencies

Watercare collects water quality samples for the WQMP once per month. Frequencies vary by parameter for effluent quality samples, from daily to monthly.

3 RESULTS

3.1 Wastewater

Table 3-1 Wastewater Characteristics is a summary of wastewater discharged during the three-reporting periods. During the reporting periods, the WWTP consistently complied with effluent discharge volume and quality limits, including biochemical oxygen demand, faecal coliforms, ammoniacal nitrogen, and total inorganic nitrogen. However, in 2022-2023, the WWTP did not meet the effluent discharge standard for total suspended solids. In subsequent years, compliance was achieved for all parameters. The main differences between years included a decrease in total treated wastewater discharged in 2023-2024 compared to the previous year, and minor variations in average dry-weather flow. Water quality trends showed stable results for most parameters, with increases in nitrate and total nitrogen, and notable decreases in total suspended solids, dissolved reactive phosphorus, and total phosphorus.

All the data are provided in Appendix A

Table 3-1 Wastewater Characteristics

Parameter	Unit	n/year	Mean 2022-2023	Mean 2023-2024	Mean 2024-2025	Historical mean 2017-2021
Daily volume**	m ³ /day	365	1,413 ± 27	1,265 ± 24	1,272 ± 27	1,182 ± 14
Temperature	°C	365	19.8 ± 0.3	19.5 ± 0.3	19.1 ± 0.2	20 ± 0.1
Conductivity	ms/m	52	71.8 ± 2	77.5 ± 2.4	79.2 ± 2.1	79.2 ± 1
Total suspended solids	mg/L	52	5.1 ± 0.6	4.0 ± 0.6	2.8 ± 0.6	5.7 ± 0.3
Dissolved oxygen	mg O ₂ /L	365	6.8 ± 0.1	6.9 ± 0.1	6.7 ± 0.1	6.9 ± 0.1
cBOD ₅	mg O ₂ /L	52	1.4 ± 0.1	1.7 ± 0.2	1.2 ± 0.1	1.4 ± 0.1
pH	-	365	7.3 ± 0.1	7.4 ± 0.1	7.3 ± 0.1	7.3 ± 0.1
Ammoniacal nitrogen	mg N/L	52	1.1 ± 0.2	4.1 ± 0.3	0.6 ± 0.1	2.0 ± 0.1
Nitrate	mg N/L	52	2.0 ± 0.9	4.5 ± 0.9	4.86 ± 0.6	5.2 ± 0.3
Total nitrogen	mg/L	52	7.2 ± 0.8	7.8 ± 0.7	8.3 ± 0.6	7.3 ± 0.4
Dissolved reactive phosphorus	mg/L	12	3.2 ± 0.5	5.3 ± 0.6	4.2 ± 0.5	4.9 ± 0.3
Total phosphorus	mg/L	12	3.6 ± 0.5	5.9 ± 0.7	4.9 ± 0.6	5.3 ± 0.3
<i>Enterococci spp.</i>	cfu/100 mL	51	<1.6**	<1.6	<1.6	3.8**
Faecal coliforms	cfu/100 mL	52	<1.6**	<1.6	<1.6	<1.6**

Note: Mean and historical means are arithmetic mean values ± standard error. **Median value presented, not mean.

3.2 Receiving Environment Water Quality

3.2.1 Samples

Table 3-3 Summary of receiving water quality for 2024-2025 presents the sampling schedule for the WQMP for the last three reporting periods.

Table 3-2 WQMP schedule for July 2022 to June 2025

Date	Discharge (m ³ /day)	Rainfall (mm/day)	Rainfall (mm/prev. three days)
26/07/2022	2,070	25.0	0.5
23/08/2022	1,521	1.5	11.5
13/09/2022	1,302	5	39.0
25/10/2022	1,291	0	1.5
22/11/2022	2,478	32.0	56.0
6/12/2022	1,324	1.5	0.5
3/01/2023	1,080	0.0	0.5
21/02/2023	1,251	0.0	0.0
7/03/2023	1,261	0.0	0.0
4/04/2023	1,122	0.0	29.5
16/05/2023	1,514	1.0	4.0
20/06/2023	1,357	0.5	20.0
18/07/2023	1,358	2.5	1.5
15/08/2023	1,277	0.0	3.0
12/09/2023	1,349	0.0	0.5
10/10/2023	1,229	0.5	5.0
14/11/2023	1,444	0.0	5.5
12/12/2023	1,313	0.0	0.0
9/01/2024	1,214	0.0	3.0
6/02/2024	1,221	0.0	11.5
19/03/2024	1,126	0.0	0.5
9/04/2024	1,502	3.5	19.0
21/05/2024	2,864	1.0	55.0
18/06/2024	1,530	0.5	48.5
23/07/2024	1,811	4.0	39.5
20/08/2024	1,518	1.5	52.0
3/09/2024	1,407	4.5	22.0
1/10/2024	1,194	0.0	0.0
12/11/2024	1,339	2.5	27.5
17/12/2024	1,282	13.0	20.5
14/01/2025	1,195	0.0	0.0
11/02/2025	1,211	0.0	4.0
11/03/2025	1,147	0.0	1.5

Date	Discharge (m ³ /day)	Rainfall (mm/day)	Rainfall (mm/prev. three days)
29/04/2025	2,466	7.0	46.0
13/05/2025	1,273	0.5	0.5
10/06/2025	2,206	23.0	18.0

3.2.2 Results for 2024-2025

Table 3-3 Summary of receiving water quality for 2024-2025 provides a summary of water quality in the Mahurangi River for the 2024-2025 monitoring period. Data from previous monitoring periods will be evaluated in the long-term data analysis section (section 3.2.3).

Consistent with prior years, total suspended solid concentrations downstream of the WWTP were more than 50% higher compared to both upstream and the control site. Similarly, ammoniacal nitrogen levels were slightly elevated downstream. Notably, unlike previous reporting years, no difference in dissolved/reactive phosphorus was observed between the upstream and downstream sites this year.

Bacterial monitoring for *Enterococci*, faecal coliforms, and *E. coli* showed high standard error, primarily due to outlier results, especially from samples collected on 29/04/2025 following 46 mm of rainfall over three days.

Total suspended solids and Turbidity

Increases in total suspended solids and turbidity from upstream to downstream cannot be directly attributed to the WWTP. Concentrations in the WWTP discharge are lower than measured in the river (Table 3-1 Wastewater Characteristics).

Alternatively, the discharge may be causing physical disturbance of the riverbed, dispersing material into the water column. However, a study of historical satellite imagery available online did not highlight any evidence of a sediment plume along the section of the river between the treatment plant and the harbour.

The salinity measured at both the control site and the upstream site is in the range of mesohaline water. Even located almost 3 km away from Dawson's Creek in the upper Mahurangi Harbour, the sites are dominated by a tidal current and associated mixing. Therefore, any effects from tidal currents disturbing fine sediment on the river bottom should also be present upstream. The cause of this downstream change is thus not evident.

Faecal Coliforms

Faecal coliform counts were notably higher downstream of the discharge point compared to upstream; however, levels remained lower than those recorded at the upstream control site, indicating that it is unlikely the wastewater discharge was the cause. Additionally, the treatment plant met all compliance requirements during the reporting period, including full UV disinfection of the effluent.

Table 3-3 Summary of receiving water quality for 2024-2025

Parameter	Unit	Control	Upstream	Downstream	Change between Downstream and Upstream
Physicochemical					
Temperature	°C	18.4 ± 4.7	18.4 ± 4.7	18.8 ± 4.5	2.2%
Conductivity	ms/m	1464 ± 1217	1750 ± 1335	2074 ± 1389	18.5%
Salinity	‰	10.2 ± 9.7	12.8 ± 10.8	13.1 ± 9.8	2.3%
pH	-	7.7 ± 0.3	7.6 ± 0.2	7.7 ± 0.2	0.3%
Total suspended solids	mg/L	21.4 ± 19.1	16.2 ± 12.0	35.5 ± 31.5	118.9%
Turbidity	NTU	15.5 ± 9.3	13.3 ± 8.3	18.0 ± 13.3	34.6%
cBOD5	mg O ₂ /L	1.6 ± 1.2	2.4 ± 3.7	2.4 ± 2.4	-1.6%
DO*	mg O ₂ /L	8.5 ± 1.5	8.3 ± 1.4	8.7 ± 0.9	4.8%
Ammoniacal nitrogen#					
Ammoniacal nitrogen#	mg N/L	0.037 ± 0.019	0.055 ± 0.039	0.062 ± 0.030	13%
Nitrite	mg N/L	0.003 ± 0.001	0.005 ± 0.004	0.003 ± 0.001	-40%
Nitrate#	mg N/L	0.132 ± 0.130	0.114 ± 0.076	0.108 ± 0.074	-5%
Dissolved reactive phosphorus	mg/L	0.022 ± 0.014	0.040 ± 0.032	0.041 ± 0.022	3%
Total phosphorus	mg/L	0.053 ± 0.049	0.079 ± 0.069	0.083 ± 0.046	5%
Trace metals					
Arsenic	µg/L	1 ± 0.0	1 ± 0.0	1 ± 0.0	NA
Cadmium	µg/L	BDL	BDL	BDL	NA
Chromium	µg/L	BDL	BDL	BDL	NA
Copper	µg/L	3 ± 0.2	06 ± 0.6	5 ± 0.3	NA
Lead	µg/L	BDL	BDL	BDL	NA
Nickel	µg/L	2 ± 0.1	BDL	BDL	NA
Zinc	µg/L	1.5 ± 0.7	1.1 ± 0.3	1.1 ± 0.2	- 27%

Parameter	Unit	Control	Upstream	Downstream	Change between Downstream and Upstream
Chlorophyll a	µg/L	1464 ± 1217	1750 ± 1335	2074.8 ± 1389	19%
Escherichia coli#	cfu/100 mL	21414 ± 71988	588 ± 56	555 ± 583	-6%
Enterococci spp. #	cfu/100 mL	9510 ± 31647	277 ± 287	462 ± 653	67%
Faecal coliforms#	cfu/100 mL	21659 ± 71913	78 ± 71	847 ± 950	986%

Notes: Means are mean values ± standard error except #Median values with 95%ile in parentheses.

Freshwater assessment for water quality

In 2024-2025, the Mahurangi River would meet Class A standards for nitrate (<1.0 mg/L) and Class B standards for ammoniacal nitrogen (maximum >0.05 mg N/L and <0.40 mg N/L) under the National Policy Statement for Freshwater Management (NPS-FM; MfE 2020¹). However, the river would not meet the national bottom lines for dissolved reactive phosphorus (median <0.018).

Concentrations of all PCBs, OCs, and PAHs were below detection at all sites throughout 2024-2025.

Table 3-4 NPS-FM Assessment of bacterial water quality (2020-2025) presents the contact recreation assessment, using data collected over the last five years (July 2020-June 2025 inclusive). There were not enough samples to meet the formal assessment criterion (n≥60), and the NPS-FM does not consider the presence (or absence) of wastewater discharges. Therefore, the comparison is only to put the results in context.

The results show the river is not suitable for contact recreation. In addition, the limited data for the control site indicate that site is less suitable for contact recreation upstream than downstream.

Table 3-4 NPS-FM Assessment of bacterial water quality (2020-2025)

Detail	Control	Upstream	Downstream
Number of samples	56	56	55
% results >540 cfu/100 mL	39 %	32 %	34 %
% results >260 cfu/100 mL	73 %	50 %	50 %
Median (cfu/100 mL)	425	265	262
95%ile (cfu/100 mL)	5,736	6,450	5,900
Attribute State	Red	Red	Red
Narrative	For more than 30% of the time, the estimated risk is ≥50 in 100 (>5% risk). The predicted average infection risk is >5%		

3.2.3 Long-term differences and trends

Seasonal Kendall trend tests assessed long-term trends for the upstream and downstream sites, and Table 3-5 Significant water quality trends in the Mahurangi River (p<0.05 using Seasonal Kendall test) present significant trends (p<0.05) (Detailed results and significant trends available in appendix B).

Dissolved reactive phosphorus

The previous report in 2020-2021 indicated a long-term increases in dissolved reactive phosphorus upstream and downstream of the discharge. The latest results from the previous years up to 2025, shows a reversing trend with a slight decreased in dissolved reactive phosphorus. None of the previous studies could find a clear explanation for the driver behind the previous increased in dissolved reactive phosphorus. The current change is evolving toward the right direction (decreasing) but nevertheless a close attention still needs to be taken around this parameter.

Faecal coliforms and enterococci

¹ MfE 2020. National Policy Statement for Freshwater Management 2020. Ministry for the Environment. August 2020.

The magnitude of variation for both parameters are relatively small and will not have any impacts on the freshwater assessment for the receiving environment as describe above.

Dissolved oxygen

Both the upstream and downstream site locations display a slight trend over time. The statistical significance is primarily influenced by three measurements taken in 2020, 2021, and 2022.

Chlorophyll A

Currently, there is no clear explanation for the observed decline in Chlorophyll A levels, although the variation over time remains minimal. Given the anticipated nutrient load from the treatment plant, one might expect an increase rather than a decrease in these measurements. Therefore, the underlying factor contributing to this trend is not yet understood.

pH and conductivity

pH levels have demonstrated an upward trend over time at both the upstream and downstream sites, whereas conductivity has exhibited a downward trend. Both locations are situated within estuarine and tidal environments. A primary factor that may influence these changes in pH and conductivity is increased dilution resulting from freshwater inputs. Notably, the 2021-2022 reporting period was affected by the Auckland flood events, which likely continue to impact long-term trend analyses at these monitoring sites.

Table 3-5 Significant water quality trends in the Mahurangi River ($p < 0.05$ using Seasonal Kendall test)

Parameter	Control	Upstream	Downstream
Chlorophyll A	Decreasing	Decreasing	
Conductivity	Decreasing	Decreasing	Decreasing
Dissolved oxygen		Decreasing	Decreasing
Enterococci			Increasing
Faecal Coliforms		Decreasing	Decreasing
Dissolved reactive phosphorus	Decreasing	Decreasing	
pH		Increasing	Increasing

3.3 Comparison to Auckland Council data

Table 3-6 Comparison of downstream results for 2024-25 to the Dawson's Creek monitoring station compares data collected from the downstream monitoring site and the Auckland Council site at Dawson's Creek, near the historic monitoring location at Hamilton Landing. The Dawson's Creek site reported lower levels of nutrients and sediment concentrations than the site in the Mahurangi River downstream of the WWTP, which may be due to variations in salinity. However, measurements of total suspended solids and turbidity were higher at the Auckland Council site compared to the downstream location.

Table 3-6 Comparison of downstream results for 2024-25 to the Dawson's Creek monitoring station

Parameter	Unit	Downstream 2024-2025	Dawsons 2024-2025
Physicochemical			
Temperature	°C	18.8 ± 4.5	17.6 ± 3.10
Salinity	‰	13.1 ± 9.8	33.7 ± 1.07
TSS	mg/L	35.5 ± 31.5	7.17 ± 10.35
Turbidity	NTU	18.0 ± 13.3	1.03 ± 0.55
DO	mg O ₂ /L	8.7 ± 0.9	7.74 ± 0.49
Nutrients			
Ammoniacal nitrogen	mg N/L	0.062 ± 0.030	0.12 ± 0.04
Nitrate	mg N/L	0.108 ± 0.074	0.013 ± 0.005
Dissolved reactive phosphorus	µg/L	4.1 ± 2.2	8.6 ± 1.6
Total phosphorus	µg/L	8.3 ± 4.6	8.67 ± 1.50
Biological parameters			
Chlorophyll <i>a</i>	µg/L	2074.8 ± 1389	530 ± 180

4 CONCLUSIONS

The principal findings of this report are:

Treatment plant

- The Warkworth wastewater treatment plant was fully compliant for July 2024-June 2025, inclusive.
- The plant consistently met its limits for biochemical oxygen demand (cBOD₅), faecal coliforms, ammoniacal and total inorganic nitrogen

Receiving environment

In 2022-2023, due to complications arising from the Auckland flood events, this report was initially rescheduled to 2023-2024 and subsequently to 2024-2025.

- Downstream of the wastewater treatment plant (WWTP), both turbidity and total suspended solids concentrations increased relative to upstream levels. However, there is no evidence directly linking these increases to WWTP discharge or operations.
- In the 2024-2025 period, Mahurangi River achieved Class A standards for nitrate (concentrations consistently below 1.0 mg/L) and Class B standards for ammoniacal nitrogen (consistently below 0.24 mg/L) in accordance with the National Policy Statement for Freshwater Management. The river, however, did not meet the national bottom line for phosphorus at any site, with median concentrations exceeding 0.018 mg/L.
- Faecal coliforms, enterococci, and dissolved oxygen exhibited significant trends; however, the amplitude of the observed variations suggests statistical artefacts rather than indications of concerning changes. Chlorophyll A levels declined, but overall variation over time remains minimal, and the underlying drivers behind this trend have yet to be determined.
- Statistically significant long-term trends were identified for dissolved reactive phosphorus, pH, and conductivity. In contrast to previous monitoring periods, dissolved reactive phosphorus concentrations are now decreasing, indicating an overall improvement in water quality. Variations in pH and conductivity are most likely attributable to freshwater inputs. It should be noted that the 2021-2022 reporting period was influenced by the Auckland flood events, which may continue to affect long-term trend analyses at these monitoring locations.

Appendix A. Water quality monitoring data 2020-2025

Date	Location	Parameter	Result	Unit
26/07/2022	Downstream of discharge	cBOD5	1.2	mg/L
26/07/2022	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.076	mg/L
26/07/2022	Downstream of discharge	Dissolved Oxygen	10	mg/L
26/07/2022	Control site	Dissolved Oxygen	10.2	mg/L
26/07/2022	Upstream of discharge	Dissolved Oxygen	10.5	mg/L
26/07/2022	Downstream of discharge	Nitrite (as N)	0.0068	mg/L
26/07/2022	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.33	mg/L
26/07/2022	Downstream of discharge	Dissolved Reactive Phosphorus	0.0198	mg/L
26/07/2022	Downstream of discharge	Total Suspended Solids	92	mg/L
26/07/2022	Downstream of discharge	Chlorophyll A	0.0033	mg/L
26/07/2022	Downstream of discharge	Total Arsenic	0.0016	mg/L
26/07/2022	Downstream of discharge	Total Chromium	0.0064	mg/L
26/07/2022	Downstream of discharge	Total Copper	0.0052	mg/L
26/07/2022	Downstream of discharge	Total Nickel	0.0025	mg/L
26/07/2022	Downstream of discharge	Total Zinc	0.013	mg/L
26/07/2022	Downstream of discharge	Total Cadmium	5.00E-05	mg/L
26/07/2022	Downstream of discharge	Total Lead	0.0011	mg/L
26/07/2022	Downstream of discharge	Nitrate (as N)	0.32	mg/L
26/07/2022	Downstream of discharge	Total Phosphorus (as P)	0.13	mg/L
26/07/2022	Downstream of discharge	Total Nitrogen (as N)	0.84	mg/L
26/07/2022	Control site	cBOD5	0.92	mg/L
26/07/2022	Control site	Nitrite (as N)	0.0053	mg/L
26/07/2022	Control site	Total Oxidised Nitrogen (as N)	0.35	mg/L
26/07/2022	Control site	Dissolved Reactive Phosphorus	0.015	mg/L
26/07/2022	Control site	Total Suspended Solids	68	mg/L
26/07/2022	Control site	Chlorophyll A	0.0036	mg/L
26/07/2022	Control site	Total Arsenic	0.0012	mg/L
26/07/2022	Control site	Total Chromium	0.007	mg/L
26/07/2022	Control site	Total Copper	0.005	mg/L
26/07/2022	Control site	Total Nickel	0.0029	mg/L
26/07/2022	Control site	Total Zinc	0.016	mg/L
26/07/2022	Control site	Total Cadmium	5.00E-05	mg/L
26/07/2022	Control site	Total Lead	0.0011	mg/L
26/07/2022	Control site	Nitrate (as N)	0.35	mg/L
26/07/2022	Control site	Total Phosphorus (as P)	0.124	mg/L
26/07/2022	Control site	Total Nitrogen (as N)	0.88	mg/L
26/07/2022	Control site	Ammoniacal Nitrogen (as N)	0.042	mg/L
26/07/2022	Upstream of discharge	cBOD5	0.9	mg/L
26/07/2022	Upstream of discharge	Nitrite (as N)	0.0064	mg/L
26/07/2022	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.32	mg/L
26/07/2022	Upstream of discharge	Dissolved Reactive Phosphorus	0.019	mg/L
26/07/2022	Upstream of discharge	Total Suspended Solids	76	mg/L
26/07/2022	Upstream of discharge	Chlorophyll A	0.0023	mg/L
26/07/2022	Upstream of discharge	Total Arsenic	0.0011	mg/L
26/07/2022	Upstream of discharge	Total Chromium	0.0067	mg/L
26/07/2022	Upstream of discharge	Total Copper	0.0045	mg/L
26/07/2022	Upstream of discharge	Total Nickel	0.0023	mg/L
26/07/2022	Upstream of discharge	Total Zinc	0.012	mg/L
26/07/2022	Upstream of discharge	Total Cadmium	5.00E-05	mg/L
26/07/2022	Upstream of discharge	Total Lead	0.0011	mg/L
26/07/2022	Upstream of discharge	Nitrate (as N)	0.32	mg/L
26/07/2022	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.066	mg/L
26/07/2022	Upstream of discharge	Total Phosphorus (as P)	0.118	mg/L
26/07/2022	Upstream of discharge	Total Nitrogen (as N)	0.88	mg/L
26/07/2022	Upstream of discharge	Salinity	0.1	ppt
26/07/2022	Control site	Salinity	0.1	ppt
26/07/2022	Downstream of discharge	Salinity	0.1	ppt
26/07/2022	Upstream of discharge	pH	6.6	pH unit
26/07/2022	Control site	pH	6.8	pH unit
26/07/2022	Downstream of discharge	pH	7.1	pH unit
26/07/2022	Control site	Temperature	14.1	°C
26/07/2022	Upstream of discharge	Temperature	14.3	°C
26/07/2022	Downstream of discharge	Temperature	14.8	°C
26/07/2022	Downstream of discharge	Turbidity	65	NTU
26/07/2022	Upstream of discharge	Turbidity	70	NTU
26/07/2022	Control site	Turbidity	65	NTU
26/07/2022	Control site	Conductivity	14.6	mS/m
26/07/2022	Upstream of discharge	Conductivity	15.1	mS/m
26/07/2022	Downstream of discharge	Conductivity	27.1	mS/m
26/07/2022	Downstream of discharge	Escherichia coli	2000	cfu/100 mL
26/07/2022	Downstream of discharge	Enterococci	1300	cfu/100 mL
26/07/2022	Downstream of discharge	Faecal coliforms	2700	cfu/100 mL
26/07/2022	Control site	Escherichia coli	1700	cfu/100 mL
26/07/2022	Control site	Enterococci	680	cfu/100 mL
26/07/2022	Control site	Faecal coliforms	2100	cfu/100 mL
26/07/2022	Upstream of discharge	Escherichia coli	1200	cfu/100 mL
26/07/2022	Upstream of discharge	Enterococci	770	cfu/100 mL
26/07/2022	Upstream of discharge	Faecal coliforms	2200	cfu/100 mL
23/08/2022	Control site	cBOD5	0.71	mg/L
23/08/2022	Control site	Nitrite (as N)	0.0028	mg/L
23/08/2022	Control site	Total Oxidised Nitrogen (as N)	0.26	mg/L
23/08/2022	Control site	Dissolved Reactive Phosphorus	0.011	mg/L
23/08/2022	Control site	Chlorophyll A	0.00098	mg/L
23/08/2022	Control site	Nitrate (as N)	0.25	mg/L
23/08/2022	Control site	Ammoniacal Nitrogen (as N)	0.015	mg/L
23/08/2022	Control site	Total Phosphorus (as P)	0.019	mg/L
23/08/2022	Upstream of discharge	Dissolved Oxygen	95.4	mg/L
23/08/2022	Downstream of discharge	cBOD5	0.76	mg/L
23/08/2022	Downstream of discharge	Nitrite (as N)	0.0039	mg/L
23/08/2022	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.23	mg/L
23/08/2022	Downstream of discharge	Dissolved Reactive Phosphorus	0.016	mg/L
23/08/2022	Downstream of discharge	Total Suspended Solids	12	mg/L
23/08/2022	Downstream of discharge	Chlorophyll A	0.0016	mg/L
23/08/2022	Downstream of discharge	Total Arsenic	0.00052	mg/L
23/08/2022	Downstream of discharge	Total Cadmium	0.00025	mg/L
23/08/2022	Downstream of discharge	Total Chromium	0.0025	mg/L
23/08/2022	Downstream of discharge	Total Copper	0.0013	mg/L
23/08/2022	Downstream of discharge	Total Lead	0.0005	mg/L
23/08/2022	Downstream of discharge	Total Nickel	0.0011	mg/L
23/08/2022	Downstream of discharge	Total Zinc	0.005	mg/L

23/08/2022	Downstream of discharge	Nitrate (as N)	0.23 mg/L
23/08/2022	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.047 mg/L
23/08/2022	Downstream of discharge	Total Phosphorus (as P)	0.024 mg/L
23/08/2022	Downstream of discharge	Total Nitrogen (as N)	0.5 mg/L
23/08/2022	Control site	Dissolved Oxygen	98.4 mg/L
23/08/2022	Control site	Total Suspended Solids	8.4 mg/L
23/08/2022	Control site	Total Arsenic	0.0005 mg/L
23/08/2022	Control site	Total Cadmium	0.0001 mg/L
23/08/2022	Control site	Total Chromium	0.0011 mg/L
23/08/2022	Control site	Total Copper	0.0011 mg/L
23/08/2022	Control site	Total Lead	0.0002 mg/L
23/08/2022	Control site	Total Nickel	0.0011 mg/L
23/08/2022	Control site	Total Zinc	0.0036 mg/L
23/08/2022	Control site	Total Nitrogen (as N)	0.38 mg/L
23/08/2022	Upstream of discharge	cBOD5	0.75 mg/L
23/08/2022	Upstream of discharge	Nitrite (as N)	0.0021 mg/L
23/08/2022	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.25 mg/L
23/08/2022	Upstream of discharge	Dissolved Reactive Phosphorus	0.013 mg/L
23/08/2022	Upstream of discharge	Total Suspended Solids	8 mg/L
23/08/2022	Upstream of discharge	Chlorophyll A	0.00078 mg/L
23/08/2022	Upstream of discharge	Total Arsenic	0.0005 mg/L
23/08/2022	Upstream of discharge	Total Cadmium	0.00025 mg/L
23/08/2022	Upstream of discharge	Total Chromium	0.0025 mg/L
23/08/2022	Upstream of discharge	Total Copper	0.0019 mg/L
23/08/2022	Upstream of discharge	Total Lead	0.0005 mg/L
23/08/2022	Upstream of discharge	Total Nickel	0.0011 mg/L
23/08/2022	Upstream of discharge	Total Zinc	0.0056 mg/L
23/08/2022	Upstream of discharge	Nitrate (as N)	0.25 mg/L
23/08/2022	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.037 mg/L
23/08/2022	Upstream of discharge	Total Phosphorus (as P)	0.022 mg/L
23/08/2022	Upstream of discharge	Total Nitrogen (as N)	0.42 mg/L
23/08/2022	Downstream of discharge	Dissolved Oxygen	94.3 mg/L
23/08/2022	Control site	pH	7 pH unit
23/08/2022	Upstream of discharge	pH	7 pH unit
23/08/2022	Downstream of discharge	pH	7.2 pH unit
23/08/2022	Control site	Salinity	1.3 ppt
23/08/2022	Downstream of discharge	Salinity	4.7 ppt
23/08/2022	Upstream of discharge	Salinity	3 ppt
23/08/2022	Control site	Temperature	14.2 °C
23/08/2022	Upstream of discharge	Temperature	14.2 °C
23/08/2022	Downstream of discharge	Temperature	13.7 °C
23/08/2022	Downstream of discharge	Turbidity	12 NTU
23/08/2022	Upstream of discharge	Turbidity	11 NTU
23/08/2022	Control site	Turbidity	10 NTU
23/08/2022	Downstream of discharge	Conductivity	922 mS/m
23/08/2022	Upstream of discharge	Conductivity	611 mS/m
23/08/2022	Control site	Conductivity	325 mS/m
23/08/2022	Control site	Escherichia coli	420 cfu/100 mL
23/08/2022	Control site	Enterococci	58 cfu/100 mL
23/08/2022	Control site	Faecal coliforms	380 cfu/100 mL
23/08/2022	Upstream of discharge	Escherichia coli	360 cfu/100 mL
23/08/2022	Upstream of discharge	Enterococci	78 cfu/100 mL
23/08/2022	Upstream of discharge	Faecal coliforms	410 cfu/100 mL
23/08/2022	Downstream of discharge	Escherichia coli	440 cfu/100 mL
23/08/2022	Downstream of discharge	Enterococci	74 cfu/100 mL
23/08/2022	Downstream of discharge	Faecal coliforms	390 cfu/100 mL
13/09/2022	Control site	Turbidity	45 NTU
13/09/2022	Upstream of discharge	Turbidity	39 NTU
13/09/2022	Downstream of discharge	Turbidity	220 NTU
13/09/2022	Control site	Escherichia coli	1800 cfu/100 mL
13/09/2022	Control site	Enterococci	1100 cfu/100 mL
13/09/2022	Control site	Faecal coliforms	4700 cfu/100 mL
13/09/2022	Upstream of discharge	Escherichia coli	3500 cfu/100 mL
13/09/2022	Upstream of discharge	Enterococci	1100 cfu/100 mL
13/09/2022	Upstream of discharge	Faecal coliforms	4000 cfu/100 mL
13/09/2022	Downstream of discharge	Escherichia coli	5200 cfu/100 mL
13/09/2022	Downstream of discharge	Enterococci	2000 cfu/100 mL
13/09/2022	Downstream of discharge	Faecal coliforms	5400 cfu/100 mL
13/09/2022	Downstream of discharge	Conductivity	1090 mS/m
13/09/2022	Upstream of discharge	Conductivity	991 mS/m
13/09/2022	Control site	Conductivity	511 mS/m
13/09/2022	Downstream of discharge	Dissolved Oxygen	9.2 mg/L
13/09/2022	Control site	Total Chromium	0.0043 mg/L
13/09/2022	Control site	Total Copper	0.0035 mg/L
13/09/2022	Control site	Total Lead	0.001 mg/L
13/09/2022	Control site	Total Nickel	0.0024 mg/L
13/09/2022	Control site	Total Zinc	0.0098 mg/L
13/09/2022	Control site	Total Nitrogen (as N)	0.66 mg/L
13/09/2022	Control site	Total Phosphorus (as P)	0.062 mg/L
13/09/2022	Downstream of discharge	Total Copper	0.02 mg/L
13/09/2022	Downstream of discharge	Total Nickel	0.012 mg/L
13/09/2022	Downstream of discharge	Total Arsenic	0.0077 mg/L
13/09/2022	Downstream of discharge	Total Cadmium	0.0005 mg/L
13/09/2022	Downstream of discharge	Total Chromium	0.029 mg/L
13/09/2022	Downstream of discharge	Total Lead	0.0074 mg/L
13/09/2022	Downstream of discharge	Total Zinc	0.064 mg/L
13/09/2022	Downstream of discharge	Nitrate (as N)	0.19 mg/L
13/09/2022	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.065 mg/L
13/09/2022	Downstream of discharge	Total Nitrogen (as N)	1.9 mg/L
13/09/2022	Downstream of discharge	Total Phosphorus (as P)	0.614 mg/L
13/09/2022	Upstream of discharge	Dissolved Oxygen	9.5 mg/L
13/09/2022	Downstream of discharge	cBOD5	2.1 mg/L
13/09/2022	Downstream of discharge	Nitrite (as N)	0.0048 mg/L
13/09/2022	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.2 mg/L
13/09/2022	Downstream of discharge	Dissolved Reactive Phosphorus	0.028 mg/L
13/09/2022	Downstream of discharge	Total Suspended Solids	380 mg/L
13/09/2022	Downstream of discharge	Chlorophyll A	0.0042 mg/L
13/09/2022	Upstream of discharge	cBOD5	0.8 mg/L
13/09/2022	Upstream of discharge	Nitrite (as N)	0.0051 mg/L
13/09/2022	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.26 mg/L
13/09/2022	Upstream of discharge	Dissolved Reactive Phosphorus	0.018 mg/L

13/09/2022	Upstream of discharge	Total Suspended Solids	22 mg/L
13/09/2022	Upstream of discharge	Chlorophyll A	0.001 mg/L
13/09/2022	Control site	Dissolved Oxygen	9.2 mg/L
13/09/2022	Control site	Total Suspended Solids	22.5 mg/L
13/09/2022	Control site	Total Arsenic	0.00098 mg/L
13/09/2022	Control site	Total Cadmium	0.00025 mg/L
13/09/2022	Upstream of discharge	Total Arsenic	0.001 mg/L
13/09/2022	Upstream of discharge	Total Cadmium	0.0005 mg/L
13/09/2022	Upstream of discharge	Total Chromium	0.005 mg/L
13/09/2022	Upstream of discharge	Total Copper	0.0037 mg/L
13/09/2022	Upstream of discharge	Total Lead	0.001 mg/L
13/09/2022	Upstream of discharge	Total Nickel	0.0021 mg/L
13/09/2022	Upstream of discharge	Total Zinc	0.01 mg/L
13/09/2022	Upstream of discharge	Nitrate (as N)	0.25 mg/L
13/09/2022	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.049 mg/L
13/09/2022	Upstream of discharge	Total Nitrogen (as N)	0.57 mg/L
13/09/2022	Upstream of discharge	Total Phosphorus (as P)	0.065 mg/L
13/09/2022	Downstream of discharge	Salinity	5 ppt
13/09/2022	Upstream of discharge	Salinity	4.8 ppt
13/09/2022	Control site	Salinity	2.4 ppt
13/09/2022	Downstream of discharge	pH	7.3 pH unit
13/09/2022	Control site	pH	7.1 pH unit
13/09/2022	Upstream of discharge	pH	7 pH unit
13/09/2022	Control site	cBOD5	0.88 mg/L
13/09/2022	Control site	Nitrite (as N)	0.0051 mg/L
13/09/2022	Control site	Total Oxidised Nitrogen (as N)	0.3 mg/L
13/09/2022	Control site	Dissolved Reactive Phosphorus	0.013 mg/L
13/09/2022	Control site	Chlorophyll A	0.0012 mg/L
13/09/2022	Control site	Nitrate (as N)	0.3 mg/L
13/09/2022	Control site	Ammoniacal Nitrogen (as N)	0.03 mg/L
13/09/2022	Control site	Temperature	15.1 °C
13/09/2022	Upstream of discharge	Temperature	15.6 °C
13/09/2022	Downstream of discharge	Temperature	16.1 °C
25/10/2022	Control site	Temperature	17.7 °C
25/10/2022	Upstream of discharge	Temperature	18.8 °C
25/10/2022	Downstream of discharge	Temperature	19 °C
25/10/2022	Control site	cBOD5	1.4 mg/L
25/10/2022	Control site	Nitrite (as N)	0.0023 mg/L
25/10/2022	Control site	Total Oxidised Nitrogen (as N)	0.13 mg/L
25/10/2022	Control site	Dissolved Reactive Phosphorus	0.018 mg/L
25/10/2022	Control site	Total Suspended Solids	5.2 mg/L
25/10/2022	Control site	Chlorophyll A	0.0024 mg/L
25/10/2022	Control site	Total Nickel	0.031 mg/L
25/10/2022	Control site	Total Arsenic	0.001 mg/L
25/10/2022	Control site	Total Cadmium	0.0005 mg/L
25/10/2022	Control site	Total Chromium	0.005 mg/L
25/10/2022	Control site	Total Copper	0.002 mg/L
25/10/2022	Control site	Total Lead	0.001 mg/L
25/10/2022	Control site	Total Zinc	0.01 mg/L
25/10/2022	Control site	Nitrate (as N)	0.13 mg/L
25/10/2022	Control site	Ammoniacal Nitrogen (as N)	0.025 mg/L
25/10/2022	Control site	Total Nitrogen (as N)	0.28 mg/L
25/10/2022	Control site	Total Phosphorus (as P)	0.027 mg/L
25/10/2022	Control site	Dissolved Oxygen	9.1 mg/L
25/10/2022	Upstream of discharge	Dissolved Reactive Phosphorus	0.026 mg/L
25/10/2022	Upstream of discharge	Total Suspended Solids	6.4 mg/L
25/10/2022	Upstream of discharge	Chlorophyll A	0.00071 mg/L
25/10/2022	Upstream of discharge	Total Nickel	0.03 mg/L
25/10/2022	Upstream of discharge	Total Arsenic	0.002 mg/L
25/10/2022	Upstream of discharge	Total Cadmium	0.001 mg/L
25/10/2022	Upstream of discharge	Total Chromium	0.01 mg/L
25/10/2022	Upstream of discharge	Total Copper	0.026 mg/L
25/10/2022	Upstream of discharge	Total Lead	0.0021 mg/L
25/10/2022	Upstream of discharge	Total Zinc	0.037 mg/L
25/10/2022	Upstream of discharge	Nitrate (as N)	0.087 mg/L
25/10/2022	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.043 mg/L
25/10/2022	Upstream of discharge	Total Phosphorus (as P)	0.036 mg/L
25/10/2022	Upstream of discharge	Total Nitrogen (as N)	0.29 mg/L
25/10/2022	Upstream of discharge	cBOD5	1.4 mg/L
25/10/2022	Upstream of discharge	Nitrite (as N)	0.0035 mg/L
25/10/2022	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.09 mg/L
25/10/2022	Downstream of discharge	cBOD5	1.4 mg/L
25/10/2022	Downstream of discharge	Nitrite (as N)	0.0041 mg/L
25/10/2022	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.079 mg/L
25/10/2022	Downstream of discharge	Dissolved Reactive Phosphorus	0.035 mg/L
25/10/2022	Downstream of discharge	Total Suspended Solids	20.4 mg/L
25/10/2022	Downstream of discharge	Chlorophyll A	0.002 mg/L
25/10/2022	Downstream of discharge	Total Nickel	0.032 mg/L
25/10/2022	Downstream of discharge	Total Arsenic	0.002 mg/L
25/10/2022	Downstream of discharge	Total Cadmium	0.001 mg/L
25/10/2022	Downstream of discharge	Total Chromium	0.01 mg/L
25/10/2022	Downstream of discharge	Total Copper	0.0045 mg/L
25/10/2022	Downstream of discharge	Total Lead	0.002 mg/L
25/10/2022	Downstream of discharge	Total Zinc	0.02 mg/L
25/10/2022	Downstream of discharge	Nitrate (as N)	0.075 mg/L
25/10/2022	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.039 mg/L
25/10/2022	Downstream of discharge	Total Phosphorus (as P)	0.063 mg/L
25/10/2022	Downstream of discharge	Total Nitrogen (as N)	0.3 mg/L
25/10/2022	Downstream of discharge	Dissolved Oxygen	7.9 mg/L
25/10/2022	Upstream of discharge	Dissolved Oxygen	8.4 mg/L
25/10/2022	Downstream of discharge	pH	7.3 pH unit
25/10/2022	Upstream of discharge	pH	7.2 pH unit
25/10/2022	Control site	pH	6.9 pH unit
25/10/2022	Control site	Salinity	5.9 ppt
25/10/2022	Upstream of discharge	Salinity	9.9 ppt
25/10/2022	Downstream of discharge	Salinity	14.1 ppt
25/10/2022	Downstream of discharge	Conductivity	2390 mS/m
25/10/2022	Upstream of discharge	Conductivity	1660 mS/m
25/10/2022	Control site	Conductivity	1160 mS/m
25/10/2022	Control site	Escherichia coli	500 cfu/100 mL
25/10/2022	Control site	Enterococci	82 cfu/100 mL

25/10/2022	Control site	Faecal coliforms	8900	cfu/100 mL
25/10/2022	Upstream of discharge	Escherichia coli	18	cfu/100 mL
25/10/2022	Upstream of discharge	Enterococci	8.2	cfu/100 mL
25/10/2022	Upstream of discharge	Faecal coliforms	36	cfu/100 mL
25/10/2022	Downstream of discharge	Escherichia coli	45	cfu/100 mL
25/10/2022	Downstream of discharge	Enterococci	20	cfu/100 mL
25/10/2022	Downstream of discharge	Faecal coliforms	220	cfu/100 mL
25/10/2022	Control site	Turbidity	6	NTU
25/10/2022	Downstream of discharge	Turbidity	8	NTU
25/10/2022	Upstream of discharge	Turbidity	5.4	NTU
22/11/2022	Upstream of discharge	Turbidity	22	NTU
22/11/2022	Downstream of discharge	Turbidity	26	NTU
22/11/2022	Control site	Turbidity	22	NTU
22/11/2022	Control site	Escherichia coli	920	cfu/100 mL
22/11/2022	Control site	Enterococci	120	cfu/100 mL
22/11/2022	Control site	Faecal coliforms	920	cfu/100 mL
22/11/2022	Upstream of discharge	Escherichia coli	900	cfu/100 mL
22/11/2022	Upstream of discharge	Enterococci	350	cfu/100 mL
22/11/2022	Upstream of discharge	Faecal coliforms	1100	cfu/100 mL
22/11/2022	Downstream of discharge	Escherichia coli	1600	cfu/100 mL
22/11/2022	Downstream of discharge	Enterococci	290	cfu/100 mL
22/11/2022	Downstream of discharge	Faecal coliforms	1500	cfu/100 mL
22/11/2022	Downstream of discharge	Conductivity	780	mS/m
22/11/2022	Upstream of discharge	Conductivity	577	mS/m
22/11/2022	Control site	Conductivity	234	mS/m
22/11/2022	Downstream of discharge	Dissolved Oxygen	8.8	mg/L
22/11/2022	Upstream of discharge	Dissolved Oxygen	8.8	mg/L
22/11/2022	Downstream of discharge	cBOD5	1	mg/L
22/11/2022	Downstream of discharge	Nitrite (as N)	0.0047	mg/L
22/11/2022	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.21	mg/L
22/11/2022	Downstream of discharge	Dissolved Reactive Phosphorus	0.021	mg/L
22/11/2022	Downstream of discharge	Total Suspended Solids	30	mg/L
22/11/2022	Downstream of discharge	Chlorophyll A	0.001	mg/L
22/11/2022	Downstream of discharge	Total Arsenic	0.0011	mg/L
22/11/2022	Downstream of discharge	Total Cadmium	0.0005	mg/L
22/11/2022	Downstream of discharge	Total Chromium	0.005	mg/L
22/11/2022	Downstream of discharge	Total Copper	0.0025	mg/L
22/11/2022	Downstream of discharge	Total Lead	0.001	mg/L
22/11/2022	Downstream of discharge	Total Nickel	0.0022	mg/L
22/11/2022	Downstream of discharge	Total Zinc	0.01	mg/L
22/11/2022	Downstream of discharge	Nitrate (as N)	0.21	mg/L
22/11/2022	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.12	mg/L
22/11/2022	Downstream of discharge	Total Phosphorus (as P)	0.061	mg/L
22/11/2022	Downstream of discharge	Total Nitrogen (as N)	0.46	mg/L
22/11/2022	Downstream of discharge	Salinity	4.4	ppt
22/11/2022	Control site	Salinity	1.5	ppt
22/11/2022	Upstream of discharge	Salinity	3.1	ppt
22/11/2022	Control site	cBOD5	0.59	mg/L
22/11/2022	Control site	Nitrite (as N)	0.003	mg/L
22/11/2022	Control site	Total Oxidised Nitrogen (as N)	0.25	mg/L
22/11/2022	Control site	Dissolved Reactive Phosphorus	0.012	mg/L
22/11/2022	Control site	Chlorophyll A	0.001	mg/L
22/11/2022	Control site	Nitrate (as N)	0.25	mg/L
22/11/2022	Control site	Ammoniacal Nitrogen (as N)	0.035	mg/L
22/11/2022	Control site	Total Phosphorus (as P)	0.068	mg/L
22/11/2022	Control site	pH	8	pH unit
22/11/2022	Upstream of discharge	pH	7.6	pH unit
22/11/2022	Downstream of discharge	pH	7.6	pH unit
22/11/2022	Control site	Total Arsenic	0.0011	mg/L
22/11/2022	Control site	Total Copper	0.0021	mg/L
22/11/2022	Control site	Total Nickel	0.002	mg/L
22/11/2022	Control site	Total Cadmium	0.0001	mg/L
22/11/2022	Control site	Total Chromium	0.0032	mg/L
22/11/2022	Control site	Total Lead	0.0004	mg/L
22/11/2022	Control site	Total Zinc	0.0055	mg/L
22/11/2022	Control site	Total Nitrogen (as N)	0.62	mg/L
22/11/2022	Upstream of discharge	cBOD5	0.69	mg/L
22/11/2022	Upstream of discharge	Nitrite (as N)	0.0034	mg/L
22/11/2022	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.21	mg/L
22/11/2022	Upstream of discharge	Dissolved Reactive Phosphorus	0.014	mg/L
22/11/2022	Upstream of discharge	Total Suspended Solids	27	mg/L
22/11/2022	Upstream of discharge	Chlorophyll A	0.001	mg/L
22/11/2022	Control site	Dissolved Oxygen	9.3	mg/L
22/11/2022	Control site	Total Suspended Solids	16	mg/L
22/11/2022	Upstream of discharge	Total Arsenic	0.001	mg/L
22/11/2022	Upstream of discharge	Total Cadmium	0.0005	mg/L
22/11/2022	Upstream of discharge	Total Chromium	0.005	mg/L
22/11/2022	Upstream of discharge	Total Copper	0.0028	mg/L
22/11/2022	Upstream of discharge	Total Lead	0.001	mg/L
22/11/2022	Upstream of discharge	Total Nickel	0.002	mg/L
22/11/2022	Upstream of discharge	Total Zinc	0.01	mg/L
22/11/2022	Upstream of discharge	Nitrate (as N)	0.21	mg/L
22/11/2022	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.034	mg/L
22/11/2022	Upstream of discharge	Total Phosphorus (as P)	0.047	mg/L
22/11/2022	Upstream of discharge	Total Nitrogen (as N)	0.45	mg/L
22/11/2022	Control site	Temperature	18.2	°C
22/11/2022	Upstream of discharge	Temperature	18.4	°C
22/11/2022	Downstream of discharge	Temperature	19.5	°C
6/12/2022	Control site	Temperature	19	°C
6/12/2022	Upstream of discharge	Temperature	19.9	°C
6/12/2022	Downstream of discharge	Temperature	20.5	°C
6/12/2022	Control site	Total Oxidised Nitrogen (as N)	0.15	mg/L
6/12/2022	Control site	Dissolved Reactive Phosphorus	0.018	mg/L
6/12/2022	Control site	Total Suspended Solids	5.2	mg/L
6/12/2022	Control site	Chlorophyll A	0.0006	mg/L
6/12/2022	Control site	Total Arsenic	0.001	mg/L
6/12/2022	Control site	Total Cadmium	0.0005	mg/L
6/12/2022	Control site	Total Chromium	0.005	mg/L
6/12/2022	Control site	Total Copper	0.002	mg/L
6/12/2022	Control site	Total Lead	0.001	mg/L
6/12/2022	Control site	Total Nickel	0.001	mg/L

6/12/2022	Control site	Total Zinc	0.02 mg/L
6/12/2022	Control site	Nitrate (as N)	0.15 mg/L
6/12/2022	Control site	Ammoniacal Nitrogen (as N)	0.025 mg/L
6/12/2022	Control site	Total Phosphorus (as P)	0.066 mg/L
6/12/2022	Control site	Total Nitrogen (as N)	0.27 mg/L
6/12/2022	Upstream of discharge	cBOD5	0.82 mg/L
6/12/2022	Upstream of discharge	Nitrite (as N)	0.003 mg/L
6/12/2022	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.089 mg/L
6/12/2022	Upstream of discharge	Dissolved Reactive Phosphorus	0.02 mg/L
6/12/2022	Upstream of discharge	Total Suspended Solids	2.4 mg/L
6/12/2022	Upstream of discharge	Chlorophyll A	0.0034 mg/L
6/12/2022	Upstream of discharge	Total Arsenic	0.001 mg/L
6/12/2022	Upstream of discharge	Total Cadmium	0.0005 mg/L
6/12/2022	Upstream of discharge	Total Chromium	0.005 mg/L
6/12/2022	Upstream of discharge	Total Copper	0.002 mg/L
6/12/2022	Upstream of discharge	Total Lead	0.001 mg/L
6/12/2022	Upstream of discharge	Total Nickel	0.001 mg/L
6/12/2022	Upstream of discharge	Total Zinc	0.01 mg/L
6/12/2022	Upstream of discharge	Nitrate (as N)	0.086 mg/L
6/12/2022	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.045 mg/L
6/12/2022	Upstream of discharge	Total Phosphorus (as P)	0.028 mg/L
6/12/2022	Upstream of discharge	Total Nitrogen (as N)	0.096 mg/L
6/12/2022	Control site	Dissolved Oxygen	9.1 mg/L
6/12/2022	Control site	cBOD5	0.61 mg/L
6/12/2022	Control site	Nitrite (as N)	0.0026 mg/L
6/12/2022	Upstream of discharge	Dissolved Oxygen	8.1 mg/L
6/12/2022	Downstream of discharge	Dissolved Oxygen	8.1 mg/L
6/12/2022	Downstream of discharge	cBOD5	0.67 mg/L
6/12/2022	Downstream of discharge	Nitrite (as N)	0.0037 mg/L
6/12/2022	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.082 mg/L
6/12/2022	Downstream of discharge	Dissolved Reactive Phosphorus	0.031 mg/L
6/12/2022	Downstream of discharge	Total Suspended Solids	16 mg/L
6/12/2022	Downstream of discharge	Chlorophyll A	0.0062 mg/L
6/12/2022	Downstream of discharge	Total Arsenic	0.001 mg/L
6/12/2022	Downstream of discharge	Total Cadmium	0.0005 mg/L
6/12/2022	Downstream of discharge	Total Chromium	0.005 mg/L
6/12/2022	Downstream of discharge	Total Copper	0.002 mg/L
6/12/2022	Downstream of discharge	Total Lead	0.001 mg/L
6/12/2022	Downstream of discharge	Total Nickel	0.001 mg/L
6/12/2022	Downstream of discharge	Total Zinc	0.01 mg/L
6/12/2022	Downstream of discharge	Nitrate (as N)	0.078 mg/L
6/12/2022	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.038 mg/L
6/12/2022	Downstream of discharge	Total Phosphorus (as P)	0.048 mg/L
6/12/2022	Downstream of discharge	Total Nitrogen (as N)	0.38 mg/L
6/12/2022	Control site	pH	7.5 pH unit
6/12/2022	Control site	Salinity	4.4 ppt
6/12/2022	Upstream of discharge	Salinity	6.4 ppt
6/12/2022	Downstream of discharge	Salinity	8.5 ppt
6/12/2022	Upstream of discharge	pH	7.5 pH unit
6/12/2022	Downstream of discharge	pH	7.5 pH unit
6/12/2022	Downstream of discharge	Conductivity	1510 mS/m
6/12/2022	Upstream of discharge	Conductivity	1120 mS/m
6/12/2022	Control site	Conductivity	829 mS/m
6/12/2022	Control site	Escherichia coli	250 cfu/100 mL
6/12/2022	Control site	Enterococci	90 cfu/100 mL
6/12/2022	Control site	Faecal coliforms	330 cfu/100 mL
6/12/2022	Upstream of discharge	Escherichia coli	140 cfu/100 mL
6/12/2022	Upstream of discharge	Enterococci	44 cfu/100 mL
6/12/2022	Upstream of discharge	Faecal coliforms	150 cfu/100 mL
6/12/2022	Downstream of discharge	Escherichia coli	68 cfu/100 mL
6/12/2022	Downstream of discharge	Enterococci	38 cfu/100 mL
6/12/2022	Downstream of discharge	Faecal coliforms	280 cfu/100 mL
6/12/2022	Control site	Turbidity	5.2 NTU
6/12/2022	Downstream of discharge	Turbidity	9.1 NTU
6/12/2022	Upstream of discharge	Turbidity	2.8 NTU
3/01/2023	Downstream of discharge	Turbidity	17 NTU
3/01/2023	Upstream of discharge	Turbidity	11 NTU
3/01/2023	Control site	Turbidity	7 NTU
3/01/2023	Upstream of discharge	Faecal coliforms	250 cfu/100 mL
3/01/2023	Downstream of discharge	Escherichia coli	120 cfu/100 mL
3/01/2023	Downstream of discharge	Enterococci	54 cfu/100 mL
3/01/2023	Downstream of discharge	Faecal coliforms	210 cfu/100 mL
3/01/2023	Upstream of discharge	Escherichia coli	260 cfu/100 mL
3/01/2023	Upstream of discharge	Enterococci	96 cfu/100 mL
3/01/2023	Control site	Escherichia coli	270 cfu/100 mL
3/01/2023	Control site	Enterococci	260 cfu/100 mL
3/01/2023	Control site	Faecal coliforms	360 cfu/100 mL
3/01/2023	Downstream of discharge	Conductivity	2130 mS/m
3/01/2023	Upstream of discharge	Conductivity	1220 mS/m
3/01/2023	Control site	Conductivity	781 mS/m
3/01/2023	Downstream of discharge	Total Copper	0.004 mg/L
3/01/2023	Downstream of discharge	Total Lead	0.002 mg/L
3/01/2023	Downstream of discharge	Total Nickel	0.002 mg/L
3/01/2023	Downstream of discharge	Total Zinc	0.02 mg/L
3/01/2023	Downstream of discharge	Nitrate (as N)	0.013 mg/L
3/01/2023	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.021 mg/L
3/01/2023	Downstream of discharge	Total Nitrogen (as N)	0.36 mg/L
3/01/2023	Downstream of discharge	Total Phosphorus (as P)	0.122 mg/L
3/01/2023	Control site	cBOD5	0.5 mg/L
3/01/2023	Control site	Nitrite (as N)	0.002 mg/L
3/01/2023	Control site	Total Oxidised Nitrogen (as N)	0.038 mg/L
3/01/2023	Control site	Dissolved Reactive Phosphorus	0.016 mg/L
3/01/2023	Control site	Total Suspended Solids	8 mg/L
3/01/2023	Control site	Chlorophyll A	0.0048 mg/L
3/01/2023	Control site	Total Arsenic	0.00055 mg/L
3/01/2023	Control site	Total Cadmium	0.00025 mg/L
3/01/2023	Control site	Total Chromium	0.0025 mg/L
3/01/2023	Control site	Total Copper	0.001 mg/L
3/01/2023	Control site	Total Lead	0.0005 mg/L
3/01/2023	Control site	Total Nickel	0.00078 mg/L
3/01/2023	Control site	Total Zinc	0.0067 mg/L

3/01/2023	Control site	Nitrate (as N)	0.038 mg/L
3/01/2023	Control site	Ammoniacal Nitrogen (as N)	0.029 mg/L
3/01/2023	Control site	Total Phosphorus (as P)	0.036 mg/L
3/01/2023	Control site	Total Nitrogen (as N)	0.2 mg/L
3/01/2023	Control site	Dissolved Oxygen	8.4 mg/L
3/01/2023	Upstream of discharge	Dissolved Oxygen	8.2 mg/L
3/01/2023	Downstream of discharge	cBOD5	0.6 mg/L
3/01/2023	Downstream of discharge	Nitrite (as N)	0.002 mg/L
3/01/2023	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.013 mg/L
3/01/2023	Downstream of discharge	Dissolved Reactive Phosphorus	0.061 mg/L
3/01/2023	Downstream of discharge	Total Suspended Solids	26.8 mg/L
3/01/2023	Downstream of discharge	Chlorophyll A	0.027 mg/L
3/01/2023	Upstream of discharge	cBOD5	0.5 mg/L
3/01/2023	Upstream of discharge	Nitrite (as N)	0.002 mg/L
3/01/2023	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.03 mg/L
3/01/2023	Upstream of discharge	Dissolved Reactive Phosphorus	0.03 mg/L
3/01/2023	Upstream of discharge	Total Suspended Solids	16.8 mg/L
3/01/2023	Upstream of discharge	Chlorophyll A	0.018 mg/L
3/01/2023	Upstream of discharge	Total Arsenic	0.001 mg/L
3/01/2023	Upstream of discharge	Total Copper	0.002 mg/L
3/01/2023	Upstream of discharge	Total Lead	0.001 mg/L
3/01/2023	Upstream of discharge	Total Nickel	0.001 mg/L
3/01/2023	Upstream of discharge	Total Zinc	0.01 mg/L
3/01/2023	Upstream of discharge	Nitrate (as N)	0.03 mg/L
3/01/2023	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.0093 mg/L
3/01/2023	Upstream of discharge	Total Phosphorus (as P)	0.055 mg/L
3/01/2023	Upstream of discharge	Total Nitrogen (as N)	0.2 mg/L
3/01/2023	Upstream of discharge	Total Cadmium	0.0005 mg/L
3/01/2023	Upstream of discharge	Total Chromium	0.005 mg/L
3/01/2023	Control site	pH	7.7 pH unit
3/01/2023	Upstream of discharge	pH	7.6 pH unit
3/01/2023	Downstream of discharge	Salinity	13.2 ppt
3/01/2023	Upstream of discharge	Salinity	7.4 ppt
3/01/2023	Control site	Salinity	4.9 ppt
3/01/2023	Downstream of discharge	Dissolved Oxygen	7.6 mg/L
3/01/2023	Downstream of discharge	Total Arsenic	0.002 mg/L
3/01/2023	Downstream of discharge	Total Cadmium	0.001 mg/L
3/01/2023	Downstream of discharge	Total Chromium	0.01 mg/L
3/01/2023	Downstream of discharge	pH	7.6 pH unit
3/01/2023	Control site	Temperature	20.4 °C
3/01/2023	Upstream of discharge	Temperature	20.1 °C
3/01/2023	Downstream of discharge	Temperature	21 °C
21/02/2023	Control site	Temperature	21.1 °C
21/02/2023	Upstream of discharge	Temperature	22.2 °C
21/02/2023	Downstream of discharge	Temperature	23 °C
21/02/2023	Control site	pH	7.4 pH unit
21/02/2023	Upstream of discharge	pH	7.4 pH unit
21/02/2023	Control site	cBOD5	0.52 mg/L
21/02/2023	Control site	Nitrite (as N)	0.0021 mg/L
21/02/2023	Control site	Total Oxidised Nitrogen (as N)	0.15 mg/L
21/02/2023	Control site	Dissolved Reactive Phosphorus	0.006 mg/L
21/02/2023	Control site	Total Suspended Solids	25 mg/L
21/02/2023	Control site	Chlorophyll A	0.0027 mg/L
21/02/2023	Control site	Total Arsenic	0.00047 mg/L
21/02/2023	Control site	Total Cadmium	5.00E-05 mg/L
21/02/2023	Control site	Total Chromium	0.0027 mg/L
21/02/2023	Control site	Total Copper	0.0017 mg/L
21/02/2023	Control site	Total Lead	0.00031 mg/L
21/02/2023	Control site	Total Nickel	0.0015 mg/L
21/02/2023	Control site	Total Zinc	0.0037 mg/L
21/02/2023	Control site	Nitrate (as N)	0.15 mg/L
21/02/2023	Control site	Total Phosphorus (as P)	0.016 mg/L
21/02/2023	Control site	Ammoniacal Nitrogen (as N)	0.0081 mg/L
21/02/2023	Control site	Total Nitrogen (as N)	0.19 mg/L
21/02/2023	Upstream of discharge	Total Nitrogen (as N)	0.21 mg/L
21/02/2023	Upstream of discharge	Nitrite (as N)	0.0025 mg/L
21/02/2023	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.12 mg/L
21/02/2023	Upstream of discharge	Dissolved Reactive Phosphorus	0.01 mg/L
21/02/2023	Upstream of discharge	Total Suspended Solids	17.8 mg/L
21/02/2023	Upstream of discharge	Chlorophyll A	0.0088 mg/L
21/02/2023	Upstream of discharge	Total Arsenic	0.00049 mg/L
21/02/2023	Upstream of discharge	Total Cadmium	5.00E-05 mg/L
21/02/2023	Upstream of discharge	Total Chromium	0.0011 mg/L
21/02/2023	Upstream of discharge	Total Copper	0.0014 mg/L
21/02/2023	Upstream of discharge	Total Lead	0.00011 mg/L
21/02/2023	Upstream of discharge	Total Nickel	0.0011 mg/L
21/02/2023	Upstream of discharge	Total Zinc	0.0031 mg/L
21/02/2023	Upstream of discharge	Nitrate (as N)	0.11 mg/L
21/02/2023	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.015 mg/L
21/02/2023	Upstream of discharge	Total Phosphorus (as P)	0.013 mg/L
21/02/2023	Control site	Dissolved Oxygen	9.1 mg/L
21/02/2023	Upstream of discharge	cBOD5	0.84 mg/L
21/02/2023	Downstream of discharge	Total Nickel	0.0014 mg/L
21/02/2023	Downstream of discharge	Total Zinc	0.0049 mg/L
21/02/2023	Downstream of discharge	Nitrate (as N)	0.092 mg/L
21/02/2023	Downstream of discharge	Total Phosphorus (as P)	0.012 mg/L
21/02/2023	Downstream of discharge	Total Nitrogen (as N)	0.21 mg/L
21/02/2023	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.041 mg/L
21/02/2023	Upstream of discharge	Dissolved Oxygen	8.5 mg/L
21/02/2023	Downstream of discharge	cBOD5	1.2 mg/L
21/02/2023	Downstream of discharge	Nitrite (as N)	0.0025 mg/L
21/02/2023	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.094 mg/L
21/02/2023	Downstream of discharge	Dissolved Reactive Phosphorus	0.006 mg/L
21/02/2023	Downstream of discharge	Total Suspended Solids	46 mg/L
21/02/2023	Downstream of discharge	Chlorophyll A	0.017 mg/L
21/02/2023	Downstream of discharge	Total Arsenic	0.00064 mg/L
21/02/2023	Downstream of discharge	Total Cadmium	5.00E-05 mg/L
21/02/2023	Downstream of discharge	Total Chromium	0.0022 mg/L
21/02/2023	Downstream of discharge	Total Copper	0.0017 mg/L
21/02/2023	Downstream of discharge	Total Lead	0.00025 mg/L
21/02/2023	Control site	Salinity	2.1 ppt

21/02/2023	Downstream of discharge	Salinity	8.3 ppt
21/02/2023	Upstream of discharge	Salinity	5.6 ppt
21/02/2023	Downstream of discharge	pH	7.5 pH unit
21/02/2023	Downstream of discharge	Dissolved Oxygen	8.5 mg/L
21/02/2023	Downstream of discharge	Conductivity	1480 mS/m
21/02/2023	Upstream of discharge	Conductivity	1100 mS/m
21/02/2023	Control site	Conductivity	397 mS/m
21/02/2023	Control site	Escherichia coli	460 cfu/100 mL
21/02/2023	Control site	Enterococci	280 cfu/100 mL
21/02/2023	Control site	Faecal coliforms	930 cfu/100 mL
21/02/2023	Upstream of discharge	Escherichia coli	180 cfu/100 mL
21/02/2023	Upstream of discharge	Enterococci	98 cfu/100 mL
21/02/2023	Upstream of discharge	Faecal coliforms	300 cfu/100 mL
21/02/2023	Downstream of discharge	Escherichia coli	190 cfu/100 mL
21/02/2023	Downstream of discharge	Enterococci	100 cfu/100 mL
21/02/2023	Downstream of discharge	Faecal coliforms	350 cfu/100 mL
21/02/2023	Control site	Turbidity	30 NTU
21/02/2023	Downstream of discharge	Turbidity	7 NTU
21/02/2023	Upstream of discharge	Turbidity	8.4 NTU
7/03/2023	Downstream of discharge	Turbidity	15 NTU
7/03/2023	Upstream of discharge	Turbidity	11 NTU
7/03/2023	Control site	Turbidity	19 NTU
7/03/2023	Control site	Escherichia coli	590 cfu/100 mL
7/03/2023	Control site	Enterococci	350 cfu/100 mL
7/03/2023	Control site	Faecal coliforms	1700 cfu/100 mL
7/03/2023	Upstream of discharge	Escherichia coli	440 cfu/100 mL
7/03/2023	Upstream of discharge	Enterococci	98 cfu/100 mL
7/03/2023	Upstream of discharge	Faecal coliforms	520 cfu/100 mL
7/03/2023	Downstream of discharge	Escherichia coli	270 cfu/100 mL
7/03/2023	Downstream of discharge	Enterococci	70 cfu/100 mL
7/03/2023	Downstream of discharge	Faecal coliforms	850 cfu/100 mL
7/03/2023	Downstream of discharge	Conductivity	861 mS/m
7/03/2023	Upstream of discharge	Conductivity	846 mS/m
7/03/2023	Control site	Conductivity	595 mS/m
7/03/2023	Downstream of discharge	Dissolved Oxygen	8.4 mg/L
7/03/2023	Control site	pH	7.2 pH unit
7/03/2023	Downstream of discharge	Salinity	4.8 ppt
7/03/2023	Upstream of discharge	Salinity	4.7 ppt
7/03/2023	Control site	Salinity	3.2 ppt
7/03/2023	Downstream of discharge	pH	7.4 pH unit
7/03/2023	Upstream of discharge	pH	7.3 pH unit
7/03/2023	Control site	cBOD5	0.77 mg/L
7/03/2023	Control site	Nitrite (as N)	0.002 mg/L
7/03/2023	Control site	Total Oxidised Nitrogen (as N)	0.14 mg/L
7/03/2023	Control site	Dissolved Reactive Phosphorus	0.008 mg/L
7/03/2023	Control site	Total Suspended Solids	4.5 mg/L
7/03/2023	Control site	Chlorophyll A	0.0006 mg/L
7/03/2023	Control site	Total Arsenic	0.00046 mg/L
7/03/2023	Control site	Total Cadmium	5.00E-05 mg/L
7/03/2023	Control site	Total Chromium	0.0018 mg/L
7/03/2023	Control site	Total Copper	0.0015 mg/L
7/03/2023	Control site	Total Nickel	0.0016 mg/L
7/03/2023	Control site	Total Zinc	0.0037 mg/L
7/03/2023	Control site	Total Lead	0.0016 mg/L
7/03/2023	Control site	Nitrate (as N)	0.14 mg/L
7/03/2023	Control site	Ammoniacal Nitrogen (as N)	0.016 mg/L
7/03/2023	Control site	Total Phosphorus (as P)	0.013 mg/L
7/03/2023	Control site	Total Nitrogen (as N)	0.19 mg/L
7/03/2023	Control site	Dissolved Oxygen	8.8 mg/L
7/03/2023	Upstream of discharge	Nitrate (as N)	0.18 mg/L
7/03/2023	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.046 mg/L
7/03/2023	Upstream of discharge	Total Phosphorus (as P)	0.029 mg/L
7/03/2023	Upstream of discharge	Total Nitrogen (as N)	0.26 mg/L
7/03/2023	Downstream of discharge	Total Cadmium	5.00E-05 mg/L
7/03/2023	Downstream of discharge	Total Chromium	0.0014 mg/L
7/03/2023	Downstream of discharge	Total Copper	0.0015 mg/L
7/03/2023	Downstream of discharge	Total Nickel	0.0012 mg/L
7/03/2023	Downstream of discharge	Total Zinc	0.0024 mg/L
7/03/2023	Downstream of discharge	Total Lead	0.0012 mg/L
7/03/2023	Downstream of discharge	Nitrate (as N)	0.17 mg/L
7/03/2023	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.037 mg/L
7/03/2023	Downstream of discharge	Total Phosphorus (as P)	0.029 mg/L
7/03/2023	Downstream of discharge	Total Nitrogen (as N)	0.28 mg/L
7/03/2023	Upstream of discharge	cBOD5	0.69 mg/L
7/03/2023	Upstream of discharge	Nitrite (as N)	0.0028 mg/L
7/03/2023	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.18 mg/L
7/03/2023	Upstream of discharge	Dissolved Reactive Phosphorus	0.023 mg/L
7/03/2023	Upstream of discharge	Total Suspended Solids	5.2 mg/L
7/03/2023	Upstream of discharge	Chlorophyll A	0.0035 mg/L
7/03/2023	Upstream of discharge	Total Arsenic	0.00055 mg/L
7/03/2023	Upstream of discharge	Total Cadmium	5.00E-05 mg/L
7/03/2023	Upstream of discharge	Total Chromium	0.0012 mg/L
7/03/2023	Upstream of discharge	Total Copper	0.0012 mg/L
7/03/2023	Upstream of discharge	Total Nickel	0.001 mg/L
7/03/2023	Upstream of discharge	Total Zinc	0.0019 mg/L
7/03/2023	Upstream of discharge	Total Lead	0.0011 mg/L
7/03/2023	Upstream of discharge	Dissolved Oxygen	7.9 mg/L
7/03/2023	Downstream of discharge	cBOD5	0.78 mg/L
7/03/2023	Downstream of discharge	Nitrite (as N)	0.0027 mg/L
7/03/2023	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.17 mg/L
7/03/2023	Downstream of discharge	Dissolved Reactive Phosphorus	0.021 mg/L
7/03/2023	Downstream of discharge	Total Suspended Solids	7.2 mg/L
7/03/2023	Downstream of discharge	Chlorophyll A	0.0078 mg/L
7/03/2023	Downstream of discharge	Total Arsenic	0.00054 mg/L
7/03/2023	Control site	Temperature	19.5 °C
7/03/2023	Upstream of discharge	Temperature	20.3 °C
7/03/2023	Downstream of discharge	Temperature	21.1 °C
4/04/2023	Control site	Temperature	18.1 °C
4/04/2023	Upstream of discharge	Temperature	17.7 °C
4/04/2023	Downstream of discharge	Temperature	18.1 °C
4/04/2023	Control site	cBOD5	0.99 mg/L

4/04/2023	Control site	Nitrite (as N)	0.003 mg/L
4/04/2023	Control site	Total Oxidised Nitrogen (as N)	0.11 mg/L
4/04/2023	Control site	Dissolved Reactive Phosphorus	0.011 mg/L
4/04/2023	Control site	Total Suspended Solids	8.6 mg/L
4/04/2023	Control site	Chlorophyll A	0.0028 mg/L
4/04/2023	Control site	Total Arsenic	0.001 mg/L
4/04/2023	Control site	Total Chromium	0.005 mg/L
4/04/2023	Control site	Total Copper	0.002 mg/L
4/04/2023	Control site	Total Zinc	0.01 mg/L
4/04/2023	Control site	Total Cadmium	0.0005 mg/L
4/04/2023	Control site	Total Lead	0.001 mg/L
4/04/2023	Control site	Total Nickel	0.0013 mg/L
4/04/2023	Control site	Nitrate (as N)	0.11 mg/L
4/04/2023	Control site	Ammoniacal Nitrogen (as N)	0.037 mg/L
4/04/2023	Control site	Total Phosphorus (as P)	0.018 mg/L
4/04/2023	Control site	Total Nitrogen (as N)	0.19 mg/L
4/04/2023	Downstream of discharge	Total Chromium	0.005 mg/L
4/04/2023	Downstream of discharge	Total Copper	0.0035 mg/L
4/04/2023	Downstream of discharge	Total Nickel	0.0014 mg/L
4/04/2023	Downstream of discharge	Total Zinc	0.01 mg/L
4/04/2023	Downstream of discharge	Total Cadmium	0.0005 mg/L
4/04/2023	Downstream of discharge	Total Lead	0.001 mg/L
4/04/2023	Downstream of discharge	Nitrate (as N)	0.13 mg/L
4/04/2023	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.076 mg/L
4/04/2023	Downstream of discharge	Total Phosphorus (as P)	0.059 mg/L
4/04/2023	Downstream of discharge	Total Nitrogen (as N)	0.33 mg/L
4/04/2023	Downstream of discharge	Total Arsenic	0.0016 mg/L
4/04/2023	Upstream of discharge	Dissolved Oxygen	7.4 mg/L
4/04/2023	Downstream of discharge	cBOD5	0.84 mg/L
4/04/2023	Downstream of discharge	Nitrite (as N)	0.0048 mg/L
4/04/2023	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.13 mg/L
4/04/2023	Downstream of discharge	Dissolved Reactive Phosphorus	0.03 mg/L
4/04/2023	Downstream of discharge	Total Suspended Solids	24.4 mg/L
4/04/2023	Downstream of discharge	Chlorophyll A	0.0033 mg/L
4/04/2023	Upstream of discharge	Total Nickel	0.0012 mg/L
4/04/2023	Upstream of discharge	Total Zinc	0.01 mg/L
4/04/2023	Upstream of discharge	Total Cadmium	0.0005 mg/L
4/04/2023	Upstream of discharge	Total Lead	0.001 mg/L
4/04/2023	Upstream of discharge	Nitrate (as N)	0.13 mg/L
4/04/2023	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.076 mg/L
4/04/2023	Upstream of discharge	Total Phosphorus (as P)	0.027 mg/L
4/04/2023	Upstream of discharge	Total Nitrogen (as N)	0.27 mg/L
4/04/2023	Control site	Dissolved Oxygen	8.7 mg/L
4/04/2023	Upstream of discharge	cBOD5	0.84 mg/L
4/04/2023	Upstream of discharge	Nitrite (as N)	0.0048 mg/L
4/04/2023	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.14 mg/L
4/04/2023	Upstream of discharge	Dissolved Reactive Phosphorus	0.029 mg/L
4/04/2023	Upstream of discharge	Total Suspended Solids	5.6 mg/L
4/04/2023	Upstream of discharge	Chlorophyll A	0.0044 mg/L
4/04/2023	Upstream of discharge	Total Arsenic	0.001 mg/L
4/04/2023	Upstream of discharge	Total Chromium	0.005 mg/L
4/04/2023	Upstream of discharge	Total Copper	0.0025 mg/L
4/04/2023	Downstream of discharge	Dissolved Oxygen	8.1 mg/L
4/04/2023	Downstream of discharge	pH	7.4 pH unit
4/04/2023	Control site	pH	7.3 pH unit
4/04/2023	Upstream of discharge	pH	7.3 pH unit
4/04/2023	Downstream of discharge	Salinity	9.7 ppt
4/04/2023	Control site	Salinity	6.1 ppt
4/04/2023	Upstream of discharge	Salinity	10.7 ppt
4/04/2023	Control site	Conductivity	1060 mS/m
4/04/2023	Downstream of discharge	Conductivity	1670 mS/m
4/04/2023	Upstream of discharge	Conductivity	1760 mS/m
4/04/2023	Control site	Escherichia coli	270 cfu/100 mL
4/04/2023	Control site	Enterococci	130 cfu/100 mL
4/04/2023	Control site	Faecal coliforms	530 cfu/100 mL
4/04/2023	Upstream of discharge	Escherichia coli	100 cfu/100 mL
4/04/2023	Upstream of discharge	Enterococci	78 cfu/100 mL
4/04/2023	Upstream of discharge	Faecal coliforms	250 cfu/100 mL
4/04/2023	Downstream of discharge	Escherichia coli	96 cfu/100 mL
4/04/2023	Downstream of discharge	Enterococci	120 cfu/100 mL
4/04/2023	Downstream of discharge	Faecal coliforms	340 cfu/100 mL
4/04/2023	Control site	Turbidity	9.5 NTU
4/04/2023	Upstream of discharge	Turbidity	2.3 NTU
4/04/2023	Downstream of discharge	Turbidity	16 NTU
16/05/2023	Downstream of discharge	Turbidity	100 NTU
16/05/2023	Upstream of discharge	Turbidity	17 NTU
16/05/2023	Control site	Turbidity	18 NTU
16/05/2023	Downstream of discharge	Escherichia coli	460 cfu/100 mL
16/05/2023	Downstream of discharge	Enterococci	590 cfu/100 mL
16/05/2023	Downstream of discharge	Faecal coliforms	890 cfu/100 mL
16/05/2023	Control site	Escherichia coli	580 cfu/100 mL
16/05/2023	Control site	Enterococci	380 cfu/100 mL
16/05/2023	Control site	Faecal coliforms	670 cfu/100 mL
16/05/2023	Upstream of discharge	Escherichia coli	350 cfu/100 mL
16/05/2023	Upstream of discharge	Enterococci	370 cfu/100 mL
16/05/2023	Upstream of discharge	Faecal coliforms	730 cfu/100 mL
16/05/2023	Upstream of discharge	Conductivity	627 mS/m
16/05/2023	Control site	Conductivity	632 mS/m
16/05/2023	Downstream of discharge	Conductivity	876 mS/m
16/05/2023	Control site	cBOD5	0.53 mg/L
16/05/2023	Control site	Nitrite (as N)	0.0027 mg/L
16/05/2023	Control site	Total Oxidised Nitrogen (as N)	0.24 mg/L
16/05/2023	Control site	Dissolved Reactive Phosphorus	0.017 mg/L
16/05/2023	Control site	Total Suspended Solids	9 mg/L
16/05/2023	Control site	Chlorophyll A	0.00068 mg/L
16/05/2023	Control site	Total Arsenic	0.001 mg/L
16/05/2023	Control site	Total Cadmium	0.0005 mg/L
16/05/2023	Control site	Total Chromium	0.005 mg/L
16/05/2023	Control site	Total Copper	0.002 mg/L
16/05/2023	Control site	Total Lead	0.001 mg/L
16/05/2023	Control site	Total Nickel	0.0019 mg/L

16/05/2023	Control site	Total Zinc	0.01 mg/L
16/05/2023	Control site	Nitrate (as N)	0.23 mg/L
16/05/2023	Control site	Ammoniacal Nitrogen (as N)	0.043 mg/L
16/05/2023	Control site	Total Phosphorus (as P)	0.019 mg/L
16/05/2023	Control site	Total Nitrogen (as N)	0.32 mg/L
16/05/2023	Upstream of discharge	Total Nickel	0.0019 mg/L
16/05/2023	Upstream of discharge	Total Zinc	0.01 mg/L
16/05/2023	Upstream of discharge	Nitrate (as N)	0.22 mg/L
16/05/2023	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.049 mg/L
16/05/2023	Upstream of discharge	Total Phosphorus (as P)	0.024 mg/L
16/05/2023	Upstream of discharge	Total Nitrogen (as N)	0.33 mg/L
16/05/2023	Control site	Dissolved Oxygen	9.9 mg/L
16/05/2023	Upstream of discharge	cBOD5	0.5 mg/L
16/05/2023	Upstream of discharge	Nitrite (as N)	0.003 mg/L
16/05/2023	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.22 mg/L
16/05/2023	Upstream of discharge	Dissolved Reactive Phosphorus	0.018 mg/L
16/05/2023	Upstream of discharge	Total Suspended Solids	7.6 mg/L
16/05/2023	Upstream of discharge	Chlorophyll A	0.0026 mg/L
16/05/2023	Upstream of discharge	Total Arsenic	0.001 mg/L
16/05/2023	Upstream of discharge	Total Cadmium	0.0005 mg/L
16/05/2023	Upstream of discharge	Total Chromium	0.005 mg/L
16/05/2023	Upstream of discharge	Total Copper	0.002 mg/L
16/05/2023	Upstream of discharge	Total Lead	0.001 mg/L
16/05/2023	Downstream of discharge	cBOD5	0.99 mg/L
16/05/2023	Downstream of discharge	Nitrite (as N)	0.0037 mg/L
16/05/2023	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.19 mg/L
16/05/2023	Downstream of discharge	Dissolved Reactive Phosphorus	0.066 mg/L
16/05/2023	Downstream of discharge	Total Suspended Solids	161 mg/L
16/05/2023	Downstream of discharge	Chlorophyll A	0.0082 mg/L
16/05/2023	Downstream of discharge	Total Arsenic	0.0011 mg/L
16/05/2023	Downstream of discharge	Total Cadmium	0.0005 mg/L
16/05/2023	Downstream of discharge	Total Chromium	0.0055 mg/L
16/05/2023	Downstream of discharge	Total Copper	0.0042 mg/L
16/05/2023	Downstream of discharge	Total Lead	0.001 mg/L
16/05/2023	Downstream of discharge	Total Nickel	0.0026 mg/L
16/05/2023	Downstream of discharge	Total Zinc	0.01 mg/L
16/05/2023	Downstream of discharge	Nitrate (as N)	0.19 mg/L
16/05/2023	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.086 mg/L
16/05/2023	Downstream of discharge	Total Phosphorus (as P)	0.076 mg/L
16/05/2023	Downstream of discharge	Total Nitrogen (as N)	0.51 mg/L
16/05/2023	Upstream of discharge	Dissolved Oxygen	9.7 mg/L
16/05/2023	Downstream of discharge	Dissolved Oxygen	9.3 mg/L
16/05/2023	Downstream of discharge	pH	7.7 pH unit
16/05/2023	Upstream of discharge	pH	7.9 pH unit
16/05/2023	Control site	pH	7.9 pH unit
16/05/2023	Upstream of discharge	Salinity	3.5 ppt
16/05/2023	Downstream of discharge	Salinity	5.3 ppt
16/05/2023	Control site	Salinity	3.4 ppt
16/05/2023	Control site	Temperature	13.5 °C
16/05/2023	Upstream of discharge	Temperature	13.4 °C
16/05/2023	Downstream of discharge	Temperature	13.4 °C
20/06/2023	Control site	Temperature	12.4 °C
20/06/2023	Upstream of discharge	Temperature	12.4 °C
20/06/2023	Downstream of discharge	Temperature	14 °C
20/06/2023	Downstream of discharge	cBOD5	1.2 mg/L
20/06/2023	Downstream of discharge	Nitrite (as N)	0.0043 mg/L
20/06/2023	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.18 mg/L
20/06/2023	Downstream of discharge	Dissolved Reactive Phosphorus	0.031 mg/L
20/06/2023	Downstream of discharge	Total Suspended Solids	151 mg/L
20/06/2023	Downstream of discharge	Chlorophyll A	0.0051 mg/L
20/06/2023	Downstream of discharge	Total Arsenic	0.0025 mg/L
20/06/2023	Downstream of discharge	Total Cadmium	0.00025 mg/L
20/06/2023	Downstream of discharge	Total Chromium	0.0067 mg/L
20/06/2023	Downstream of discharge	Total Copper	0.0082 mg/L
20/06/2023	Downstream of discharge	Total Lead	0.0015 mg/L
20/06/2023	Downstream of discharge	Total Nickel	0.004 mg/L
20/06/2023	Downstream of discharge	Total Zinc	0.02 mg/L
20/06/2023	Downstream of discharge	Nitrate (as N)	0.17 mg/L
20/06/2023	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.089 mg/L
20/06/2023	Downstream of discharge	Total Phosphorus (as P)	0.162 mg/L
20/06/2023	Downstream of discharge	Total Nitrogen (as N)	0.74 mg/L
20/06/2023	Downstream of discharge	Dissolved Oxygen	9.6 mg/L
20/06/2023	Upstream of discharge	Dissolved Oxygen	10.2 mg/L
20/06/2023	Control site	cBOD5	0.5 mg/L
20/06/2023	Control site	Nitrite (as N)	0.0044 mg/L
20/06/2023	Control site	Total Oxidised Nitrogen (as N)	0.28 mg/L
20/06/2023	Control site	Dissolved Reactive Phosphorus	0.012 mg/L
20/06/2023	Control site	Total Suspended Solids	8.2 mg/L
20/06/2023	Control site	Chlorophyll A	0.0006 mg/L
20/06/2023	Control site	Total Arsenic	0.00064 mg/L
20/06/2023	Control site	Total Cadmium	0.00025 mg/L
20/06/2023	Control site	Total Chromium	0.0025 mg/L
20/06/2023	Control site	Total Copper	0.0027 mg/L
20/06/2023	Control site	Total Lead	0.0005 mg/L
20/06/2023	Control site	Total Nickel	0.0021 mg/L
20/06/2023	Control site	Total Zinc	0.01 mg/L
20/06/2023	Control site	Nitrate (as N)	0.28 mg/L
20/06/2023	Control site	Ammoniacal Nitrogen (as N)	0.038 mg/L
20/06/2023	Control site	Total Phosphorus (as P)	0.027 mg/L
20/06/2023	Control site	Total Nitrogen (as N)	0.37 mg/L
20/06/2023	Control site	Dissolved Oxygen	10.5 mg/L
20/06/2023	Upstream of discharge	cBOD5	0.55 mg/L
20/06/2023	Upstream of discharge	Nitrite (as N)	0.004 mg/L
20/06/2023	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.24 mg/L
20/06/2023	Upstream of discharge	Dissolved Reactive Phosphorus	0.013 mg/L
20/06/2023	Upstream of discharge	Total Suspended Solids	8.6 mg/L
20/06/2023	Upstream of discharge	Chlorophyll A	0.0006 mg/L
20/06/2023	Upstream of discharge	Total Arsenic	0.00082 mg/L
20/06/2023	Upstream of discharge	Total Cadmium	0.00025 mg/L
20/06/2023	Upstream of discharge	Total Chromium	0.0025 mg/L
20/06/2023	Upstream of discharge	Total Copper	0.0032 mg/L

20/06/2023	Upstream of discharge	Total Lead	0.0005 mg/L
20/06/2023	Upstream of discharge	Total Nickel	0.002 mg/L
20/06/2023	Upstream of discharge	Total Zinc	0.005 mg/L
20/06/2023	Upstream of discharge	Nitrate (as N)	0.23 mg/L
20/06/2023	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.043 mg/L
20/06/2023	Upstream of discharge	Total Phosphorus (as P)	0.032 mg/L
20/06/2023	Upstream of discharge	Total Nitrogen (as N)	0.41 mg/L
20/06/2023	Downstream of discharge	pH	7.3 pH unit
20/06/2023	Upstream of discharge	pH	7.3 pH unit
20/06/2023	Control site	pH	6.6 pH unit
20/06/2023	Upstream of discharge	Salinity	3.3 ppt
20/06/2023	Downstream of discharge	Salinity	4.3 ppt
20/06/2023	Control site	Salinity	2.8 ppt
20/06/2023	Control site	Escherichia coli	620 cfu/100 mL
20/06/2023	Control site	Enterococci	290 cfu/100 mL
20/06/2023	Control site	Faecal coliforms	780 cfu/100 mL
20/06/2023	Upstream of discharge	Escherichia coli	940 cfu/100 mL
20/06/2023	Upstream of discharge	Enterococci	410 cfu/100 mL
20/06/2023	Upstream of discharge	Faecal coliforms	2500 cfu/100 mL
20/06/2023	Downstream of discharge	Escherichia coli	710 cfu/100 mL
20/06/2023	Downstream of discharge	Enterococci	410 cfu/100 mL
20/06/2023	Downstream of discharge	Faecal coliforms	880 cfu/100 mL
20/06/2023	Downstream of discharge	Conductivity	802 mS/m
20/06/2023	Upstream of discharge	Conductivity	616 mS/m
20/06/2023	Control site	Conductivity	505 mS/m
20/06/2023	Control site	Turbidity	19 NTU
20/06/2023	Downstream of discharge	Turbidity	85 NTU
20/06/2023	Upstream of discharge	Turbidity	20 NTU
18/07/2023	Upstream of discharge	Turbidity	9.6 NTU
18/07/2023	Control site	Turbidity	9.2 NTU
18/07/2023	Downstream of discharge	Turbidity	11 NTU
18/07/2023	Upstream of discharge	Conductivity	711 mS/m
18/07/2023	Control site	Conductivity	656 mS/m
18/07/2023	Downstream of discharge	Conductivity	1190 mS/m
18/07/2023	Downstream of discharge	Escherichia coli	81 cfu/100 mL
18/07/2023	Downstream of discharge	Enterococci	45 cfu/100 mL
18/07/2023	Downstream of discharge	Faecal coliforms	210 cfu/100 mL
18/07/2023	Control site	Escherichia coli	370 cfu/100 mL
18/07/2023	Control site	Enterococci	370 cfu/100 mL
18/07/2023	Control site	Faecal coliforms	580 cfu/100 mL
18/07/2023	Upstream of discharge	Escherichia coli	210 cfu/100 mL
18/07/2023	Upstream of discharge	Enterococci	54 cfu/100 mL
18/07/2023	Upstream of discharge	Faecal coliforms	300 cfu/100 mL
18/07/2023	Upstream of discharge	Total Copper	0.0029 mg/L
18/07/2023	Upstream of discharge	Total Lead	0.001 mg/L
18/07/2023	Upstream of discharge	Total Nickel	0.001 mg/L
18/07/2023	Upstream of discharge	Total Zinc	0.01 mg/L
18/07/2023	Upstream of discharge	Nitrate (as N)	0.21 mg/L
18/07/2023	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.028 mg/L
18/07/2023	Upstream of discharge	Total Phosphorus (as P)	0.023 mg/L
18/07/2023	Upstream of discharge	Total Nitrogen (as N)	0.29 mg/L
18/07/2023	Downstream of discharge	Dissolved Oxygen	9.4 mg/L
18/07/2023	Downstream of discharge	cBOD5	0.62 mg/L
18/07/2023	Downstream of discharge	Nitrite (as N)	0.0043 mg/L
18/07/2023	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.23 mg/L
18/07/2023	Downstream of discharge	Dissolved Reactive Phosphorus	0.04 mg/L
18/07/2023	Downstream of discharge	Total Suspended Solids	32.4 mg/L
18/07/2023	Downstream of discharge	Chlorophyll A	0.0014 mg/L
18/07/2023	Downstream of discharge	Total Arsenic	0.001 mg/L
18/07/2023	Downstream of discharge	Total Cadmium	0.0005 mg/L
18/07/2023	Downstream of discharge	Total Chromium	0.005 mg/L
18/07/2023	Downstream of discharge	Total Copper	0.0023 mg/L
18/07/2023	Downstream of discharge	Total Lead	0.001 mg/L
18/07/2023	Downstream of discharge	Total Nickel	0.0013 mg/L
18/07/2023	Downstream of discharge	Total Zinc	0.01 mg/L
18/07/2023	Downstream of discharge	Nitrate (as N)	0.23 mg/L
18/07/2023	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.036 mg/L
18/07/2023	Downstream of discharge	Total Phosphorus (as P)	0.062 mg/L
18/07/2023	Downstream of discharge	Total Nitrogen (as N)	0.33 mg/L
18/07/2023	Upstream of discharge	Total Arsenic	0.001 mg/L
18/07/2023	Upstream of discharge	Total Cadmium	0.0005 mg/L
18/07/2023	Upstream of discharge	Total Chromium	0.005 mg/L
18/07/2023	Upstream of discharge	Dissolved Oxygen	9.9 mg/L
18/07/2023	Control site	cBOD5	0.82 mg/L
18/07/2023	Control site	Nitrite (as N)	0.0023 mg/L
18/07/2023	Control site	Total Oxidised Nitrogen (as N)	0.208 mg/L
18/07/2023	Control site	Dissolved Reactive Phosphorus	0.011 mg/L
18/07/2023	Control site	Total Suspended Solids	10.8 mg/L
18/07/2023	Control site	Chlorophyll A	0.0006 mg/L
18/07/2023	Control site	Total Arsenic	0.001 mg/L
18/07/2023	Control site	Total Cadmium	0.0005 mg/L
18/07/2023	Control site	Total Chromium	0.005 mg/L
18/07/2023	Control site	Total Copper	0.002 mg/L
18/07/2023	Control site	Total Lead	0.001 mg/L
18/07/2023	Control site	Total Nickel	0.0013 mg/L
18/07/2023	Control site	Total Zinc	0.01 mg/L
18/07/2023	Control site	Nitrate (as N)	0.21 mg/L
18/07/2023	Control site	Ammoniacal Nitrogen (as N)	0.024 mg/L
18/07/2023	Control site	Total Phosphorus (as P)	0.019 mg/L
18/07/2023	Control site	Total Nitrogen (as N)	0.26 mg/L
18/07/2023	Control site	Dissolved Oxygen	10.3 mg/L
18/07/2023	Upstream of discharge	Total Suspended Solids	14 mg/L
18/07/2023	Upstream of discharge	Chlorophyll A	0.0006 mg/L
18/07/2023	Control site	pH	7.5 pH unit
18/07/2023	Control site	Salinity	3 ppt
18/07/2023	Downstream of discharge	Salinity	7.6 ppt
18/07/2023	Upstream of discharge	Salinity	3.5 ppt
18/07/2023	Downstream of discharge	pH	7.5 pH unit
18/07/2023	Upstream of discharge	pH	7.5 pH unit
18/07/2023	Upstream of discharge	cBOD5	0.52 mg/L
18/07/2023	Upstream of discharge	Nitrite (as N)	0.003 mg/L

18/07/2023	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.211 mg/L
18/07/2023	Upstream of discharge	Dissolved Reactive Phosphorus	0.012 mg/L
18/07/2023	Control site	Temperature	13.3 °C
18/07/2023	Upstream of discharge	Temperature	14.1 °C
18/07/2023	Downstream of discharge	Temperature	14 °C
15/08/2023	Control site	Temperature	11.4 °C
15/08/2023	Upstream of discharge	Temperature	11.6 °C
15/08/2023	Downstream of discharge	Temperature	11.4 °C
15/08/2023	Upstream of discharge	Dissolved Oxygen	10.1 mg/L
15/08/2023	Downstream of discharge	Dissolved Oxygen	9.8 mg/L
15/08/2023	Downstream of discharge	cBOD5	0.5 mg/L
15/08/2023	Downstream of discharge	Nitrite (as N)	0.0055 mg/L
15/08/2023	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.16 mg/L
15/08/2023	Downstream of discharge	Total Suspended Solids	16.8 mg/L
15/08/2023	Downstream of discharge	Dissolved Reactive Phosphorus	0.023 mg/L
15/08/2023	Downstream of discharge	Chlorophyll A	0.0006 mg/L
15/08/2023	Control site	cBOD5	0.5 mg/L
15/08/2023	Control site	Dissolved Reactive Phosphorus	0.012 mg/L
15/08/2023	Control site	Total Suspended Solids	7.4 mg/L
15/08/2023	Control site	Total Oxidised Nitrogen (as N)	0.171 mg/L
15/08/2023	Control site	Nitrite (as N)	0.0027 mg/L
15/08/2023	Control site	Chlorophyll A	0.0013 mg/L
15/08/2023	Control site	Total Arsenic	0.001 mg/L
15/08/2023	Control site	Total Cadmium	0.0005 mg/L
15/08/2023	Control site	Total Chromium	0.005 mg/L
15/08/2023	Control site	Total Copper	0.002 mg/L
15/08/2023	Control site	Total Lead	0.001 mg/L
15/08/2023	Control site	Total Nickel	0.001 mg/L
15/08/2023	Downstream of discharge	Total Arsenic	0.001 mg/L
15/08/2023	Downstream of discharge	Total Cadmium	0.0005 mg/L
15/08/2023	Downstream of discharge	Total Chromium	0.005 mg/L
15/08/2023	Downstream of discharge	Total Copper	0.002 mg/L
15/08/2023	Downstream of discharge	Total Lead	0.001 mg/L
15/08/2023	Downstream of discharge	Total Nickel	0.001 mg/L
15/08/2023	Downstream of discharge	Total Zinc	0.01 mg/L
15/08/2023	Downstream of discharge	Nitrate (as N)	0.15 mg/L
15/08/2023	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.012 mg/L
15/08/2023	Downstream of discharge	Total Nitrogen (as N)	0.16 mg/L
15/08/2023	Downstream of discharge	Total Phosphorus (as P)	0.024 mg/L
15/08/2023	Control site	Dissolved Oxygen	10.4 mg/L
15/08/2023	Upstream of discharge	cBOD5	0.5 mg/L
15/08/2023	Upstream of discharge	Nitrite (as N)	0.0033 mg/L
15/08/2023	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.167 mg/L
15/08/2023	Upstream of discharge	Dissolved Reactive Phosphorus	0.017 mg/L
15/08/2023	Upstream of discharge	Total Suspended Solids	15 mg/L
15/08/2023	Upstream of discharge	Chlorophyll A	0.0006 mg/L
15/08/2023	Upstream of discharge	Total Arsenic	0.001 mg/L
15/08/2023	Upstream of discharge	Total Cadmium	0.0005 mg/L
15/08/2023	Upstream of discharge	Total Chromium	0.005 mg/L
15/08/2023	Upstream of discharge	Total Copper	0.002 mg/L
15/08/2023	Upstream of discharge	Total Lead	0.001 mg/L
15/08/2023	Upstream of discharge	Total Nickel	0.001 mg/L
15/08/2023	Upstream of discharge	Total Zinc	0.01 mg/L
15/08/2023	Upstream of discharge	Nitrate (as N)	0.16 mg/L
15/08/2023	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.017 mg/L
15/08/2023	Upstream of discharge	Total Phosphorus (as P)	0.025 mg/L
15/08/2023	Upstream of discharge	Total Nitrogen (as N)	0.16 mg/L
15/08/2023	Control site	Total Zinc	0.01 mg/L
15/08/2023	Control site	Nitrate (as N)	0.17 mg/L
15/08/2023	Control site	Ammoniacal Nitrogen (as N)	0.0064 mg/L
15/08/2023	Control site	Total Phosphorus (as P)	0.012 mg/L
15/08/2023	Control site	Total Nitrogen (as N)	0.3 mg/L
15/08/2023	Downstream of discharge	pH	7.6 pH unit
15/08/2023	Control site	pH	7.5 pH unit
15/08/2023	Upstream of discharge	pH	7.6 pH unit
15/08/2023	Upstream of discharge	Salinity	5.9 ppt
15/08/2023	Control site	Salinity	5.2 ppt
15/08/2023	Downstream of discharge	Salinity	8.4 ppt
15/08/2023	Downstream of discharge	Escherichia coli	96 cfu/100 mL
15/08/2023	Downstream of discharge	Enterococci	190 cfu/100 mL
15/08/2023	Downstream of discharge	Faecal coliforms	270 cfu/100 mL
15/08/2023	Control site	Escherichia coli	230 cfu/100 mL
15/08/2023	Control site	Enterococci	130 cfu/100 mL
15/08/2023	Control site	Faecal coliforms	380 cfu/100 mL
15/08/2023	Upstream of discharge	Escherichia coli	140 cfu/100 mL
15/08/2023	Upstream of discharge	Enterococci	76 cfu/100 mL
15/08/2023	Upstream of discharge	Faecal coliforms	350 cfu/100 mL
15/08/2023	Upstream of discharge	Conductivity	1040 mS/m
15/08/2023	Control site	Conductivity	847 mS/m
15/08/2023	Downstream of discharge	Conductivity	1450 mS/m
15/08/2023	Downstream of discharge	Turbidity	8 NTU
15/08/2023	Upstream of discharge	Turbidity	8.6 NTU
15/08/2023	Control site	Turbidity	8.4 NTU
12/09/2023	Control site	cBOD5	2.4 mg/L
12/09/2023	Control site	Nitrite (as N)	0.0082 mg/L
12/09/2023	Control site	Total Oxidised Nitrogen (as N)	0.141 mg/L
12/09/2023	Control site	Dissolved Reactive Phosphorus	0.018 mg/L
12/09/2023	Control site	Total Suspended Solids	80 mg/L
12/09/2023	Control site	Chlorophyll A	0.002 mg/L
12/09/2023	Control site	Total Copper	0.0035 mg/L
12/09/2023	Control site	Total Lead	0.0011 mg/L
12/09/2023	Control site	Total Nickel	0.0026 mg/L
12/09/2023	Control site	Total Zinc	0.012 mg/L
12/09/2023	Control site	Total Arsenic	0.0011 mg/L
12/09/2023	Control site	Total Cadmium	5.00E-05 mg/L
12/09/2023	Control site	Total Chromium	0.0046 mg/L
12/09/2023	Control site	Nitrate (as N)	0.13 mg/L
12/09/2023	Control site	Ammoniacal Nitrogen (as N)	0.027 mg/L
12/09/2023	Control site	Total Phosphorus (as P)	0.145 mg/L
12/09/2023	Control site	Total Nitrogen (as N)	0.96 mg/L
12/09/2023	Downstream of discharge	cBOD5	1.9 mg/L

12/09/2023	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.149 mg/L
12/09/2023	Downstream of discharge	Dissolved Reactive Phosphorus	0.031 mg/L
12/09/2023	Downstream of discharge	Total Suspended Solids	60 mg/L
12/09/2023	Downstream of discharge	Nitrite (as N)	0.01 mg/L
12/09/2023	Downstream of discharge	Chlorophyll A	0.0067 mg/L
12/09/2023	Upstream of discharge	Dissolved Oxygen	10 mg/L
12/09/2023	Upstream of discharge	Total Lead	0.00087 mg/L
12/09/2023	Upstream of discharge	Total Zinc	0.0081 mg/L
12/09/2023	Upstream of discharge	Nitrate (as N)	0.14 mg/L
12/09/2023	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.035 mg/L
12/09/2023	Upstream of discharge	Total Phosphorus (as P)	0.121 mg/L
12/09/2023	Upstream of discharge	Total Nitrogen (as N)	0.88 mg/L
12/09/2023	Control site	Dissolved Oxygen	10.3 mg/L
12/09/2023	Downstream of discharge	Dissolved Oxygen	10 mg/L
12/09/2023	Downstream of discharge	Total Copper	0.0033 mg/L
12/09/2023	Downstream of discharge	Total Lead	0.001 mg/L
12/09/2023	Downstream of discharge	Total Nickel	0.0018 mg/L
12/09/2023	Downstream of discharge	Total Zinc	0.015 mg/L
12/09/2023	Downstream of discharge	Total Arsenic	0.0011 mg/L
12/09/2023	Downstream of discharge	Total Cadmium	5.00E-05 mg/L
12/09/2023	Downstream of discharge	Total Chromium	0.0038 mg/L
12/09/2023	Downstream of discharge	Nitrate (as N)	0.14 mg/L
12/09/2023	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.043 mg/L
12/09/2023	Downstream of discharge	Total Phosphorus (as P)	0.12 mg/L
12/09/2023	Downstream of discharge	Total Nitrogen (as N)	0.86 mg/L
12/09/2023	Upstream of discharge	cBOD5	1.8 mg/L
12/09/2023	Upstream of discharge	Nitrite (as N)	0.0049 mg/L
12/09/2023	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.146 mg/L
12/09/2023	Upstream of discharge	Dissolved Reactive Phosphorus	0.017 mg/L
12/09/2023	Upstream of discharge	Total Suspended Solids	59 mg/L
12/09/2023	Upstream of discharge	Chlorophyll A	0.002 mg/L
12/09/2023	Upstream of discharge	Total Copper	0.0032 mg/L
12/09/2023	Upstream of discharge	Total Nickel	0.002 mg/L
12/09/2023	Upstream of discharge	Total Arsenic	0.0011 mg/L
12/09/2023	Upstream of discharge	Total Cadmium	5.00E-05 mg/L
12/09/2023	Upstream of discharge	Total Chromium	0.0041 mg/L
12/09/2023	Upstream of discharge	pH	7.1 pH unit
12/09/2023	Control site	pH	7.1 pH unit
12/09/2023	Downstream of discharge	pH	7.4 pH unit
12/09/2023	Control site	Salinity	0.1 ppt
12/09/2023	Downstream of discharge	Salinity	0.5 ppt
12/09/2023	Upstream of discharge	Salinity	0.9 ppt
12/09/2023	Control site	Temperature	14.6 °C
12/09/2023	Upstream of discharge	Temperature	13.8 °C
12/09/2023	Downstream of discharge	Temperature	14.6 °C
12/09/2023	Downstream of discharge	Turbidity	60 NTU
12/09/2023	Upstream of discharge	Turbidity	65 NTU
12/09/2023	Control site	Turbidity	70 NTU
12/09/2023	Downstream of discharge	Conductivity	192 mS/m
12/09/2023	Upstream of discharge	Conductivity	157 mS/m
12/09/2023	Control site	Conductivity	31.4 mS/m
12/09/2023	Control site	Escherichia coli	17000 cfu/100 mL
12/09/2023	Control site	Enterococci	8200 cfu/100 mL
12/09/2023	Control site	Faecal coliforms	16000 cfu/100 mL
12/09/2023	Upstream of discharge	Escherichia coli	18000 cfu/100 mL
12/09/2023	Upstream of discharge	Enterococci	7200 cfu/100 mL
12/09/2023	Upstream of discharge	Faecal coliforms	22000 cfu/100 mL
12/09/2023	Downstream of discharge	Escherichia coli	12000 cfu/100 mL
12/09/2023	Downstream of discharge	Enterococci	5300 cfu/100 mL
12/09/2023	Downstream of discharge	Faecal coliforms	12000 cfu/100 mL
10/10/2023	Control site	Escherichia coli	980 cfu/100 mL
10/10/2023	Control site	Enterococci	350 cfu/100 mL
10/10/2023	Control site	Faecal coliforms	2900 cfu/100 mL
10/10/2023	Upstream of discharge	Escherichia coli	670 cfu/100 mL
10/10/2023	Upstream of discharge	Enterococci	110 cfu/100 mL
10/10/2023	Upstream of discharge	Faecal coliforms	990 cfu/100 mL
10/10/2023	Downstream of discharge	Escherichia coli	2200 cfu/100 mL
10/10/2023	Downstream of discharge	Enterococci	280 cfu/100 mL
10/10/2023	Downstream of discharge	Faecal coliforms	2300 cfu/100 mL
10/10/2023	Downstream of discharge	Conductivity	1920 mS/m
10/10/2023	Upstream of discharge	Conductivity	1350 mS/m
10/10/2023	Control site	Conductivity	975 mS/m
10/10/2023	Control site	Turbidity	9.6 NTU
10/10/2023	Upstream of discharge	Turbidity	6.1 NTU
10/10/2023	Downstream of discharge	Turbidity	17 NTU
10/10/2023	Control site	Temperature	14.9 °C
10/10/2023	Upstream of discharge	Temperature	15.2 °C
10/10/2023	Downstream of discharge	Temperature	15.7 °C
10/10/2023	Upstream of discharge	Dissolved Oxygen	8.5 mg/L
10/10/2023	Upstream of discharge	Total Chromium	0.005 mg/L
10/10/2023	Upstream of discharge	Total Copper	0.002 mg/L
10/10/2023	Upstream of discharge	Total Lead	0.001 mg/L
10/10/2023	Upstream of discharge	Total Nickel	0.001 mg/L
10/10/2023	Upstream of discharge	Total Zinc	0.01 mg/L
10/10/2023	Upstream of discharge	Nitrate (as N)	0.11 mg/L
10/10/2023	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.045 mg/L
10/10/2023	Upstream of discharge	Total Phosphorus (as P)	0.016 mg/L
10/10/2023	Upstream of discharge	Total Nitrogen (as N)	0.17 mg/L
10/10/2023	Downstream of discharge	cBOD5	0.7 mg/L
10/10/2023	Downstream of discharge	Nitrite (as N)	0.015 mg/L
10/10/2023	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.135 mg/L
10/10/2023	Downstream of discharge	Dissolved Reactive Phosphorus	0.045 mg/L
10/10/2023	Downstream of discharge	Total Suspended Solids	38 mg/L
10/10/2023	Downstream of discharge	Chlorophyll A	0.00084 mg/L
10/10/2023	Downstream of discharge	Total Arsenic	0.0015 mg/L
10/10/2023	Downstream of discharge	Total Cadmium	0.0005 mg/L
10/10/2023	Downstream of discharge	Total Chromium	0.005 mg/L
10/10/2023	Downstream of discharge	Total Copper	0.0025 mg/L
10/10/2023	Downstream of discharge	Total Lead	0.001 mg/L
10/10/2023	Downstream of discharge	Total Nickel	0.0012 mg/L
10/10/2023	Downstream of discharge	Total Zinc	0.01 mg/L

10/10/2023	Downstream of discharge	Nitrate (as N)	0.12 mg/L
10/10/2023	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.059 mg/L
10/10/2023	Downstream of discharge	Total Phosphorus (as P)	0.066 mg/L
10/10/2023	Downstream of discharge	Total Nitrogen (as N)	0.3 mg/L
10/10/2023	Downstream of discharge	Dissolved Oxygen	8.1 mg/L
10/10/2023	Control site	cBOD5	0.62 mg/L
10/10/2023	Control site	Nitrite (as N)	0.0022 mg/L
10/10/2023	Control site	Total Oxidised Nitrogen (as N)	0.115 mg/L
10/10/2023	Control site	Dissolved Reactive Phosphorus	0.01 mg/L
10/10/2023	Control site	Total Suspended Solids	12 mg/L
10/10/2023	Control site	Chlorophyll A	0.0006 mg/L
10/10/2023	Control site	Total Arsenic	0.001 mg/L
10/10/2023	Control site	Total Cadmium	0.0005 mg/L
10/10/2023	Control site	Total Chromium	0.005 mg/L
10/10/2023	Control site	Total Copper	0.002 mg/L
10/10/2023	Control site	Total Lead	0.001 mg/L
10/10/2023	Control site	Total Nickel	0.001 mg/L
10/10/2023	Control site	Total Zinc	0.01 mg/L
10/10/2023	Control site	Nitrate (as N)	0.11 mg/L
10/10/2023	Control site	Ammoniacal Nitrogen (as N)	0.035 mg/L
10/10/2023	Control site	Total Phosphorus (as P)	0.012 mg/L
10/10/2023	Control site	Total Nitrogen (as N)	0.21 mg/L
10/10/2023	Upstream of discharge	cBOD5	0.61 mg/L
10/10/2023	Upstream of discharge	Nitrite (as N)	0.004 mg/L
10/10/2023	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.117 mg/L
10/10/2023	Upstream of discharge	Dissolved Reactive Phosphorus	0.014 mg/L
10/10/2023	Upstream of discharge	Total Suspended Solids	7.2 mg/L
10/10/2023	Upstream of discharge	Chlorophyll A	0.0006 mg/L
10/10/2023	Upstream of discharge	Total Arsenic	0.0012 mg/L
10/10/2023	Upstream of discharge	Total Cadmium	0.0005 mg/L
10/10/2023	Control site	Dissolved Oxygen	9.1 mg/L
10/10/2023	Upstream of discharge	Salinity	7.6 ppt
10/10/2023	Downstream of discharge	Salinity	11.1 ppt
10/10/2023	Control site	pH	7.4 pH unit
10/10/2023	Control site	Salinity	5.2 ppt
10/10/2023	Downstream of discharge	pH	7.5 pH unit
10/10/2023	Upstream of discharge	pH	7.5 pH unit
14/11/2023	Control site	cBOD5	1.6 mg/L
14/11/2023	Control site	Nitrite (as N)	0.005 mg/L
14/11/2023	Control site	Total Nitrogen (as N)	0.2 mg/L
14/11/2023	Upstream of discharge	cBOD5	1.3 mg/L
14/11/2023	Upstream of discharge	Nitrite (as N)	0.0067 mg/L
14/11/2023	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.0947 mg/L
14/11/2023	Upstream of discharge	Dissolved Reactive Phosphorus	0.022 mg/L
14/11/2023	Upstream of discharge	Total Suspended Solids	7.6 mg/L
14/11/2023	Upstream of discharge	Chlorophyll A	0.011 mg/L
14/11/2023	Upstream of discharge	Total Arsenic	0.001 mg/L
14/11/2023	Upstream of discharge	Total Cadmium	0.0005 mg/L
14/11/2023	Control site	Dissolved Oxygen	7.5 mg/L
14/11/2023	Upstream of discharge	Total Chromium	0.005 mg/L
14/11/2023	Upstream of discharge	Total Copper	0.0057 mg/L
14/11/2023	Upstream of discharge	Total Lead	0.001 mg/L
14/11/2023	Upstream of discharge	Total Nickel	0.0018 mg/L
14/11/2023	Upstream of discharge	Total Zinc	0.013 mg/L
14/11/2023	Upstream of discharge	Nitrate (as N)	0.088 mg/L
14/11/2023	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.016 mg/L
14/11/2023	Upstream of discharge	Total Phosphorus (as P)	0.032 mg/L
14/11/2023	Upstream of discharge	Total Nitrogen (as N)	0.25 mg/L
14/11/2023	Control site	Total Oxidised Nitrogen (as N)	0.0979 mg/L
14/11/2023	Control site	Dissolved Reactive Phosphorus	0.014 mg/L
14/11/2023	Control site	Total Suspended Solids	33.6 mg/L
14/11/2023	Control site	Chlorophyll A	0.0025 mg/L
14/11/2023	Control site	Total Arsenic	0.0016 mg/L
14/11/2023	Control site	Total Cadmium	0.0005 mg/L
14/11/2023	Control site	Total Chromium	0.005 mg/L
14/11/2023	Control site	Total Copper	0.0027 mg/L
14/11/2023	Control site	Total Lead	0.001 mg/L
14/11/2023	Control site	Total Nickel	0.0014 mg/L
14/11/2023	Control site	Total Zinc	0.01 mg/L
14/11/2023	Control site	Nitrate (as N)	0.093 mg/L
14/11/2023	Control site	Ammoniacal Nitrogen (as N)	0.021 mg/L
14/11/2023	Control site	Total Phosphorus (as P)	0.029 mg/L
14/11/2023	Upstream of discharge	Dissolved Oxygen	5.8 mg/L
14/11/2023	Downstream of discharge	cBOD5	2.8 mg/L
14/11/2023	Downstream of discharge	Nitrite (as N)	0.008 mg/L
14/11/2023	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.0981 mg/L
14/11/2023	Downstream of discharge	Dissolved Reactive Phosphorus	0.022 mg/L
14/11/2023	Downstream of discharge	Total Suspended Solids	20.4 mg/L
14/11/2023	Downstream of discharge	Chlorophyll A	0.024 mg/L
14/11/2023	Downstream of discharge	Total Arsenic	0.001 mg/L
14/11/2023	Downstream of discharge	Total Cadmium	0.0005 mg/L
14/11/2023	Downstream of discharge	Total Chromium	0.005 mg/L
14/11/2023	Downstream of discharge	Total Copper	0.0042 mg/L
14/11/2023	Downstream of discharge	Total Lead	0.001 mg/L
14/11/2023	Downstream of discharge	Total Nickel	0.0013 mg/L
14/11/2023	Downstream of discharge	Total Zinc	0.01 mg/L
14/11/2023	Downstream of discharge	Nitrate (as N)	0.09 mg/L
14/11/2023	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.0069 mg/L
14/11/2023	Downstream of discharge	Total Phosphorus (as P)	0.041 mg/L
14/11/2023	Downstream of discharge	Total Nitrogen (as N)	0.35 mg/L
14/11/2023	Downstream of discharge	Dissolved Oxygen	6.9 mg/L
14/11/2023	Control site	pH	7.3 pH unit
14/11/2023	Downstream of discharge	pH	7.5 pH unit
14/11/2023	Upstream of discharge	pH	7.3 pH unit
14/11/2023	Upstream of discharge	Salinity	17 ppt
14/11/2023	Downstream of discharge	Salinity	16.8 ppt
14/11/2023	Control site	Salinity	10.6 ppt
14/11/2023	Control site	Temperature	18.9 °C
14/11/2023	Upstream of discharge	Temperature	20.1 °C
14/11/2023	Downstream of discharge	Temperature	19.9 °C
14/11/2023	Downstream of discharge	Turbidity	8.7 NTU

14/11/2023	Upstream of discharge	Turbidity	4.9 NTU
14/11/2023	Control site	Turbidity	20 NTU
14/11/2023	Control site	Conductivity	1710 mS/m
14/11/2023	Downstream of discharge	Conductivity	2780 mS/m
14/11/2023	Upstream of discharge	Conductivity	2810 mS/m
14/11/2023	Control site	Escherichia coli	470 cfu/100 mL
14/11/2023	Control site	Enterococci	230 cfu/100 mL
14/11/2023	Control site	Faecal coliforms	510 cfu/100 mL
14/11/2023	Upstream of discharge	Escherichia coli	78 cfu/100 mL
14/11/2023	Upstream of discharge	Enterococci	46 cfu/100 mL
14/11/2023	Upstream of discharge	Faecal coliforms	200 cfu/100 mL
14/11/2023	Downstream of discharge	Escherichia coli	98 cfu/100 mL
14/11/2023	Downstream of discharge	Enterococci	66 cfu/100 mL
14/11/2023	Downstream of discharge	Faecal coliforms	120 cfu/100 mL
12/12/2023	Downstream of discharge	Salinity	19 ppt
12/12/2023	Downstream of discharge	Dissolved Oxygen	6.3 mg/L
12/12/2023	Downstream of discharge	cBOD5	1.6 mg/L
12/12/2023	Downstream of discharge	Nitrite (as N)	0.0039 mg/L
12/12/2023	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.0911 mg/L
12/12/2023	Downstream of discharge	Total Suspended Solids	42.4 mg/L
12/12/2023	Downstream of discharge	Dissolved Reactive Phosphorus	0.0411 mg/L
12/12/2023	Downstream of discharge	Chlorophyll A	0.0044 mg/L
12/12/2023	Downstream of discharge	Total Arsenic	0.001 mg/L
12/12/2023	Downstream of discharge	Total Cadmium	0.0005 mg/L
12/12/2023	Downstream of discharge	Total Chromium	0.005 mg/L
12/12/2023	Downstream of discharge	Total Copper	0.0046 mg/L
12/12/2023	Downstream of discharge	Total Lead	0.001 mg/L
12/12/2023	Downstream of discharge	Total Nickel	0.0013 mg/L
12/12/2023	Downstream of discharge	Total Zinc	0.01 mg/L
12/12/2023	Downstream of discharge	Nitrate (as N)	0.087 mg/L
12/12/2023	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.025 mg/L
12/12/2023	Downstream of discharge	Total Phosphorus (as P)	0.068 mg/L
12/12/2023	Downstream of discharge	Total Nitrogen (as N)	0.3 mg/L
12/12/2023	Downstream of discharge	pH	7.6 pH unit
12/12/2023	Downstream of discharge	Temperature	21.1 °C
12/12/2023	Downstream of discharge	Escherichia coli	180 cfu/100 mL
12/12/2023	Downstream of discharge	Enterococci	74 cfu/100 mL
12/12/2023	Downstream of discharge	Faecal coliforms	380 cfu/100 mL
12/12/2023	Downstream of discharge	Conductivity	3040 mS/m
12/12/2023	Downstream of discharge	Turbidity	16 NTU
12/12/2023	Control site	cBOD5	0.64 mg/L
12/12/2023	Control site	Nitrite (as N)	0.0034 mg/L
12/12/2023	Control site	Total Oxidised Nitrogen (as N)	0.0858 mg/L
12/12/2023	Control site	Total Suspended Solids	15 mg/L
12/12/2023	Control site	Dissolved Reactive Phosphorus	0.0222 mg/L
12/12/2023	Control site	Chlorophyll A	0.0006 mg/L
12/12/2023	Control site	Total Arsenic	0.001 mg/L
12/12/2023	Control site	Total Cadmium	0.0005 mg/L
12/12/2023	Control site	Total Chromium	0.005 mg/L
12/12/2023	Control site	Total Copper	0.0026 mg/L
12/12/2023	Control site	Total Lead	0.001 mg/L
12/12/2023	Control site	Total Nickel	0.001 mg/L
12/12/2023	Control site	Total Zinc	0.01 mg/L
12/12/2023	Control site	Dissolved Oxygen	7.3 mg/L
12/12/2023	Control site	Nitrate (as N)	0.082 mg/L
12/12/2023	Control site	Ammoniacal Nitrogen (as N)	0.034 mg/L
12/12/2023	Control site	Total Phosphorus (as P)	0.035 mg/L
12/12/2023	Control site	Total Nitrogen (as N)	0.24 mg/L
12/12/2023	Control site	Salinity	11.6 ppt
12/12/2023	Control site	pH	7.8 pH unit
12/12/2023	Control site	Temperature	20.2 °C
12/12/2023	Control site	Turbidity	8.9 NTU
12/12/2023	Control site	Conductivity	1610 mS/m
12/12/2023	Control site	Escherichia coli	500 cfu/100 mL
12/12/2023	Control site	Enterococci	220 cfu/100 mL
12/12/2023	Control site	Faecal coliforms	470 cfu/100 mL
12/12/2023	Upstream of discharge	Escherichia coli	86 cfu/100 mL
12/12/2023	Upstream of discharge	Enterococci	42 cfu/100 mL
12/12/2023	Upstream of discharge	Faecal coliforms	230 cfu/100 mL
12/12/2023	Upstream of discharge	Conductivity	3040 mS/m
12/12/2023	Upstream of discharge	Turbidity	7.1 NTU
12/12/2023	Upstream of discharge	Temperature	21.2 °C
12/12/2023	Upstream of discharge	cBOD5	1.4 mg/L
12/12/2023	Upstream of discharge	Nitrite (as N)	0.0039 mg/L
12/12/2023	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.0798 mg/L
12/12/2023	Upstream of discharge	Total Suspended Solids	21.2 mg/L
12/12/2023	Upstream of discharge	Dissolved Reactive Phosphorus	0.0312 mg/L
12/12/2023	Upstream of discharge	Chlorophyll A	0.0032 mg/L
12/12/2023	Upstream of discharge	Total Arsenic	0.001 mg/L
12/12/2023	Upstream of discharge	Total Cadmium	0.0005 mg/L
12/12/2023	Upstream of discharge	Total Chromium	0.005 mg/L
12/12/2023	Upstream of discharge	Total Copper	0.0057 mg/L
12/12/2023	Upstream of discharge	Total Lead	0.001 mg/L
12/12/2023	Upstream of discharge	Total Nickel	0.0012 mg/L
12/12/2023	Upstream of discharge	Total Zinc	0.01 mg/L
12/12/2023	Upstream of discharge	Nitrate (as N)	0.076 mg/L
12/12/2023	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.032 mg/L
12/12/2023	Upstream of discharge	Total Phosphorus (as P)	0.043 mg/L
12/12/2023	Upstream of discharge	Total Nitrogen (as N)	0.24 mg/L
12/12/2023	Upstream of discharge	pH	7.5 pH unit
12/12/2023	Upstream of discharge	Salinity	18.8 ppt
12/12/2023	Upstream of discharge	Dissolved Oxygen	5.8 mg/L
9/01/2024	Control site	cBOD5	1 mg/L
9/01/2024	Control site	Total Suspended Solids	6.4 mg/L
9/01/2024	Control site	Nitrite (as N)	0.0029 mg/L
9/01/2024	Control site	Total Oxidised Nitrogen (as N)	0.084 mg/L
9/01/2024	Downstream of discharge	Total Arsenic	0.0012 mg/L
9/01/2024	Downstream of discharge	Total Cadmium	0.0005 mg/L
9/01/2024	Downstream of discharge	Total Chromium	0.005 mg/L
9/01/2024	Downstream of discharge	Total Copper	0.003 mg/L
9/01/2024	Downstream of discharge	Total Lead	0.001 mg/L

9/01/2024	Downstream of discharge	Total Nickel	0.0017 mg/L
9/01/2024	Downstream of discharge	Total Zinc	0.01 mg/L
9/01/2024	Downstream of discharge	Nitrate (as N)	0.11 mg/L
9/01/2024	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.041 mg/L
9/01/2024	Downstream of discharge	Total Phosphorus (as P)	0.053 mg/L
9/01/2024	Downstream of discharge	Total Nitrogen (as N)	0.3 mg/L
9/01/2024	Upstream of discharge	Dissolved Oxygen	6.9 mg/L
9/01/2024	Control site	Dissolved Reactive Phosphorus	0.015 mg/L
9/01/2024	Control site	Chlorophyll A	0.0018 mg/L
9/01/2024	Control site	Total Arsenic	0.001 mg/L
9/01/2024	Control site	Total Cadmium	0.0005 mg/L
9/01/2024	Control site	Total Chromium	0.005 mg/L
9/01/2024	Control site	Total Copper	0.0026 mg/L
9/01/2024	Control site	Total Lead	0.001 mg/L
9/01/2024	Control site	Total Nickel	0.0019 mg/L
9/01/2024	Control site	Total Zinc	0.01 mg/L
9/01/2024	Control site	Nitrate (as N)	0.081 mg/L
9/01/2024	Control site	Ammoniacal Nitrogen (as N)	0.071 mg/L
9/01/2024	Control site	Total Phosphorus (as P)	0.025 mg/L
9/01/2024	Control site	Total Nitrogen (as N)	0.26 mg/L
9/01/2024	Upstream of discharge	cBOD5	0.78 mg/L
9/01/2024	Upstream of discharge	Total Suspended Solids	7.6 mg/L
9/01/2024	Upstream of discharge	Nitrite (as N)	0.0048 mg/L
9/01/2024	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.126 mg/L
9/01/2024	Upstream of discharge	Dissolved Reactive Phosphorus	0.055 mg/L
9/01/2024	Upstream of discharge	Chlorophyll A	0.0045 mg/L
9/01/2024	Upstream of discharge	Total Arsenic	0.0011 mg/L
9/01/2024	Upstream of discharge	Total Cadmium	0.0005 mg/L
9/01/2024	Upstream of discharge	Total Chromium	0.005 mg/L
9/01/2024	Upstream of discharge	Total Copper	0.004 mg/L
9/01/2024	Upstream of discharge	Total Lead	0.001 mg/L
9/01/2024	Upstream of discharge	Total Nickel	0.0017 mg/L
9/01/2024	Upstream of discharge	Total Zinc	0.013 mg/L
9/01/2024	Upstream of discharge	Nitrate (as N)	0.12 mg/L
9/01/2024	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.052 mg/L
9/01/2024	Upstream of discharge	Total Phosphorus (as P)	0.053 mg/L
9/01/2024	Upstream of discharge	Total Nitrogen (as N)	0.28 mg/L
9/01/2024	Downstream of discharge	Dissolved Oxygen	6.5 mg/L
9/01/2024	Downstream of discharge	cBOD5	1.1 mg/L
9/01/2024	Downstream of discharge	Total Suspended Solids	14.8 mg/L
9/01/2024	Downstream of discharge	Nitrite (as N)	0.0044 mg/L
9/01/2024	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.114 mg/L
9/01/2024	Downstream of discharge	Dissolved Reactive Phosphorus	0.043 mg/L
9/01/2024	Downstream of discharge	Chlorophyll A	0.0066 mg/L
9/01/2024	Control site	Dissolved Oxygen	7.6 mg/L
9/01/2024	Downstream of discharge	Salinity	12.2 ppt
9/01/2024	Upstream of discharge	Salinity	8.3 ppt
9/01/2024	Control site	Salinity	5.6 ppt
9/01/2024	Upstream of discharge	pH	7.5 pH unit
9/01/2024	Downstream of discharge	pH	7.5 pH unit
9/01/2024	Control site	pH	7.6 pH unit
9/01/2024	Control site	Temperature	21.8 °C
9/01/2024	Upstream of discharge	Temperature	22.5 °C
9/01/2024	Downstream of discharge	Temperature	23.5 °C
9/01/2024	Downstream of discharge	Turbidity	11 NTU
9/01/2024	Upstream of discharge	Turbidity	8.3 NTU
9/01/2024	Control site	Turbidity	11 NTU
9/01/2024	Downstream of discharge	Conductivity	1950 mS/m
9/01/2024	Upstream of discharge	Conductivity	1470 mS/m
9/01/2024	Control site	Conductivity	976 mS/m
9/01/2024	Control site	Escherichia coli	980 cfu/100 mL
9/01/2024	Control site	Enterococci	330 cfu/100 mL
9/01/2024	Control site	Faecal coliforms	6500 cfu/100 mL
9/01/2024	Upstream of discharge	Escherichia coli	380 cfu/100 mL
9/01/2024	Upstream of discharge	Enterococci	230 cfu/100 mL
9/01/2024	Upstream of discharge	Faecal coliforms	5600 cfu/100 mL
9/01/2024	Downstream of discharge	Escherichia coli	310 cfu/100 mL
9/01/2024	Downstream of discharge	Enterococci	82 cfu/100 mL
9/01/2024	Downstream of discharge	Faecal coliforms	3500 cfu/100 mL
6/02/2024	Control site	Escherichia coli	170 cfu/100 mL
6/02/2024	Control site	Enterococci	110 cfu/100 mL
6/02/2024	Control site	Faecal coliforms	480 cfu/100 mL
6/02/2024	Control site	Conductivity	2010 mS/m
6/02/2024	Control site	Turbidity	11 NTU
6/02/2024	Control site	Temperature	21.2 °C
6/02/2024	Control site	cBOD5	0.93 mg/L
6/02/2024	Control site	Total Suspended Solids	25.2 mg/L
6/02/2024	Control site	Nitrite (as N)	0.002 mg/L
6/02/2024	Control site	Total Oxidised Nitrogen (as N)	0.0435 mg/L
6/02/2024	Control site	Dissolved Reactive Phosphorus	0.016 mg/L
6/02/2024	Control site	Chlorophyll A	0.0047 mg/L
6/02/2024	Control site	Total Arsenic	0.001 mg/L
6/02/2024	Control site	Total Cadmium	0.0005 mg/L
6/02/2024	Control site	Total Chromium	0.005 mg/L
6/02/2024	Control site	Total Copper	0.0022 mg/L
6/02/2024	Control site	Total Lead	0.001 mg/L
6/02/2024	Control site	Total Nickel	0.0015 mg/L
6/02/2024	Control site	Total Zinc	0.01 mg/L
6/02/2024	Control site	Nitrate (as N)	0.043 mg/L
6/02/2024	Control site	Ammoniacal Nitrogen (as N)	0.041 mg/L
6/02/2024	Control site	Total Phosphorus (as P)	0.038 mg/L
6/02/2024	Control site	Total Nitrogen (as N)	0.16 mg/L
6/02/2024	Control site	Dissolved Oxygen	6.9 mg/L
6/02/2024	Control site	pH	7.1 pH unit
6/02/2024	Control site	Salinity	11.8 ppt
6/02/2024	Upstream of discharge	cBOD5	1 mg/L
6/02/2024	Upstream of discharge	Total Suspended Solids	7 mg/L
6/02/2024	Upstream of discharge	Nitrite (as N)	0.0029 mg/L
6/02/2024	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.122 mg/L
6/02/2024	Upstream of discharge	Dissolved Reactive Phosphorus	0.046 mg/L
6/02/2024	Upstream of discharge	Chlorophyll A	0.0014 mg/L

6/02/2024	Upstream of discharge	Total Arsenic	0.001	mg/L		
6/02/2024	Upstream of discharge	Total Cadmium	0.0005	mg/L		
6/02/2024	Upstream of discharge	Total Chromium	0.005	mg/L		
6/02/2024	Upstream of discharge	Total Copper	0.0026	mg/L		
6/02/2024	Upstream of discharge	Total Lead	0.001	mg/L		
6/02/2024	Upstream of discharge	Total Nickel	0.001	mg/L		
6/02/2024	Upstream of discharge	Total Zinc	0.015	mg/L		
6/02/2024	Upstream of discharge	Nitrate (as N)	0.12	mg/L		
6/02/2024	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.04	mg/L		
6/02/2024	Upstream of discharge	Total Phosphorus (as P)	0.465	mg/L		
6/02/2024	Upstream of discharge	Total Nitrogen (as N)	1	mg/L		
6/02/2024	Upstream of discharge	Dissolved Oxygen	5.2	mg/L		
6/02/2024	Upstream of discharge	Salinity	20	ppt		
6/02/2024	Upstream of discharge	pH	7.4	pH unit		
6/02/2024	Upstream of discharge	Temperature	22.4	°C		
6/02/2024	Upstream of discharge	Turbidity	6	NTU		
6/02/2024	Upstream of discharge	Conductivity	1850	mS/m		
6/02/2024	Upstream of discharge	Escherichia coli	220	cfu/100 mL		
6/02/2024	Upstream of discharge	Enterococci	120	cfu/100 mL		
6/02/2024	Upstream of discharge	Faecal coliforms	390	cfu/100 mL		
6/02/2024	Downstream of discharge	Escherichia coli	120	cfu/100 mL		
6/02/2024	Downstream of discharge	Enterococci	58	cfu/100 mL		
6/02/2024	Downstream of discharge	Faecal coliforms	140	cfu/100 mL		
6/02/2024	Downstream of discharge	Conductivity	2920	mS/m		
6/02/2024	Downstream of discharge	Turbidity	15	NTU		
6/02/2024	Downstream of discharge	Temperature	22.5	°C		
6/02/2024	Downstream of discharge	Nitrate (as N)	0.085	mg/L		
6/02/2024	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.022	mg/L		14 0.339286
6/02/2024	Downstream of discharge	Total Phosphorus (as P)	0.083	mg/L		13 0.339286
6/02/2024	Downstream of discharge	Total Nitrogen (as N)	0.22	mg/L		
6/02/2024	Downstream of discharge	cBOD5	1.6	mg/L		
6/02/2024	Downstream of discharge	Total Suspended Solids	25.8	mg/L		
6/02/2024	Downstream of discharge	Nitrite (as N)	0.0021	mg/L		
6/02/2024	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.0872	mg/L		
6/02/2024	Downstream of discharge	Dissolved Reactive Phosphorus	0.042	mg/L		
6/02/2024	Downstream of discharge	Chlorophyll A	0.0006	mg/L		
6/02/2024	Downstream of discharge	Total Arsenic	0.001	mg/L		
6/02/2024	Downstream of discharge	Total Cadmium	0.0005	mg/L		
6/02/2024	Downstream of discharge	Total Chromium	0.005	mg/L		
6/02/2024	Downstream of discharge	Total Copper	0.0038	mg/L		
6/02/2024	Downstream of discharge	Total Lead	0.001	mg/L		21 0.5
6/02/2024	Downstream of discharge	Total Nickel	0.0016	mg/L		
6/02/2024	Downstream of discharge	Total Zinc	0.01	mg/L		
6/02/2024	Downstream of discharge	Dissolved Oxygen	6.1	mg/L		
6/02/2024	Downstream of discharge	pH	7.5	pH unit		
6/02/2024	Downstream of discharge	Salinity	18	ppt		
19/03/2024	Upstream of discharge	pH	7.5	pH unit		
19/03/2024	Downstream of discharge	pH	7.5	pH unit		
19/03/2024	Upstream of discharge	Salinity	15.2	ppt		
19/03/2024	Downstream of discharge	Salinity	22.9	ppt		
19/03/2024	Control site	Salinity	17.9	ppt		
19/03/2024	Control site	cBOD5	0.99	mg/L		
19/03/2024	Control site	Total Suspended Solids	63.2	mg/L		
19/03/2024	Control site	Nitrite (as N)	0.0049	mg/L		
19/03/2024	Control site	Total Oxidised Nitrogen (as N)	0.121	mg/L		
19/03/2024	Control site	Dissolved Reactive Phosphorus	0.027	mg/L		
19/03/2024	Control site	Chlorophyll A	0.003	mg/L		
19/03/2024	Control site	Total Arsenic	0.0018	mg/L		
19/03/2024	Control site	Total Cadmium	0.0005	mg/L		
19/03/2024	Control site	Total Chromium	0.005	mg/L		
19/03/2024	Control site	Total Copper	0.0057	mg/L		
19/03/2024	Control site	Total Lead	0.001	mg/L		
19/03/2024	Control site	Total Nickel	0.0022	mg/L		
19/03/2024	Control site	Total Zinc	0.012	mg/L		
19/03/2024	Control site	Nitrate (as N)	0.12	mg/L		
19/03/2024	Control site	Total Phosphorus (as P)	0.076	mg/L		
19/03/2024	Control site	Total Nitrogen (as N)	0.41	mg/L		
19/03/2024	Control site	Ammoniacal Nitrogen (as N)	0.093	mg/L		
19/03/2024	Control site	Dissolved Oxygen	6.7	mg/L		
19/03/2024	Upstream of discharge	cBOD5	0.63	mg/L		
19/03/2024	Upstream of discharge	Total Suspended Solids	8	mg/L		
19/03/2024	Upstream of discharge	Nitrite (as N)	0.005	mg/L		
19/03/2024	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.139	mg/L		
19/03/2024	Upstream of discharge	Dissolved Reactive Phosphorus	0.07	mg/L		
19/03/2024	Upstream of discharge	Chlorophyll A	0.0019	mg/L		
19/03/2024	Upstream of discharge	Total Arsenic	0.001	mg/L		
19/03/2024	Upstream of discharge	Total Cadmium	0.0005	mg/L		
19/03/2024	Upstream of discharge	Total Chromium	0.005	mg/L		
19/03/2024	Upstream of discharge	Total Copper	0.0044	mg/L		
19/03/2024	Upstream of discharge	Total Lead	0.001	mg/L		
19/03/2024	Upstream of discharge	Total Nickel	0.001	mg/L		
19/03/2024	Upstream of discharge	Total Zinc	0.01	mg/L		
19/03/2024	Upstream of discharge	Nitrate (as N)	0.13	mg/L		
19/03/2024	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.069	mg/L		
19/03/2024	Upstream of discharge	Total Phosphorus (as P)	0.069	mg/L		
19/03/2024	Upstream of discharge	Total Nitrogen (as N)	0.32	mg/L		
19/03/2024	Control site	pH	6.8	pH unit		
19/03/2024	Downstream of discharge	Dissolved Oxygen	6.5	mg/L		
19/03/2024	Downstream of discharge	Nitrite (as N)	0.0044	mg/L		
19/03/2024	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.103	mg/L		
19/03/2024	Downstream of discharge	Dissolved Reactive Phosphorus	0.048	mg/L		
19/03/2024	Downstream of discharge	Chlorophyll A	0.0051	mg/L		
19/03/2024	Downstream of discharge	Total Arsenic	0.001	mg/L		
19/03/2024	Downstream of discharge	Total Cadmium	0.0005	mg/L		
19/03/2024	Downstream of discharge	Total Chromium	0.005	mg/L		
19/03/2024	Downstream of discharge	Total Copper	0.0037	mg/L		
19/03/2024	Downstream of discharge	Total Lead	0.001	mg/L		
19/03/2024	Downstream of discharge	Total Nickel	0.001	mg/L		
19/03/2024	Downstream of discharge	Total Zinc	0.01	mg/L		
19/03/2024	Downstream of discharge	Nitrate (as N)	0.098	mg/L		
19/03/2024	Downstream of discharge	Total Phosphorus (as P)	0.082	mg/L		

19/03/2024	Downstream of discharge	Total Nitrogen (as N)	0.44 mg/L	
19/03/2024	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.078 mg/L	
19/03/2024	Upstream of discharge	Dissolved Oxygen	7.3 mg/L	
19/03/2024	Downstream of discharge	cBOD5	0.78 mg/L	
19/03/2024	Downstream of discharge	Total Suspended Solids	19.6 mg/L	
19/03/2024	Control site	Temperature	18.2 °C	
19/03/2024	Upstream of discharge	Temperature	15.9 °C	
19/03/2024	Downstream of discharge	Temperature	17.4 °C	
19/03/2024	Downstream of discharge	Turbidity	7.9 NTU	
19/03/2024	Upstream of discharge	Turbidity	4.9 NTU	
19/03/2024	Control site	Turbidity	33 NTU	
19/03/2024	Downstream of discharge	Conductivity	3370 mS/m	
19/03/2024	Upstream of discharge	Conductivity	2440 mS/m	
19/03/2024	Control site	Conductivity	2620 mS/m	
19/03/2024	Control site	Escherichia coli	360 cfu/100 mL	
19/03/2024	Control site	Enterococci	290 cfu/100 mL	
19/03/2024	Control site	Faecal coliforms	510 cfu/100 mL	
19/03/2024	Upstream of discharge	Escherichia coli	490 cfu/100 mL	
19/03/2024	Upstream of discharge	Enterococci	1000 cfu/100 mL	
19/03/2024	Upstream of discharge	Faecal coliforms	700 cfu/100 mL	
19/03/2024	Downstream of discharge	Escherichia coli	210 cfu/100 mL	
19/03/2024	Downstream of discharge	Enterococci	250 cfu/100 mL	
19/03/2024	Downstream of discharge	Faecal coliforms	290 cfu/100 mL	
9/04/2024	Control site	Escherichia coli	490 cfu/100 mL	
9/04/2024	Control site	Enterococci	740 cfu/100 mL	
9/04/2024	Control site	Faecal coliforms	730 cfu/100 mL	
9/04/2024	Upstream of discharge	Escherichia coli	130 cfu/100 mL	
9/04/2024	Upstream of discharge	Enterococci	200 cfu/100 mL	
9/04/2024	Upstream of discharge	Faecal coliforms	220 cfu/100 mL	
9/04/2024	Downstream of discharge	Escherichia coli	160 cfu/100 mL	
9/04/2024	Downstream of discharge	Enterococci	240 cfu/100 mL	
9/04/2024	Downstream of discharge	Faecal coliforms	210 cfu/100 mL	
9/04/2024	Downstream of discharge	Conductivity	3760 mS/m	
9/04/2024	Upstream of discharge	Conductivity	3820 mS/m	
9/04/2024	Control site	Conductivity	2140 mS/m	
9/04/2024	Downstream of discharge	Turbidity	13 NTU	
9/04/2024	Upstream of discharge	Turbidity	5.2 NTU	
9/04/2024	Control site	Turbidity	3.9 NTU	
9/04/2024	Control site	Temperature	19.1 °C	
9/04/2024	Upstream of discharge	Temperature	19.6 °C	
9/04/2024	Downstream of discharge	Temperature	20 °C	
9/04/2024	Downstream of discharge	pH	7.6 pH unit	
9/04/2024	Upstream of discharge	pH	7.5 pH unit	
9/04/2024	Downstream of discharge	Salinity	24.4 ppt	
9/04/2024	Control site	Salinity	12.8 ppt	
9/04/2024	Upstream of discharge	Salinity	21.9 ppt	
9/04/2024	Control site	pH	7.7 pH unit	
9/04/2024	Downstream of discharge	Dissolved Oxygen	6.6 mg/L	
9/04/2024	Downstream of discharge	Nitrate (as N)	0.085 mg/L	
9/04/2024	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.078 mg/L	
9/04/2024	Downstream of discharge	Total Phosphorus (as P)	0.076 mg/L	
9/04/2024	Downstream of discharge	Total Nitrogen (as N)	0.31 mg/L	
9/04/2024	Downstream of discharge	cBOD5	0.76 mg/L	
9/04/2024	Downstream of discharge	Total Suspended Solids	42.2 mg/L	
9/04/2024	Downstream of discharge	Nitrite (as N)	0.0036 mg/L	
9/04/2024	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.0881 mg/L	
9/04/2024	Downstream of discharge	Dissolved Reactive Phosphorus	0.045 mg/L	
9/04/2024	Downstream of discharge	Chlorophyll A	0.0028 mg/L	
9/04/2024	Downstream of discharge	Total Arsenic	0.01 mg/L	
9/04/2024	Downstream of discharge	Total Cadmium	0.005 mg/L	
9/04/2024	Downstream of discharge	Total Chromium	0.05 mg/L	
9/04/2024	Downstream of discharge	Total Copper	0.02 mg/L	
9/04/2024	Downstream of discharge	Total Lead	0.01 mg/L	
9/04/2024	Downstream of discharge	Total Nickel	0.01 mg/L	
9/04/2024	Downstream of discharge	Total Zinc	0.1 mg/L	
9/04/2024	Upstream of discharge	Dissolved Oxygen	6.1 mg/L	
9/04/2024	Control site	cBOD5	0.87 mg/L	
9/04/2024	Control site	Total Suspended Solids	19 mg/L	
9/04/2024	Control site	Nitrite (as N)	0.0032 mg/L	
9/04/2024	Control site	Total Oxidised Nitrogen (as N)	0.0712 mg/L	
9/04/2024	Control site	Dissolved Reactive Phosphorus	0.03 mg/L	
9/04/2024	Control site	Chlorophyll A	0.0022 mg/L	
9/04/2024	Control site	Total Arsenic	0.01 mg/L	
9/04/2024	Control site	Total Cadmium	0.005 mg/L	
9/04/2024	Control site	Total Chromium	0.05 mg/L	
9/04/2024	Control site	Total Copper	0.02 mg/L	
9/04/2024	Control site	Total Lead	0.01 mg/L	
9/04/2024	Control site	Total Nickel	0.01 mg/L	
9/04/2024	Control site	Total Zinc	0.1 mg/L	
9/04/2024	Control site	Nitrate (as N)	0.068 mg/L	
9/04/2024	Control site	Ammoniacal Nitrogen (as N)	0.052 mg/L	31 0.553571
9/04/2024	Control site	Total Phosphorus (as P)	0.034 mg/L	
9/04/2024	Control site	Total Nitrogen (as N)	0.17 mg/L	
9/04/2024	Control site	Dissolved Oxygen	7.7 mg/L	
9/04/2024	Upstream of discharge	cBOD5	0.69 mg/L	
9/04/2024	Upstream of discharge	Total Suspended Solids	23.4 mg/L	
9/04/2024	Upstream of discharge	Nitrite (as N)	0.004 mg/L	
9/04/2024	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.0912 mg/L	
9/04/2024	Upstream of discharge	Dissolved Reactive Phosphorus	0.038 mg/L	
9/04/2024	Upstream of discharge	Chlorophyll A	0.0025 mg/L	18 0.392857
9/04/2024	Upstream of discharge	Total Arsenic	0.01 mg/L	
9/04/2024	Upstream of discharge	Total Cadmium	0.005 mg/L	
9/04/2024	Upstream of discharge	Total Chromium	0.05 mg/L	
9/04/2024	Upstream of discharge	Total Copper	0.02 mg/L	
9/04/2024	Upstream of discharge	Total Lead	0.01 mg/L	
9/04/2024	Upstream of discharge	Total Nickel	0.01 mg/L	
9/04/2024	Upstream of discharge	Total Zinc	0.1 mg/L	
9/04/2024	Upstream of discharge	Nitrate (as N)	0.087 mg/L	
9/04/2024	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.098 mg/L	
9/04/2024	Upstream of discharge	Total Phosphorus (as P)	0.049 mg/L	
9/04/2024	Upstream of discharge	Total Nitrogen (as N)	0.27 mg/L	

21/05/2024	Control site	Turbidity	8 NTU
21/05/2024	Control site	Conductivity	22.1 mS/m
21/05/2024	Control site	Faecal coliforms	31000 cfu/100 mL
21/05/2024	Control site	Escherichia coli	19000 cfu/100 mL
21/05/2024	Control site	Enterococci	5900 cfu/100 mL
21/05/2024	Control site	Ammoniacal Nitrogen (as N)	0.079 mg/L
21/05/2024	Control site	Total Phosphorus (as P)	0.677 mg/L
21/05/2024	Control site	Total Nitrogen (as N)	0.81 mg/L
21/05/2024	Control site	Nitrite (as N)	0.0078 mg/L
21/05/2024	Control site	Total Oxidised Nitrogen (as N)	0.414 mg/L
21/05/2024	Control site	Dissolved Reactive Phosphorus	0.015 mg/L
21/05/2024	Control site	Dissolved Oxygen	10 mg/L
21/05/2024	Control site	Nitrate (as N)	0.41 mg/L
21/05/2024	Control site	cBOD5	5.7 mg/L
21/05/2024	Control site	Total Suspended Solids	4200 mg/L
21/05/2024	Control site	Chlorophyll A	0.003 mg/L
21/05/2024	Control site	Total Arsenic	0.0031 mg/L
21/05/2024	Control site	Total Chromium	0.025 mg/L
21/05/2024	Control site	Total Copper	0.016 mg/L
21/05/2024	Control site	Total Lead	0.0049 mg/L
21/05/2024	Control site	Total Nickel	0.01 mg/L
21/05/2024	Control site	Total Zinc	0.055 mg/L
21/05/2024	Control site	Total Cadmium	8.10E-05 mg/L
21/05/2024	Control site	Salinity	0.1 ppt
21/05/2024	Control site	pH	6.9 pH unit
21/05/2024	Control site	Temperature	14.9 °C
21/05/2024	Control site	Temperature	14.8 °C
21/05/2024	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.066 mg/L
21/05/2024	Upstream of discharge	Total Nitrogen (as N)	1.1 mg/L
21/05/2024	Upstream of discharge	Total Phosphorus (as P)	0.156 mg/L
21/05/2024	Upstream of discharge	Nitrite (as N)	0.0083 mg/L
21/05/2024	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.414 mg/L
21/05/2024	Upstream of discharge	Dissolved Reactive Phosphorus	0.017 mg/L
21/05/2024	Upstream of discharge	Nitrate (as N)	0.41 mg/L
21/05/2024	Upstream of discharge	cBOD5	3.5 mg/L
21/05/2024	Upstream of discharge	Total Suspended Solids	190 mg/L
21/05/2024	Upstream of discharge	Chlorophyll A	0.0027 mg/L
21/05/2024	Upstream of discharge	Total Arsenic	0.0014 mg/L
21/05/2024	Upstream of discharge	Total Chromium	0.012 mg/L
21/05/2024	Upstream of discharge	Total Copper	0.0086 mg/L
21/05/2024	Upstream of discharge	Total Lead	0.0024 mg/L
21/05/2024	Upstream of discharge	Total Nickel	0.0046 mg/L
21/05/2024	Upstream of discharge	Total Zinc	0.021 mg/L
21/05/2024	Upstream of discharge	Total Cadmium	5.00E-05 mg/L
21/05/2024	Upstream of discharge	pH	6.7 pH unit
21/05/2024	Upstream of discharge	Salinity	0.3 ppt
21/05/2024	Upstream of discharge	Dissolved Oxygen	9.8 mg/L
21/05/2024	Upstream of discharge	Faecal coliforms	36000 cfu/100 mL
21/05/2024	Upstream of discharge	Escherichia coli	19000 cfu/100 mL
21/05/2024	Upstream of discharge	Enterococci	8300 cfu/100 mL
21/05/2024	Upstream of discharge	Conductivity	51.1 mS/m
21/05/2024	Upstream of discharge	Turbidity	5.6 NTU
21/05/2024	Downstream of discharge	Turbidity	11 NTU
21/05/2024	Downstream of discharge	Conductivity	120 mS/m
21/05/2024	Downstream of discharge	Faecal coliforms	20000 cfu/100 mL
21/05/2024	Downstream of discharge	Escherichia coli	17000 cfu/100 mL
21/05/2024	Downstream of discharge	Enterococci	8500 cfu/100 mL
21/05/2024	Downstream of discharge	Dissolved Oxygen	9.7 mg/L
21/05/2024	Downstream of discharge	Nitrate (as N)	0.43 mg/L
21/05/2024	Downstream of discharge	cBOD5	2.7 mg/L
21/05/2024	Downstream of discharge	Total Suspended Solids	220 mg/L
21/05/2024	Downstream of discharge	Chlorophyll A	0.0033 mg/L
21/05/2024	Downstream of discharge	Total Arsenic	0.0016 mg/L
21/05/2024	Downstream of discharge	Total Chromium	0.013 mg/L
21/05/2024	Downstream of discharge	Total Copper	0.0088 mg/L
21/05/2024	Downstream of discharge	Total Lead	0.0025 mg/L
21/05/2024	Downstream of discharge	Total Nickel	0.0049 mg/L
21/05/2024	Downstream of discharge	Total Zinc	0.023 mg/L
21/05/2024	Downstream of discharge	Total Cadmium	5.00E-05 mg/L
21/05/2024	Downstream of discharge	Salinity	0.6 ppt
21/05/2024	Downstream of discharge	pH	7 pH unit
21/05/2024	Downstream of discharge	Total Phosphorus (as P)	0.177 mg/L
21/05/2024	Downstream of discharge	Dissolved Reactive Phosphorus	0.036 mg/L
21/05/2024	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.11 mg/L
21/05/2024	Downstream of discharge	Total Nitrogen (as N)	1.3 mg/L
21/05/2024	Downstream of discharge	Nitrite (as N)	0.0099 mg/L
21/05/2024	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.44 mg/L
21/05/2024	Downstream of discharge	Temperature	15 °C
18/06/2024	Control site	Turbidity	35 NTU
18/06/2024	Control site	Escherichia coli	1900 cfu/100 mL
18/06/2024	Control site	Enterococci	260 cfu/100 mL
18/06/2024	Control site	Faecal coliforms	2900 cfu/100 mL
18/06/2024	Control site	Conductivity	130 mS/m
18/06/2024	Control site	Temperature	13.7 °C
18/06/2024	Control site	Ammoniacal Nitrogen (as N)	0.024 mg/L
18/06/2024	Control site	Total Nitrogen (as N)	0.78 mg/L
18/06/2024	Control site	Total Phosphorus (as P)	0.082 mg/L
18/06/2024	Control site	Nitrite (as N)	0.0037 mg/L
18/06/2024	Control site	Total Oxidised Nitrogen (as N)	0.248 mg/L
18/06/2024	Control site	Dissolved Reactive Phosphorus	0.015 mg/L
18/06/2024	Control site	Total Suspended Solids	20 mg/L
18/06/2024	Control site	Chlorophyll A	0.0012 mg/L
18/06/2024	Control site	Total Chromium	0.0065 mg/L
18/06/2024	Control site	Total Copper	0.0044 mg/L
18/06/2024	Control site	Total Lead	0.001 mg/L
18/06/2024	Control site	Total Nickel	0.0032 mg/L
18/06/2024	Control site	Total Zinc	0.017 mg/L
18/06/2024	Control site	Total Arsenic	0.00098 mg/L
18/06/2024	Control site	Total Cadmium	5.00E-05 mg/L
18/06/2024	Control site	Nitrate (as N)	0.24 mg/L
18/06/2024	Control site	cBOD5	1 mg/L

18/06/2024	Control site	Dissolved Oxygen	10.1 mg/L
18/06/2024	Control site	pH	6.9 pH unit
18/06/2024	Control site	Salinity	0.7 ppt
18/06/2024	Upstream of discharge	Total Arsenic	0.0011 mg/L
18/06/2024	Upstream of discharge	Total Cadmium	0.0005 mg/L
18/06/2024	Upstream of discharge	Total Chromium	0.005 mg/L
18/06/2024	Upstream of discharge	Total Copper	0.0031 mg/L
18/06/2024	Upstream of discharge	Total Lead	0.001 mg/L
18/06/2024	Upstream of discharge	Total Nickel	0.0021 mg/L
18/06/2024	Upstream of discharge	Total Zinc	0.01 mg/L
18/06/2024	Upstream of discharge	Nitrate (as N)	0.25 mg/L
18/06/2024	Upstream of discharge	cBOD5	0.54 mg/L
18/06/2024	Upstream of discharge	Total Suspended Solids	12 mg/L
18/06/2024	Upstream of discharge	Chlorophyll A	0.0012 mg/L
18/06/2024	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.028 mg/L
18/06/2024	Upstream of discharge	Total Nitrogen (as N)	0.65 mg/L
18/06/2024	Upstream of discharge	Total Phosphorus (as P)	0.051 mg/L
18/06/2024	Upstream of discharge	Nitrite (as N)	0.0039 mg/L
18/06/2024	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.255 mg/L
18/06/2024	Upstream of discharge	Dissolved Reactive Phosphorus	0.017 mg/L
18/06/2024	Upstream of discharge	Dissolved Oxygen	7.1 mg/L
18/06/2024	Upstream of discharge	Salinity	20.3 ppt
18/06/2024	Upstream of discharge	pH	7.7 pH unit
18/06/2024	Upstream of discharge	Temperature	14.5 °C
18/06/2024	Upstream of discharge	Conductivity	319 mS/m
18/06/2024	Upstream of discharge	Faecal coliforms	2600 cfu/100 mL
18/06/2024	Upstream of discharge	Escherichia coli	1500 cfu/100 mL
18/06/2024	Upstream of discharge	Enterococci	260 cfu/100 mL
18/06/2024	Upstream of discharge	Turbidity	37 NTU
18/06/2024	Downstream of discharge	Turbidity	39 NTU
18/06/2024	Downstream of discharge	Faecal coliforms	2300 cfu/100 mL
18/06/2024	Downstream of discharge	Escherichia coli	1800 cfu/100 mL
18/06/2024	Downstream of discharge	Enterococci	220 cfu/100 mL
18/06/2024	Downstream of discharge	Conductivity	394 mS/m
18/06/2024	Downstream of discharge	Temperature	13.8 °C
18/06/2024	Downstream of discharge	Dissolved Oxygen	9.5 mg/L
18/06/2024	Downstream of discharge	Nitrate (as N)	0.26 mg/L
18/06/2024	Downstream of discharge	cBOD5	0.63 mg/L
18/06/2024	Downstream of discharge	Total Suspended Solids	18 mg/L
18/06/2024	Downstream of discharge	Chlorophyll A	0.0012 mg/L
18/06/2024	Downstream of discharge	Total Arsenic	0.001 mg/L
18/06/2024	Downstream of discharge	Total Cadmium	0.0005 mg/L
18/06/2024	Downstream of discharge	Total Chromium	0.005 mg/L
18/06/2024	Downstream of discharge	Total Copper	0.0029 mg/L
18/06/2024	Downstream of discharge	Total Lead	0.001 mg/L
18/06/2024	Downstream of discharge	Total Nickel	0.0017 mg/L
18/06/2024	Downstream of discharge	Total Zinc	0.016 mg/L
18/06/2024	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.033 mg/L
18/06/2024	Downstream of discharge	Total Nitrogen (as N)	0.58 mg/L
18/06/2024	Downstream of discharge	Total Phosphorus (as P)	0.069 mg/L
18/06/2024	Downstream of discharge	Nitrite (as N)	0.0042 mg/L
18/06/2024	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.261 mg/L
18/06/2024	Downstream of discharge	Dissolved Reactive Phosphorus	0.021 mg/L
18/06/2024	Downstream of discharge	pH	7.6 pH unit
18/06/2024	Downstream of discharge	Salinity	2.2 ppt
23/07/2024	Control site	Turbidity	19 NTU
23/07/2024	Control site	Conductivity	280 mS/m
23/07/2024	Control site	Faecal coliforms	570 cfu/100 mL
23/07/2024	Control site	Escherichia coli	630 cfu/100 mL
23/07/2024	Control site	Enterococci	220 cfu/100 mL
23/07/2024	Control site	Ammoniacal Nitrogen (as N)	0.023 mg/L
23/07/2024	Control site	Total Nitrogen (as N)	0.36 mg/L
23/07/2024	Control site	Total Phosphorus (as P)	0.036 mg/L
23/07/2024	Control site	Nitrite (as N)	0.002 mg/L
23/07/2024	Control site	Total Oxidised Nitrogen (as N)	0.189 mg/L
23/07/2024	Control site	Dissolved Reactive Phosphorus	0.011 mg/L
23/07/2024	Control site	Dissolved Oxygen	10.3 mg/L
23/07/2024	Control site	Nitrate (as N)	0.19 mg/L
23/07/2024	Control site	cBOD5	0.51 mg/L
23/07/2024	Control site	Total Suspended Solids	16 mg/L
23/07/2024	Control site	Chlorophyll A	0.0006 mg/L
23/07/2024	Control site	Total Arsenic	0.001 mg/L
23/07/2024	Control site	Total Cadmium	0.0005 mg/L
23/07/2024	Control site	Total Chromium	0.005 mg/L
23/07/2024	Control site	Total Copper	0.0022 mg/L
23/07/2024	Control site	Total Lead	0.001 mg/L
23/07/2024	Control site	Total Nickel	0.0027 mg/L
23/07/2024	Control site	Total Zinc	0.011 mg/L
23/07/2024	Control site	Salinity	1.5 ppt
23/07/2024	Control site	pH	8.1 pH unit
23/07/2024	Control site	Temperature	12.7 °C
23/07/2024	Upstream of discharge	Temperature	13.2 °C
23/07/2024	Upstream of discharge	Dissolved Oxygen	9.5 mg/L
23/07/2024	Upstream of discharge	Nitrate (as N)	0.19 mg/L
23/07/2024	Upstream of discharge	cBOD5	0.52 mg/L
23/07/2024	Upstream of discharge	Total Suspended Solids	22 mg/L
23/07/2024	Upstream of discharge	Chlorophyll A	0.0006 mg/L
23/07/2024	Upstream of discharge	Total Arsenic	0.001 mg/L
23/07/2024	Upstream of discharge	Total Cadmium	0.0005 mg/L
23/07/2024	Upstream of discharge	Total Chromium	0.005 mg/L
23/07/2024	Upstream of discharge	Total Copper	0.023 mg/L
23/07/2024	Upstream of discharge	Total Lead	0.001 mg/L
23/07/2024	Upstream of discharge	Total Nickel	0.0025 mg/L
23/07/2024	Upstream of discharge	Total Zinc	0.018 mg/L
23/07/2024	Upstream of discharge	Total Nitrogen (as N)	0.22 mg/L
23/07/2024	Upstream of discharge	Nitrite (as N)	0.0027 mg/L
23/07/2024	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.191 mg/L
23/07/2024	Upstream of discharge	Total Phosphorus (as P)	0.029 mg/L
23/07/2024	Upstream of discharge	Dissolved Reactive Phosphorus	0.015 mg/L
23/07/2024	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.034 mg/L
23/07/2024	Upstream of discharge	pH	7.7 pH unit

23/07/2024	Upstream of discharge	Salinity	4.9 ppt
23/07/2024	Upstream of discharge	Faecal coliforms	400 cfu/100 mL
23/07/2024	Upstream of discharge	Escherichia coli	420 cfu/100 mL
23/07/2024	Upstream of discharge	Enterococci	110 cfu/100 mL
23/07/2024	Upstream of discharge	Conductivity	610 mS/m
23/07/2024	Upstream of discharge	Turbidity	29 NTU
23/07/2024	Downstream of discharge	Turbidity	55 NTU
23/07/2024	Downstream of discharge	Conductivity	850 mS/m
23/07/2024	Downstream of discharge	Faecal coliforms	530 cfu/100 mL
23/07/2024	Downstream of discharge	Escherichia coli	460 cfu/100 mL
23/07/2024	Downstream of discharge	Enterococci	130 cfu/100 mL
23/07/2024	Downstream of discharge	Nitrate (as N)	0.2 mg/L
23/07/2024	Downstream of discharge	cBOD5	0.9 mg/L
23/07/2024	Downstream of discharge	Total Suspended Solids	130 mg/L
23/07/2024	Downstream of discharge	Chlorophyll A	0.001 mg/L
23/07/2024	Downstream of discharge	Total Arsenic	0.0013 mg/L
23/07/2024	Downstream of discharge	Total Cadmium	0.0005 mg/L
23/07/2024	Downstream of discharge	Total Chromium	0.005 mg/L
23/07/2024	Downstream of discharge	Total Copper	0.01 mg/L
23/07/2024	Downstream of discharge	Total Lead	0.0011 mg/L
23/07/2024	Downstream of discharge	Total Nickel	0.0027 mg/L
23/07/2024	Downstream of discharge	Total Zinc	0.018 mg/L
23/07/2024	Downstream of discharge	Dissolved Oxygen	9.9 mg/L
23/07/2024	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.045 mg/L
23/07/2024	Downstream of discharge	Total Nitrogen (as N)	0.45 mg/L
23/07/2024	Downstream of discharge	Total Phosphorus (as P)	0.053 mg/L
23/07/2024	Downstream of discharge	Nitrite (as N)	0.0037 mg/L
23/07/2024	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.208 mg/L
23/07/2024	Downstream of discharge	Dissolved Reactive Phosphorus	0.026 mg/L
23/07/2024	Downstream of discharge	Salinity	4 ppt
23/07/2024	Downstream of discharge	pH	7.8 pH unit
23/07/2024	Downstream of discharge	Temperature	13.5 °C
20/08/2024	Control site	Turbidity	24 NTU
20/08/2024	Control site	Faecal coliforms	1300 cfu/100 mL
20/08/2024	Control site	Escherichia coli	1000 cfu/100 mL
20/08/2024	Control site	Enterococci	760 cfu/100 mL
20/08/2024	Control site	Conductivity	550 mS/m
20/08/2024	Control site	Temperature	13 °C
20/08/2024	Control site	Ammoniacal Nitrogen (as N)	0.051 mg/L
20/08/2024	Control site	Total Nitrogen (as N)	0.78 mg/L
20/08/2024	Control site	Total Phosphorus (as P)	0.02 mg/L
20/08/2024	Control site	Nitrite (as N)	0.0032 mg/L
20/08/2024	Control site	Total Oxidised Nitrogen (as N)	0.172 mg/L
20/08/2024	Control site	Dissolved Reactive Phosphorus	0.013 mg/L
20/08/2024	Control site	Dissolved Oxygen	10.1 mg/L
20/08/2024	Control site	Nitrate (as N)	0.17 mg/L
20/08/2024	Control site	cBOD5	1.1 mg/L
20/08/2024	Control site	Total Suspended Solids	13 mg/L
20/08/2024	Control site	Chlorophyll A	0.0066 mg/L
20/08/2024	Control site	Total Arsenic	0.001 mg/L
20/08/2024	Control site	Total Cadmium	0.0005 mg/L
20/08/2024	Control site	Total Chromium	0.005 mg/L
20/08/2024	Control site	Total Copper	0.0038 mg/L
20/08/2024	Control site	Total Lead	0.001 mg/L
20/08/2024	Control site	Total Nickel	0.0018 mg/L
20/08/2024	Control site	Total Zinc	0.022 mg/L
20/08/2024	Control site	pH	7.9 pH unit
20/08/2024	Control site	Salinity	3.1 ppt
20/08/2024	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.13 mg/L
20/08/2024	Upstream of discharge	Total Nitrogen (as N)	0.59 mg/L
20/08/2024	Upstream of discharge	Total Phosphorus (as P)	0.129 mg/L
20/08/2024	Upstream of discharge	Nitrite (as N)	0.011 mg/L
20/08/2024	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.218 mg/L
20/08/2024	Upstream of discharge	Dissolved Reactive Phosphorus	0.094 mg/L
20/08/2024	Upstream of discharge	Salinity	6.2 ppt
20/08/2024	Upstream of discharge	pH	7.6 pH unit
20/08/2024	Upstream of discharge	Dissolved Oxygen	9.3 mg/L
20/08/2024	Upstream of discharge	Total Arsenic	0.001 mg/L
20/08/2024	Upstream of discharge	Total Cadmium	0.0005 mg/L
20/08/2024	Upstream of discharge	Total Chromium	0.005 mg/L
20/08/2024	Upstream of discharge	Total Copper	0.0079 mg/L
20/08/2024	Upstream of discharge	Total Lead	0.001 mg/L
20/08/2024	Upstream of discharge	Total Nickel	0.0014 mg/L
20/08/2024	Upstream of discharge	Total Zinc	0.01 mg/L
20/08/2024	Upstream of discharge	Nitrate (as N)	0.21 mg/L
20/08/2024	Upstream of discharge	cBOD5	0.94 mg/L
20/08/2024	Upstream of discharge	Total Suspended Solids	9.6 mg/L
20/08/2024	Upstream of discharge	Chlorophyll A	0.0012 mg/L
20/08/2024	Upstream of discharge	Temperature	13.1 °C
20/08/2024	Upstream of discharge	Conductivity	1000 mS/m
20/08/2024	Upstream of discharge	Faecal coliforms	1000 cfu/100 mL
20/08/2024	Upstream of discharge	Escherichia coli	2000 cfu/100 mL
20/08/2024	Upstream of discharge	Enterococci	790 cfu/100 mL
20/08/2024	Upstream of discharge	Turbidity	17 NTU
20/08/2024	Downstream of discharge	Turbidity	23 NTU
20/08/2024	Downstream of discharge	Faecal coliforms	3000 cfu/100 mL
20/08/2024	Downstream of discharge	Escherichia coli	2000 cfu/100 mL
20/08/2024	Downstream of discharge	Enterococci	890 cfu/100 mL
20/08/2024	Downstream of discharge	Conductivity	1100 mS/m
20/08/2024	Downstream of discharge	Temperature	13.7 °C
20/08/2024	Downstream of discharge	pH	7.7 pH unit
20/08/2024	Downstream of discharge	Salinity	6.9 ppt
20/08/2024	Downstream of discharge	Nitrate (as N)	0.16 mg/L
20/08/2024	Downstream of discharge	cBOD5	0.76 mg/L
20/08/2024	Downstream of discharge	Total Suspended Solids	19 mg/L
20/08/2024	Downstream of discharge	Chlorophyll A	0.0013 mg/L
20/08/2024	Downstream of discharge	Total Arsenic	0.0015 mg/L
20/08/2024	Downstream of discharge	Total Cadmium	0.0005 mg/L
20/08/2024	Downstream of discharge	Total Chromium	0.005 mg/L
20/08/2024	Downstream of discharge	Total Copper	0.0034 mg/L
20/08/2024	Downstream of discharge	Total Lead	0.001 mg/L

20/08/2024	Downstream of discharge	Total Nickel	0.0017 mg/L
20/08/2024	Downstream of discharge	Total Zinc	0.01 mg/L
20/08/2024	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.083 mg/L
20/08/2024	Downstream of discharge	Total Nitrogen (as N)	0.51 mg/L
20/08/2024	Downstream of discharge	Total Phosphorus (as P)	0.06 mg/L
20/08/2024	Downstream of discharge	Nitrite (as N)	0.0051 mg/L
20/08/2024	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.163 mg/L
20/08/2024	Downstream of discharge	Dissolved Reactive Phosphorus	0.028 mg/L
20/08/2024	Downstream of discharge	Dissolved Oxygen	9.8 mg/L
3/09/2024	Control site	Turbidity	32 NTU
3/09/2024	Control site	Conductivity	960 mS/m
3/09/2024	Control site	Faecal coliforms	710 cfu/100 mL
3/09/2024	Control site	Escherichia coli	690 cfu/100 mL
3/09/2024	Control site	Enterococci	240 cfu/100 mL
3/09/2024	Control site	Ammoniacal Nitrogen (as N)	0.063 mg/L
3/09/2024	Control site	Total Nitrogen (as N)	0.51 mg/L
3/09/2024	Control site	Total Phosphorus (as P)	0.05 mg/L
3/09/2024	Control site	Nitrite (as N)	0.0036 mg/L
3/09/2024	Control site	Total Oxidised Nitrogen (as N)	0.134 mg/L
3/09/2024	Control site	Dissolved Reactive Phosphorus	0.016 mg/L
3/09/2024	Control site	Dissolved Oxygen	9.1 mg/L
3/09/2024	Control site	Nitrate (as N)	0.13 mg/L
3/09/2024	Control site	cBOD5	0.82 mg/L
3/09/2024	Control site	Total Suspended Solids	36 mg/L
3/09/2024	Control site	Chlorophyll A	0.002 mg/L
3/09/2024	Control site	Total Arsenic	0.001 mg/L
3/09/2024	Control site	Total Cadmium	0.0005 mg/L
3/09/2024	Control site	Total Chromium	0.005 mg/L
3/09/2024	Control site	Total Copper	0.0039 mg/L
3/09/2024	Control site	Total Lead	0.001 mg/L
3/09/2024	Control site	Total Nickel	0.0017 mg/L
3/09/2024	Control site	Total Zinc	0.017 mg/L
3/09/2024	Control site	Salinity	5.4 ppt
3/09/2024	Control site	pH	7.8 pH unit
3/09/2024	Control site	Temperature	16.7 °C
3/09/2024	Control site	Temperature	16.8 °C
3/09/2024	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.047 mg/L
3/09/2024	Upstream of discharge	Total Nitrogen (as N)	0.52 mg/L
3/09/2024	Upstream of discharge	Total Phosphorus (as P)	0.04 mg/L
3/09/2024	Upstream of discharge	Nitrite (as N)	0.015 mg/L
3/09/2024	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.149 mg/L
3/09/2024	Upstream of discharge	Dissolved Reactive Phosphorus	0.017 mg/L
3/09/2024	Upstream of discharge	Nitrate (as N)	0.13 mg/L
3/09/2024	Upstream of discharge	cBOD5	0.7 mg/L
3/09/2024	Upstream of discharge	Total Suspended Solids	21 mg/L
3/09/2024	Upstream of discharge	Chlorophyll A	0.0006 mg/L
3/09/2024	Upstream of discharge	Total Arsenic	0.0012 mg/L
3/09/2024	Upstream of discharge	Total Cadmium	0.0005 mg/L
3/09/2024	Upstream of discharge	Total Chromium	0.005 mg/L
3/09/2024	Upstream of discharge	Total Copper	0.0037 mg/L
3/09/2024	Upstream of discharge	Total Lead	0.001 mg/L
3/09/2024	Upstream of discharge	Total Nickel	0.0015 mg/L
3/09/2024	Upstream of discharge	Total Zinc	0.01 mg/L
3/09/2024	Upstream of discharge	Dissolved Oxygen	9.1 mg/L
3/09/2024	Upstream of discharge	pH	7.7 pH unit
3/09/2024	Upstream of discharge	Salinity	4.6 ppt
3/09/2024	Upstream of discharge	Faecal coliforms	2000 cfu/100 mL
3/09/2024	Upstream of discharge	Escherichia coli	920 cfu/100 mL
3/09/2024	Upstream of discharge	Enterococci	150 cfu/100 mL
3/09/2024	Upstream of discharge	Conductivity	800 mS/m
3/09/2024	Upstream of discharge	Turbidity	26 NTU
3/09/2024	Downstream of discharge	Turbidity	28 NTU
3/09/2024	Downstream of discharge	Conductivity	1200 mS/m
3/09/2024	Downstream of discharge	Faecal coliforms	2500 cfu/100 mL
3/09/2024	Downstream of discharge	Escherichia coli	980 cfu/100 mL
3/09/2024	Downstream of discharge	Enterococci	210 cfu/100 mL
3/09/2024	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.071 mg/L
3/09/2024	Downstream of discharge	Total Nitrogen (as N)	0.58 mg/L
3/09/2024	Downstream of discharge	Total Phosphorus (as P)	0.079 mg/L
3/09/2024	Downstream of discharge	Nitrite (as N)	0.0052 mg/L
3/09/2024	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.119 mg/L
3/09/2024	Downstream of discharge	Dissolved Reactive Phosphorus	0.035 mg/L
3/09/2024	Downstream of discharge	Dissolved Oxygen	8.5 mg/L
3/09/2024	Downstream of discharge	Nitrate (as N)	0.11 mg/L
3/09/2024	Downstream of discharge	cBOD5	1.5 mg/L
3/09/2024	Downstream of discharge	Total Suspended Solids	48 mg/L
3/09/2024	Downstream of discharge	Chlorophyll A	0.0026 mg/L
3/09/2024	Downstream of discharge	Total Arsenic	0.001 mg/L
3/09/2024	Downstream of discharge	Total Cadmium	0.0005 mg/L
3/09/2024	Downstream of discharge	Total Chromium	0.005 mg/L
3/09/2024	Downstream of discharge	Total Copper	0.0048 mg/L
3/09/2024	Downstream of discharge	Total Lead	0.001 mg/L
3/09/2024	Downstream of discharge	Total Nickel	0.0016 mg/L
3/09/2024	Downstream of discharge	Total Zinc	0.011 mg/L
3/09/2024	Downstream of discharge	Salinity	7.4 ppt
3/09/2024	Downstream of discharge	pH	7.6 pH unit
3/09/2024	Downstream of discharge	Temperature	17.9 °C
3/09/2024	Downstream of discharge	Temperature	17.1 °C
1/10/2024	Control site	Total Phosphorus (as P)	0.02 mg/L
1/10/2024	Control site	Dissolved Reactive Phosphorus	0.017 mg/L
1/10/2024	Control site	Ammoniacal Nitrogen (as N)	0.041 mg/L
1/10/2024	Control site	Total Nitrogen (as N)	0.13 mg/L
1/10/2024	Control site	Nitrite (as N)	0.002 mg/L
1/10/2024	Control site	Total Oxidised Nitrogen (as N)	0.0673 mg/L
1/10/2024	Control site	Dissolved Oxygen	9.1 mg/L
1/10/2024	Control site	Nitrate (as N)	0.067 mg/L
1/10/2024	Control site	cBOD5	0.85 mg/L
1/10/2024	Control site	Total Suspended Solids	7.6 mg/L
1/10/2024	Control site	Chlorophyll A	0.0006 mg/L
1/10/2024	Control site	Total Cadmium	0.0005 mg/L
1/10/2024	Control site	Total Chromium	0.005 mg/L

1/10/2024	Control site	Total Copper	0.002 mg/L
1/10/2024	Control site	Total Lead	0.001 mg/L
1/10/2024	Control site	Total Nickel	0.001 mg/L
1/10/2024	Control site	Total Zinc	0.01 mg/L
1/10/2024	Control site	Total Arsenic	0.001 mg/L
1/10/2024	Control site	pH	7.9 pH unit
1/10/2024	Control site	Salinity	9.6 ppt
1/10/2024	Control site	Faecal coliforms	200 cfu/100 mL
1/10/2024	Control site	Escherichia coli	110 cfu/100 mL
1/10/2024	Control site	Enterococci	36 cfu/100 mL
1/10/2024	Control site	Conductivity	1400 mS/m
1/10/2024	Control site	Turbidity	4.9 NTU
1/10/2024	Upstream of discharge	Turbidity	4.2 NTU
1/10/2024	Upstream of discharge	Conductivity	2200 mS/m
1/10/2024	Upstream of discharge	Faecal coliforms	66 cfu/100 mL
1/10/2024	Upstream of discharge	Escherichia coli	29 cfu/100 mL
1/10/2024	Upstream of discharge	Enterococci	26 cfu/100 mL
1/10/2024	Upstream of discharge	Dissolved Oxygen	6.5 mg/L
1/10/2024	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.069 mg/L
1/10/2024	Upstream of discharge	Total Nitrogen (as N)	0.19 mg/L
1/10/2024	Upstream of discharge	Total Phosphorus (as P)	0.053 mg/L
1/10/2024	Upstream of discharge	Nitrite (as N)	0.0028 mg/L
1/10/2024	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.116 mg/L
1/10/2024	Upstream of discharge	Dissolved Reactive Phosphorus	0.049 mg/L
1/10/2024	Upstream of discharge	Nitrate (as N)	0.11 mg/L
1/10/2024	Upstream of discharge	cBOD5	0.91 mg/L
1/10/2024	Upstream of discharge	Total Suspended Solids	10 mg/L
1/10/2024	Upstream of discharge	Chlorophyll A	0.0006 mg/L
1/10/2024	Upstream of discharge	Total Cadmium	0.0005 mg/L
1/10/2024	Upstream of discharge	Total Chromium	0.005 mg/L
1/10/2024	Upstream of discharge	Total Copper	0.002 mg/L
1/10/2024	Upstream of discharge	Total Lead	0.001 mg/L
1/10/2024	Upstream of discharge	Total Nickel	0.001 mg/L
1/10/2024	Upstream of discharge	Total Zinc	0.01 mg/L
1/10/2024	Upstream of discharge	Total Arsenic	0.001 mg/L
1/10/2024	Upstream of discharge	Salinity	25.2 ppt
1/10/2024	Upstream of discharge	pH	7.7 pH unit
1/10/2024	Upstream of discharge	Temperature	17.5 °C
1/10/2024	Downstream of discharge	Temperature	17 °C
1/10/2024	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.092 mg/L
1/10/2024	Downstream of discharge	Total Nitrogen (as N)	0.2 mg/L
1/10/2024	Downstream of discharge	Total Phosphorus (as P)	0.064 mg/L
1/10/2024	Downstream of discharge	Nitrite (as N)	0.0027 mg/L
1/10/2024	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.119 mg/L
1/10/2024	Downstream of discharge	Dissolved Reactive Phosphorus	0.054 mg/L
1/10/2024	Downstream of discharge	Total Cadmium	0.0005 mg/L
1/10/2024	Downstream of discharge	Total Chromium	0.005 mg/L
1/10/2024	Downstream of discharge	Total Copper	0.0031 mg/L
1/10/2024	Downstream of discharge	Total Lead	0.001 mg/L
1/10/2024	Downstream of discharge	Total Nickel	0.0013 mg/L
1/10/2024	Downstream of discharge	Total Zinc	0.01 mg/L
1/10/2024	Downstream of discharge	Total Arsenic	0.0013 mg/L
1/10/2024	Downstream of discharge	Nitrate (as N)	0.12 mg/L
1/10/2024	Downstream of discharge	cBOD5	1.1 mg/L
1/10/2024	Downstream of discharge	Total Suspended Solids	12 mg/L
1/10/2024	Downstream of discharge	Chlorophyll A	0.001 mg/L
1/10/2024	Downstream of discharge	Dissolved Oxygen	7.9 mg/L
1/10/2024	Downstream of discharge	pH	7.7 pH unit
1/10/2024	Downstream of discharge	Salinity	18.3 ppt
1/10/2024	Downstream of discharge	Faecal coliforms	78 cfu/100 mL
1/10/2024	Downstream of discharge	Escherichia coli	28 cfu/100 mL
1/10/2024	Downstream of discharge	Enterococci	21 cfu/100 mL
1/10/2024	Downstream of discharge	Conductivity	2500 mS/m
1/10/2024	Downstream of discharge	Turbidity	5.1 NTU
12/11/2024	Control site	Turbidity	2.2 NTU
12/11/2024	Control site	Conductivity	1500 mS/m
12/11/2024	Control site	Faecal coliforms	420 cfu/100 mL
12/11/2024	Control site	Escherichia coli	300 cfu/100 mL
12/11/2024	Control site	Enterococci	88 cfu/100 mL
12/11/2024	Control site	Ammoniacal Nitrogen (as N)	0.033 mg/L
12/11/2024	Control site	Total Nitrogen (as N)	0.13 mg/L
12/11/2024	Control site	Total Phosphorus (as P)	0.021 mg/L
12/11/2024	Control site	Nitrite (as N)	0.0041 mg/L
12/11/2024	Control site	Total Oxidised Nitrogen (as N)	0.063 mg/L
12/11/2024	Control site	Dissolved Reactive Phosphorus	0.014 mg/L
12/11/2024	Control site	Dissolved Oxygen	7.3 mg/L
12/11/2024	Control site	Nitrate (as N)	0.059 mg/L
12/11/2024	Control site	cBOD5	0.97 mg/L
12/11/2024	Control site	Total Suspended Solids	7.6 mg/L
12/11/2024	Control site	Chlorophyll A	0.0021 mg/L
12/11/2024	Control site	Total Arsenic	0.001 mg/L
12/11/2024	Control site	Total Cadmium	0.0005 mg/L
12/11/2024	Control site	Total Chromium	0.005 mg/L
12/11/2024	Control site	Total Copper	0.002 mg/L
12/11/2024	Control site	Total Lead	0.001 mg/L
12/11/2024	Control site	Total Nickel	0.001 mg/L
12/11/2024	Control site	Total Zinc	0.01 mg/L
12/11/2024	Control site	Salinity	9.4 ppt
12/11/2024	Control site	pH	7.3 pH unit
12/11/2024	Control site	Temperature	18.2 °C
12/11/2024	Upstream of discharge	Temperature	16.3 °C
12/11/2024	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.026 mg/L
12/11/2024	Upstream of discharge	Total Nitrogen (as N)	0.14 mg/L
12/11/2024	Upstream of discharge	Total Phosphorus (as P)	0.029 mg/L
12/11/2024	Upstream of discharge	Nitrite (as N)	0.0031 mg/L
12/11/2024	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.0612 mg/L
12/11/2024	Upstream of discharge	Dissolved Reactive Phosphorus	0.02 mg/L
12/11/2024	Upstream of discharge	Total Arsenic	0.001 mg/L
12/11/2024	Upstream of discharge	Total Cadmium	0.0005 mg/L
12/11/2024	Upstream of discharge	Total Chromium	0.005 mg/L
12/11/2024	Upstream of discharge	Total Copper	0.002 mg/L

12/11/2024	Upstream of discharge	Total Lead	0.001 mg/L
12/11/2024	Upstream of discharge	Total Nickel	0.001 mg/L
12/11/2024	Upstream of discharge	Total Zinc	0.01 mg/L
12/11/2024	Upstream of discharge	Nitrate (as N)	0.058 mg/L
12/11/2024	Upstream of discharge	cBOD5	0.89 mg/L
12/11/2024	Upstream of discharge	Total Suspended Solids	8.6 mg/L
12/11/2024	Upstream of discharge	Chlorophyll A	0.0034 mg/L
12/11/2024	Upstream of discharge	Dissolved Oxygen	8.3 mg/L
12/11/2024	Upstream of discharge	pH	7.6 pH unit
12/11/2024	Upstream of discharge	Salinity	7.5 ppt
12/11/2024	Upstream of discharge	Faecal coliforms	630 cfu/100 mL
12/11/2024	Upstream of discharge	Escherichia coli	490 cfu/100 mL
12/11/2024	Upstream of discharge	Enterococci	150 cfu/100 mL
12/11/2024	Upstream of discharge	Conductivity	1300 mS/m
12/11/2024	Upstream of discharge	Turbidity	4.2 NTU
12/11/2024	Downstream of discharge	Turbidity	7.7 NTU
12/11/2024	Downstream of discharge	Conductivity	1800 mS/m
12/11/2024	Downstream of discharge	Faecal coliforms	810 cfu/100 mL
12/11/2024	Downstream of discharge	Escherichia coli	380 cfu/100 mL
12/11/2024	Downstream of discharge	Enterococci	230 cfu/100 mL
12/11/2024	Downstream of discharge	Dissolved Oxygen	8.1 mg/L
12/11/2024	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.038 mg/L
12/11/2024	Downstream of discharge	Total Nitrogen (as N)	0.17 mg/L
12/11/2024	Downstream of discharge	Total Phosphorus (as P)	0.049 mg/L
12/11/2024	Downstream of discharge	Nitrite (as N)	0.0041 mg/L
12/11/2024	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.107 mg/L
12/11/2024	Downstream of discharge	Dissolved Reactive Phosphorus	0.043 mg/L
12/11/2024	Downstream of discharge	Nitrate (as N)	0.1 mg/L
12/11/2024	Downstream of discharge	cBOD5	1 mg/L
12/11/2024	Downstream of discharge	Total Suspended Solids	20 mg/L
12/11/2024	Downstream of discharge	Chlorophyll A	0.0032 mg/L
12/11/2024	Downstream of discharge	Total Arsenic	0.001 mg/L
12/11/2024	Downstream of discharge	Total Cadmium	0.0005 mg/L
12/11/2024	Downstream of discharge	Total Chromium	0.005 mg/L
12/11/2024	Downstream of discharge	Total Copper	0.011 mg/L
12/11/2024	Downstream of discharge	Total Lead	0.001 mg/L
12/11/2024	Downstream of discharge	Total Nickel	0.001 mg/L
12/11/2024	Downstream of discharge	Total Zinc	0.01 mg/L
12/11/2024	Downstream of discharge	Salinity	9.9 ppt
12/11/2024	Downstream of discharge	pH	7.6 pH unit
12/11/2024	Downstream of discharge	Temperature	17.4 °C
17/12/2024	Control site	Turbidity	23 NTU
17/12/2024	Control site	Faecal coliforms	2400 cfu/100 mL
17/12/2024	Control site	Escherichia coli	920 cfu/100 mL
17/12/2024	Control site	Enterococci	920 cfu/100 mL
17/12/2024	Control site	Conductivity	1060 mS/m
17/12/2024	Control site	Temperature	23.5 °C
17/12/2024	Control site	Dissolved Oxygen	7.1 mg/L
17/12/2024	Control site	Nitrate (as N)	0.15 mg/L
17/12/2024	Control site	cBOD5	0.82 mg/L
17/12/2024	Control site	Total Suspended Solids	34 mg/L
17/12/2024	Control site	Chlorophyll A	0.0036 mg/L
17/12/2024	Control site	Total Arsenic	0.0011 mg/L
17/12/2024	Control site	Total Cadmium	0.0005 mg/L
17/12/2024	Control site	Total Chromium	0.005 mg/L
17/12/2024	Control site	Total Copper	0.0026 mg/L
17/12/2024	Control site	Total Lead	0.001 mg/L
17/12/2024	Control site	Total Nickel	0.0011 mg/L
17/12/2024	Control site	Total Zinc	0.012 mg/L
17/12/2024	Control site	Ammoniacal Nitrogen (as N)	0.048 mg/L
17/12/2024	Control site	Total Nitrogen (as N)	0.33 mg/L
17/12/2024	Control site	Total Phosphorus (as P)	0.049 mg/L
17/12/2024	Control site	Nitrite (as N)	0.0041 mg/L
17/12/2024	Control site	Total Oxidised Nitrogen (as N)	0.159 mg/L
17/12/2024	Control site	Dissolved Reactive Phosphorus	0.02 mg/L
17/12/2024	Control site	pH	7.7 pH unit
17/12/2024	Control site	Salinity	7.7 ppt
17/12/2024	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.13 mg/L
17/12/2024	Upstream of discharge	Total Nitrogen (as N)	0.44 mg/L
17/12/2024	Upstream of discharge	Nitrite (as N)	0.0042 mg/L
17/12/2024	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.0959 mg/L
17/12/2024	Upstream of discharge	Nitrate (as N)	0.092 mg/L
17/12/2024	Upstream of discharge	cBOD5	1.7 mg/L
17/12/2024	Upstream of discharge	Total Suspended Solids	17 mg/L
17/12/2024	Upstream of discharge	Chlorophyll A	0.0077 mg/L
17/12/2024	Upstream of discharge	Dissolved Oxygen	6.4 mg/L
17/12/2024	Upstream of discharge	Total Arsenic	0.0012 mg/L
17/12/2024	Upstream of discharge	Total Cadmium	0.0005 mg/L
17/12/2024	Upstream of discharge	Total Chromium	0.005 mg/L
17/12/2024	Upstream of discharge	Total Copper	0.0091 mg/L
17/12/2024	Upstream of discharge	Total Lead	0.001 mg/L
17/12/2024	Upstream of discharge	Total Nickel	0.001 mg/L
17/12/2024	Upstream of discharge	Total Zinc	0.015 mg/L
17/12/2024	Upstream of discharge	Total Phosphorus (as P)	0.054 mg/L
17/12/2024	Upstream of discharge	Dissolved Reactive Phosphorus	0.026 mg/L
17/12/2024	Upstream of discharge	Salinity	10.6 ppt
17/12/2024	Upstream of discharge	pH	7.6 pH unit
17/12/2024	Upstream of discharge	Temperature	25.3 °C
17/12/2024	Upstream of discharge	Conductivity	1670 mS/m
17/12/2024	Upstream of discharge	Faecal coliforms	2100 cfu/100 mL
17/12/2024	Upstream of discharge	Escherichia coli	760 cfu/100 mL
17/12/2024	Upstream of discharge	Enterococci	340 cfu/100 mL
17/12/2024	Upstream of discharge	Turbidity	13 NTU
17/12/2024	Downstream of discharge	Turbidity	14 NTU
17/12/2024	Downstream of discharge	Faecal coliforms	920 cfu/100 mL
17/12/2024	Downstream of discharge	Escherichia coli	730 cfu/100 mL
17/12/2024	Downstream of discharge	Enterococci	540 cfu/100 mL
17/12/2024	Downstream of discharge	Conductivity	2270 mS/m
17/12/2024	Downstream of discharge	Temperature	25.5 °C
17/12/2024	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.07 mg/L
17/12/2024	Downstream of discharge	Total Nitrogen (as N)	0.34 mg/L

17/12/2024	Downstream of discharge	Total Phosphorus (as P)	0.061 mg/L
17/12/2024	Downstream of discharge	Nitrite (as N)	0.0037 mg/L
17/12/2024	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.0901 mg/L
17/12/2024	Downstream of discharge	Dissolved Reactive Phosphorus	0.028 mg/L
17/12/2024	Downstream of discharge	Nitrate (as N)	0.086 mg/L
17/12/2024	Downstream of discharge	cBOD5	1.7 mg/L
17/12/2024	Downstream of discharge	Total Suspended Solids	25 mg/L
17/12/2024	Downstream of discharge	Chlorophyll A	0.0089 mg/L
17/12/2024	Downstream of discharge	pH	7.7 pH unit
17/12/2024	Downstream of discharge	Total Arsenic	0.0011 mg/L
17/12/2024	Downstream of discharge	Total Cadmium	0.0005 mg/L
17/12/2024	Downstream of discharge	Total Chromium	0.005 mg/L
17/12/2024	Downstream of discharge	Total Copper	0.0054 mg/L
17/12/2024	Downstream of discharge	Total Lead	0.001 mg/L
17/12/2024	Downstream of discharge	Total Nickel	0.0012 mg/L
17/12/2024	Downstream of discharge	Total Zinc	0.011 mg/L
17/12/2024	Downstream of discharge	Dissolved Oxygen	6.7 mg/L
17/12/2024	Downstream of discharge	Salinity	14.4 ppt
14/01/2025	Control site	Ammoniacal Nitrogen (as N)	0.005 mg/L
14/01/2025	Control site	Total Nitrogen (as N)	0.2 mg/L
14/01/2025	Control site	Nitrite (as N)	0.002 mg/L
14/01/2025	Control site	Total Oxidised Nitrogen (as N)	0.0088 mg/L
14/01/2025	Control site	Total Phosphorus (as P)	0.062 mg/L
14/01/2025	Control site	Dissolved Oxygen	7.1 mg/L
14/01/2025	Control site	Nitrate (as N)	0.0088 mg/L
14/01/2025	Control site	cBOD5	3.3 mg/L
14/01/2025	Control site	Total Suspended Solids	5.2 mg/L
14/01/2025	Control site	Chlorophyll A	0.013 mg/L
14/01/2025	Control site	Total Arsenic	0.0013 mg/L
14/01/2025	Control site	Total Cadmium	0.0005 mg/L
14/01/2025	Control site	Total Chromium	0.005 mg/L
14/01/2025	Control site	Total Copper	0.0042 mg/L
14/01/2025	Control site	Total Lead	0.001 mg/L
14/01/2025	Control site	Total Nickel	0.001 mg/L
14/01/2025	Control site	Total Zinc	0.01 mg/L
14/01/2025	Control site	Salinity	22.6 ppt
14/01/2025	Control site	pH	7.9 pH unit
14/01/2025	Control site	Dissolved Reactive Phosphorus	0.035 mg/L
14/01/2025	Control site	Temperature	24.6 °C
14/01/2025	Control site	Conductivity	3380 mS/m
14/01/2025	Control site	Faecal coliforms	260 cfu/100 mL
14/01/2025	Control site	Escherichia coli	63 cfu/100 mL
14/01/2025	Control site	Enterococci	86 cfu/100 mL
14/01/2025	Control site	Turbidity	5 NTU
14/01/2025	Upstream of discharge	Turbidity	5.3 NTU
14/01/2025	Upstream of discharge	Faecal coliforms	66 cfu/100 mL
14/01/2025	Upstream of discharge	Escherichia coli	48 cfu/100 mL
14/01/2025	Upstream of discharge	Enterococci	33 cfu/100 mL
14/01/2025	Upstream of discharge	Conductivity	3770 mS/m
14/01/2025	Upstream of discharge	Temperature	24.1 °C
14/01/2025	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.031 mg/L
14/01/2025	Upstream of discharge	Total Nitrogen (as N)	0.13 mg/L
14/01/2025	Upstream of discharge	Total Phosphorus (as P)	0.059 mg/L
14/01/2025	Upstream of discharge	Nitrite (as N)	0.002 mg/L
14/01/2025	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.0056 mg/L
14/01/2025	Upstream of discharge	Dissolved Reactive Phosphorus	0.035 mg/L
14/01/2025	Upstream of discharge	Dissolved Oxygen	7.1 mg/L
14/01/2025	Upstream of discharge	Nitrate (as N)	0.0056 mg/L
14/01/2025	Upstream of discharge	cBOD5	1.7 mg/L
14/01/2025	Upstream of discharge	Total Suspended Solids	8.4 mg/L
14/01/2025	Upstream of discharge	Chlorophyll A	0.0082 mg/L
14/01/2025	Upstream of discharge	Total Arsenic	0.001 mg/L
14/01/2025	Upstream of discharge	Total Cadmium	0.0005 mg/L
14/01/2025	Upstream of discharge	Total Chromium	0.005 mg/L
14/01/2025	Upstream of discharge	Total Copper	0.0049 mg/L
14/01/2025	Upstream of discharge	Total Lead	0.001 mg/L
14/01/2025	Upstream of discharge	Total Nickel	0.001 mg/L
14/01/2025	Upstream of discharge	Total Zinc	0.01 mg/L
14/01/2025	Upstream of discharge	pH	7.9 pH unit
14/01/2025	Upstream of discharge	Salinity	26.1 ppt
14/01/2025	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.038 mg/L
14/01/2025	Downstream of discharge	Total Nitrogen (as N)	0.18 mg/L
14/01/2025	Downstream of discharge	Total Phosphorus (as P)	0.078 mg/L
14/01/2025	Downstream of discharge	Nitrite (as N)	0.002 mg/L
14/01/2025	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.0034 mg/L
14/01/2025	Downstream of discharge	Dissolved Reactive Phosphorus	0.038 mg/L
14/01/2025	Downstream of discharge	Dissolved Oxygen	7.9 mg/L
14/01/2025	Downstream of discharge	Nitrate (as N)	0.0034 mg/L
14/01/2025	Downstream of discharge	cBOD5	3.4 mg/L
14/01/2025	Downstream of discharge	Total Suspended Solids	30 mg/L
14/01/2025	Downstream of discharge	Chlorophyll A	0.022 mg/L
14/01/2025	Downstream of discharge	Salinity	28.8 ppt
14/01/2025	Downstream of discharge	pH	7.9 pH unit
14/01/2025	Downstream of discharge	Total Arsenic	0.0016 mg/L
14/01/2025	Downstream of discharge	Total Cadmium	0.0005 mg/L
14/01/2025	Downstream of discharge	Total Chromium	0.005 mg/L
14/01/2025	Downstream of discharge	Total Copper	0.0032 mg/L
14/01/2025	Downstream of discharge	Total Lead	0.001 mg/L
14/01/2025	Downstream of discharge	Total Nickel	0.001 mg/L
14/01/2025	Downstream of discharge	Total Zinc	0.01 mg/L
14/01/2025	Downstream of discharge	Temperature	24.4 °C
14/01/2025	Downstream of discharge	Conductivity	4090 mS/m
14/01/2025	Downstream of discharge	Faecal coliforms	96 cfu/100 mL
14/01/2025	Downstream of discharge	Escherichia coli	120 cfu/100 mL
14/01/2025	Downstream of discharge	Enterococci	26 cfu/100 mL
14/01/2025	Downstream of discharge	Turbidity	15 NTU
11/02/2025	Control site	Turbidity	12 NTU
11/02/2025	Control site	Faecal coliforms	2700 cfu/100 mL
11/02/2025	Control site	Escherichia coli	2200 cfu/100 mL
11/02/2025	Control site	Enterococci	1000 cfu/100 mL
11/02/2025	Control site	Conductivity	2870 mS/m

11/02/2025	Control site	Temperature	26 °C
11/02/2025	Control site	Dissolved Oxygen	5.4 mg/L
11/02/2025	Control site	Total Suspended Solids	41 mg/L
11/02/2025	Control site	Chlorophyll A	0.027 mg/L
11/02/2025	Control site	Total Arsenic	0.0013 mg/L
11/02/2025	Control site	Total Cadmium	0.0005 mg/L
11/02/2025	Control site	Total Chromium	0.005 mg/L
11/02/2025	Control site	Total Copper	0.002 mg/L
11/02/2025	Control site	Total Lead	0.001 mg/L
11/02/2025	Control site	Total Nickel	0.001 mg/L
11/02/2025	Control site	Total Zinc	0.01 mg/L
11/02/2025	Control site	Nitrate (as N)	0.0029 mg/L
11/02/2025	Control site	cBOD5	3 mg/L
11/02/2025	Control site	Ammoniacal Nitrogen (as N)	0.048 mg/L
11/02/2025	Control site	Total Nitrogen (as N)	0.48 mg/L
11/02/2025	Control site	Total Phosphorus (as P)	0.089 mg/L
11/02/2025	Control site	Nitrite (as N)	0.002 mg/L
11/02/2025	Control site	Total Oxidised Nitrogen (as N)	0.0029 mg/L
11/02/2025	Control site	Dissolved Reactive Phosphorus	0.033 mg/L
11/02/2025	Control site	pH	7.7 pH unit
11/02/2025	Control site	Salinity	25.7 ppt
11/02/2025	Upstream of discharge	Total Nitrogen (as N)	0.94 mg/L
11/02/2025	Upstream of discharge	Total Phosphorus (as P)	0.234 mg/L
11/02/2025	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.026 mg/L
11/02/2025	Upstream of discharge	Nitrite (as N)	0.002 mg/L
11/02/2025	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.002 mg/L
11/02/2025	Upstream of discharge	Dissolved Reactive Phosphorus	0.07 mg/L
11/02/2025	Upstream of discharge	Nitrate (as N)	0.002 mg/L
11/02/2025	Upstream of discharge	cBOD5	13 mg/L
11/02/2025	Upstream of discharge	Total Suspended Solids	51 mg/L
11/02/2025	Upstream of discharge	Chlorophyll A	0.042 mg/L
11/02/2025	Upstream of discharge	Total Arsenic	0.002 mg/L
11/02/2025	Upstream of discharge	Total Cadmium	0.0005 mg/L
11/02/2025	Upstream of discharge	Total Chromium	0.005 mg/L
11/02/2025	Upstream of discharge	Total Copper	0.0035 mg/L
11/02/2025	Upstream of discharge	Total Lead	0.001 mg/L
11/02/2025	Upstream of discharge	Total Nickel	0.0013 mg/L
11/02/2025	Upstream of discharge	Total Zinc	0.01 mg/L
11/02/2025	Upstream of discharge	Dissolved Oxygen	5.9 mg/L
11/02/2025	Upstream of discharge	Salinity	27.6 ppt
11/02/2025	Upstream of discharge	pH	7.8 pH unit
11/02/2025	Upstream of discharge	Temperature	25.4 °C
11/02/2025	Upstream of discharge	Enterococci	58 cfu/100 mL
11/02/2025	Upstream of discharge	Conductivity	3580 mS/m
11/02/2025	Upstream of discharge	Faecal coliforms	280 cfu/100 mL
11/02/2025	Upstream of discharge	Escherichia coli	200 cfu/100 mL
11/02/2025	Upstream of discharge	Turbidity	15 NTU
11/02/2025	Downstream of discharge	Turbidity	15 NTU
11/02/2025	Downstream of discharge	Faecal coliforms	110 cfu/100 mL
11/02/2025	Downstream of discharge	Escherichia coli	130 cfu/100 mL
11/02/2025	Downstream of discharge	Enterococci	66 cfu/100 mL
11/02/2025	Downstream of discharge	Conductivity	4000 mS/m
11/02/2025	Downstream of discharge	Temperature	25.8 °C
11/02/2025	Downstream of discharge	Total Nitrogen (as N)	0.58 mg/L
11/02/2025	Downstream of discharge	Total Phosphorus (as P)	0.157 mg/L
11/02/2025	Downstream of discharge	Nitrite (as N)	0.002 mg/L
11/02/2025	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.002 mg/L
11/02/2025	Downstream of discharge	Dissolved Reactive Phosphorus	0.058 mg/L
11/02/2025	Downstream of discharge	Dissolved Oxygen	8.8 mg/L
11/02/2025	Downstream of discharge	Nitrate (as N)	0.002 mg/L
11/02/2025	Downstream of discharge	cBOD5	7.2 mg/L
11/02/2025	Downstream of discharge	Total Suspended Solids	34 mg/L
11/02/2025	Downstream of discharge	Chlorophyll A	0.038 mg/L
11/02/2025	Downstream of discharge	Total Arsenic	0.0019 mg/L
11/02/2025	Downstream of discharge	Total Cadmium	0.0005 mg/L
11/02/2025	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.092 mg/L
11/02/2025	Downstream of discharge	Total Chromium	0.005 mg/L
11/02/2025	Downstream of discharge	Total Copper	0.0035 mg/L
11/02/2025	Downstream of discharge	Total Lead	0.001 mg/L
11/02/2025	Downstream of discharge	Total Nickel	0.0012 mg/L
11/02/2025	Downstream of discharge	Total Zinc	0.01 mg/L
11/02/2025	Downstream of discharge	pH	8.1 pH unit
11/02/2025	Downstream of discharge	Salinity	25.5 ppt
11/03/2025	Control site	Turbidity	25 NTU
11/03/2025	Control site	Conductivity	3800 mS/m
11/03/2025	Control site	Faecal coliforms	300 cfu/100 mL
11/03/2025	Control site	Escherichia coli	200 cfu/100 mL
11/03/2025	Control site	Enterococci	270 cfu/100 mL
11/03/2025	Control site	Salinity	28.3 ppt
11/03/2025	Control site	Dissolved Oxygen	7.9 mg/L
11/03/2025	Control site	Ammoniacal Nitrogen (as N)	0.005 mg/L
11/03/2025	Control site	Total Nitrogen (as N)	0.6 mg/L
11/03/2025	Control site	Total Phosphorus (as P)	0.193 mg/L
11/03/2025	Control site	Nitrite (as N)	0.002 mg/L
11/03/2025	Control site	Total Oxidised Nitrogen (as N)	0.002 mg/L
11/03/2025	Control site	Dissolved Reactive Phosphorus	0.059 mg/L
11/03/2025	Control site	Nitrate (as N)	0.002 mg/L
11/03/2025	Control site	cBOD5	3.6 mg/L
11/03/2025	Control site	Total Suspended Solids	67 mg/L
11/03/2025	Control site	Chlorophyll A	0.018 mg/L
11/03/2025	Control site	Total Arsenic	0.0021 mg/L
11/03/2025	Control site	Total Cadmium	0.0005 mg/L
11/03/2025	Control site	Total Chromium	0.005 mg/L
11/03/2025	Control site	Total Copper	0.0072 mg/L
11/03/2025	Control site	Total Lead	0.0017 mg/L
11/03/2025	Control site	Total Nickel	0.0016 mg/L
11/03/2025	Control site	Total Zinc	0.032 mg/L
11/03/2025	Control site	pH	7.7 pH unit
11/03/2025	Control site	Temperature	22.5 °C
11/03/2025	Upstream of discharge	Temperature	21.8 °C
11/03/2025	Upstream of discharge	pH	7.9 pH unit

11/03/2025	Upstream of discharge	Total Phosphorus (as P)	0.196 mg/L
11/03/2025	Upstream of discharge	Total Nitrogen (as N)	0.47 mg/L
11/03/2025	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.025 mg/L
11/03/2025	Upstream of discharge	Nitrite (as N)	0.002 mg/L
11/03/2025	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.0426 mg/L
11/03/2025	Upstream of discharge	Dissolved Reactive Phosphorus	0.103 mg/L
11/03/2025	Upstream of discharge	Dissolved Oxygen	9.3 mg/L
11/03/2025	Upstream of discharge	Nitrate (as N)	0.043 mg/L
11/03/2025	Upstream of discharge	cBOD5	6.6 mg/L
11/03/2025	Upstream of discharge	Total Suspended Solids	15 mg/L
11/03/2025	Upstream of discharge	Chlorophyll A	0.0087 mg/L
11/03/2025	Upstream of discharge	Total Arsenic	0.0013 mg/L
11/03/2025	Upstream of discharge	Total Cadmium	0.0005 mg/L
11/03/2025	Upstream of discharge	Total Chromium	0.005 mg/L
11/03/2025	Upstream of discharge	Salinity	29.4 ppt
11/03/2025	Upstream of discharge	Total Copper	0.0074 mg/L
11/03/2025	Upstream of discharge	Total Lead	0.001 mg/L
11/03/2025	Upstream of discharge	Total Nickel	0.001 mg/L
11/03/2025	Upstream of discharge	Total Zinc	0.01 mg/L
11/03/2025	Upstream of discharge	Faecal coliforms	210 cfu/100 mL
11/03/2025	Upstream of discharge	Escherichia coli	160 cfu/100 mL
11/03/2025	Upstream of discharge	Enterococci	250 cfu/100 mL
11/03/2025	Upstream of discharge	Conductivity	4080 mS/m
11/03/2025	Upstream of discharge	Turbidity	5.9 NTU
11/03/2025	Downstream of discharge	Turbidity	13 NTU
11/03/2025	Downstream of discharge	Conductivity	4430 mS/m
11/03/2025	Downstream of discharge	Faecal coliforms	60 cfu/100 mL
11/03/2025	Downstream of discharge	Escherichia coli	56 cfu/100 mL
11/03/2025	Downstream of discharge	Enterococci	76 cfu/100 mL
11/03/2025	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.034 mg/L
11/03/2025	Downstream of discharge	Total Nitrogen (as N)	0.56 mg/L
11/03/2025	Downstream of discharge	Total Phosphorus (as P)	0.196 mg/L
11/03/2025	Downstream of discharge	Nitrite (as N)	0.002 mg/L
11/03/2025	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.0042 mg/L
11/03/2025	Downstream of discharge	Dissolved Reactive Phosphorus	0.097 mg/L
11/03/2025	Downstream of discharge	Nitrate (as N)	0.0042 mg/L
11/03/2025	Downstream of discharge	cBOD5	7.3 mg/L
11/03/2025	Downstream of discharge	Total Suspended Solids	31 mg/L
11/03/2025	Downstream of discharge	Chlorophyll A	0.021 mg/L
11/03/2025	Downstream of discharge	Dissolved Oxygen	9.1 mg/L
11/03/2025	Downstream of discharge	Salinity	28.7 ppt
11/03/2025	Downstream of discharge	pH	7.8 pH unit
11/03/2025	Downstream of discharge	Total Arsenic	0.0017 mg/L
11/03/2025	Downstream of discharge	Total Cadmium	0.0005 mg/L
11/03/2025	Downstream of discharge	Total Chromium	0.005 mg/L
11/03/2025	Downstream of discharge	Total Copper	0.0047 mg/L
11/03/2025	Downstream of discharge	Total Lead	0.001 mg/L
11/03/2025	Downstream of discharge	Total Nickel	0.001 mg/L
11/03/2025	Downstream of discharge	Total Zinc	0.01 mg/L
11/03/2025	Downstream of discharge	Temperature	21.6 °C
29/04/2025	Control site	Turbidity	16 NTU
29/04/2025	Control site	Enterococci	110000 cfu/100 mL
29/04/2025	Control site	Faecal coliforms	250000 cfu/100 mL
29/04/2025	Control site	Escherichia coli	250000 cfu/100 mL
29/04/2025	Control site	Conductivity	322 mS/m
29/04/2025	Control site	Temperature	18.6 °C
29/04/2025	Control site	Salinity	1.7 ppt
29/04/2025	Control site	pH	7.7 pH unit
29/04/2025	Control site	Dissolved Oxygen	9 mg/L
29/04/2025	Control site	Ammoniacal Nitrogen (as N)	0.04 mg/L
29/04/2025	Control site	Total Nitrogen (as N)	0.95 mg/L
29/04/2025	Control site	Total Phosphorus (as P)	0.05 mg/L
29/04/2025	Control site	Nitrite (as N)	0.0031 mg/L
29/04/2025	Control site	Total Oxidised Nitrogen (as N)	0.48 mg/L
29/04/2025	Control site	Dissolved Reactive Phosphorus	0.018 mg/L
29/04/2025	Control site	Nitrate (as N)	0.48 mg/L
29/04/2025	Control site	cBOD5	3.1 mg/L
29/04/2025	Control site	Total Suspended Solids	13 mg/L
29/04/2025	Control site	Chlorophyll A	0.0006 mg/L
29/04/2025	Control site	Total Arsenic	0.001 mg/L
29/04/2025	Control site	Total Cadmium	0.0005 mg/L
29/04/2025	Control site	Total Chromium	0.005 mg/L
29/04/2025	Control site	Total Copper	0.004 mg/L
29/04/2025	Control site	Total Lead	0.001 mg/L
29/04/2025	Control site	Total Nickel	0.0024 mg/L
29/04/2025	Control site	Total Zinc	0.021 mg/L
29/04/2025	Upstream of discharge	pH	7.5 pH unit
29/04/2025	Upstream of discharge	Salinity	3.4 ppt
29/04/2025	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.034 mg/L
29/04/2025	Upstream of discharge	Total Nitrogen (as N)	0.67 mg/L
29/04/2025	Upstream of discharge	Total Phosphorus (as P)	0.052 mg/L
29/04/2025	Upstream of discharge	Nitrite (as N)	0.0033 mg/L
29/04/2025	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.223 mg/L
29/04/2025	Upstream of discharge	Dissolved Reactive Phosphorus	0.019 mg/L
29/04/2025	Upstream of discharge	Dissolved Oxygen	8.6 mg/L
29/04/2025	Upstream of discharge	Nitrate (as N)	0.22 mg/L
29/04/2025	Upstream of discharge	cBOD5	0.92 mg/L
29/04/2025	Upstream of discharge	Total Suspended Solids	15 mg/L
29/04/2025	Upstream of discharge	Chlorophyll A	0.0024 mg/L
29/04/2025	Upstream of discharge	Total Arsenic	0.001 mg/L
29/04/2025	Upstream of discharge	Total Cadmium	0.0005 mg/L
29/04/2025	Upstream of discharge	Total Chromium	0.005 mg/L
29/04/2025	Upstream of discharge	Total Copper	0.0041 mg/L
29/04/2025	Upstream of discharge	Total Lead	0.001 mg/L
29/04/2025	Upstream of discharge	Total Nickel	0.0026 mg/L
29/04/2025	Upstream of discharge	Total Zinc	0.011 mg/L
29/04/2025	Upstream of discharge	Temperature	19.1 °C
29/04/2025	Upstream of discharge	Conductivity	623 mS/m
29/04/2025	Upstream of discharge	Faecal coliforms	1400 cfu/100 mL
29/04/2025	Upstream of discharge	Escherichia coli	1100 cfu/100 mL
29/04/2025	Upstream of discharge	Enterococci	910 cfu/100 mL

29/04/2025	Upstream of discharge	Turbidity	19 NTU
29/04/2025	Downstream of discharge	Turbidity	20 NTU
29/04/2025	Downstream of discharge	Faecal coliforms	820 cfu/100 mL
29/04/2025	Downstream of discharge	Escherichia coli	1100 cfu/100 mL
29/04/2025	Downstream of discharge	Enterococci	850 cfu/100 mL
29/04/2025	Downstream of discharge	Conductivity	892 mS/m
29/04/2025	Downstream of discharge	Temperature	19.4 °C
29/04/2025	Downstream of discharge	Salinity	4.8 ppt
29/04/2025	Downstream of discharge	pH	7.4 pH unit
29/04/2025	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.039 mg/L
29/04/2025	Downstream of discharge	Total Nitrogen (as N)	0.69 mg/L
29/04/2025	Downstream of discharge	Total Phosphorus (as P)	0.063 mg/L
29/04/2025	Downstream of discharge	Nitrite (as N)	0.0037 mg/L
29/04/2025	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.226 mg/L
29/04/2025	Downstream of discharge	Dissolved Reactive Phosphorus	0.025 mg/L
29/04/2025	Downstream of discharge	Dissolved Oxygen	8.4 mg/L
29/04/2025	Downstream of discharge	Nitrate (as N)	0.22 mg/L
29/04/2025	Downstream of discharge	cBOD5	0.83 mg/L
29/04/2025	Downstream of discharge	Total Suspended Solids	35 mg/L
29/04/2025	Downstream of discharge	Chlorophyll A	0.0057 mg/L
29/04/2025	Downstream of discharge	Total Arsenic	0.001 mg/L
29/04/2025	Downstream of discharge	Total Cadmium	0.0005 mg/L
29/04/2025	Downstream of discharge	Total Chromium	0.005 mg/L
29/04/2025	Downstream of discharge	Total Copper	0.0038 mg/L
29/04/2025	Downstream of discharge	Total Lead	0.001 mg/L
29/04/2025	Downstream of discharge	Total Nickel	0.0023 mg/L
29/04/2025	Downstream of discharge	Total Zinc	0.01 mg/L
13/05/2025	Control site	Total Nitrogen (as N)	0.33 mg/L
13/05/2025	Control site	Total Phosphorus (as P)	0.016 mg/L
13/05/2025	Control site	Ammoniacal Nitrogen (as N)	0.056 mg/L
13/05/2025	Control site	Nitrite (as N)	0.0025 mg/L
13/05/2025	Control site	Total Oxidised Nitrogen (as N)	0.148 mg/L
13/05/2025	Control site	Dissolved Reactive Phosphorus	0.013 mg/L
13/05/2025	Control site	Total Zinc	0.01 mg/L
13/05/2025	Control site	Nitrate (as N)	0.15 mg/L
13/05/2025	Control site	Salinity	5.5 ppt
13/05/2025	Control site	pH	6.9 pH unit
13/05/2025	Control site	Dissolved Oxygen	9.5 mg/L
13/05/2025	Control site	cBOD5	0.66 mg/L
13/05/2025	Control site	Total Suspended Solids	6.2 mg/L
13/05/2025	Control site	Chlorophyll A	0.0006 mg/L
13/05/2025	Control site	Total Arsenic	0.001 mg/L
13/05/2025	Control site	Total Cadmium	0.0005 mg/L
13/05/2025	Control site	Total Chromium	0.005 mg/L
13/05/2025	Control site	Total Copper	0.002 mg/L
13/05/2025	Control site	Total Lead	0.001 mg/L
13/05/2025	Control site	Total Nickel	0.0015 mg/L
13/05/2025	Control site	Temperature	15.7 °C
13/05/2025	Control site	Conductivity	993 mS/m
13/05/2025	Control site	Faecal coliforms	370 cfu/100 mL
13/05/2025	Control site	Escherichia coli	210 cfu/100 mL
13/05/2025	Control site	Enterococci	160 cfu/100 mL
13/05/2025	Control site	Turbidity	8.9 NTU
13/05/2025	Upstream of discharge	Turbidity	7.8 NTU
13/05/2025	Upstream of discharge	Faecal coliforms	370 cfu/100 mL
13/05/2025	Upstream of discharge	Escherichia coli	280 cfu/100 mL
13/05/2025	Upstream of discharge	Enterococci	200 cfu/100 mL
13/05/2025	Upstream of discharge	Conductivity	870 mS/m
13/05/2025	Upstream of discharge	Temperature	15.6 °C
13/05/2025	Upstream of discharge	Dissolved Oxygen	9.3 mg/L
13/05/2025	Upstream of discharge	Dissolved Reactive Phosphorus	0.021 mg/L
13/05/2025	Upstream of discharge	Nitrate (as N)	0.14 mg/L
13/05/2025	Upstream of discharge	cBOD5	0.81 mg/L
13/05/2025	Upstream of discharge	Total Suspended Solids	6 mg/L
13/05/2025	Upstream of discharge	Chlorophyll A	0.0006 mg/L
13/05/2025	Upstream of discharge	Total Arsenic	0.001 mg/L
13/05/2025	Upstream of discharge	Total Cadmium	0.0005 mg/L
13/05/2025	Upstream of discharge	Total Chromium	0.005 mg/L
13/05/2025	Upstream of discharge	Total Copper	0.0021 mg/L
13/05/2025	Upstream of discharge	Total Lead	0.001 mg/L
13/05/2025	Upstream of discharge	Total Nickel	0.0012 mg/L
13/05/2025	Upstream of discharge	Total Zinc	0.01 mg/L
13/05/2025	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.084 mg/L
13/05/2025	Upstream of discharge	Total Nitrogen (as N)	0.42 mg/L
13/05/2025	Upstream of discharge	Total Phosphorus (as P)	0.046 mg/L
13/05/2025	Upstream of discharge	Nitrite (as N)	0.0032 mg/L
13/05/2025	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.147 mg/L
13/05/2025	Upstream of discharge	pH	7 pH unit
13/05/2025	Upstream of discharge	Salinity	5 ppt
13/05/2025	Downstream of discharge	Total Arsenic	0.001 mg/L
13/05/2025	Downstream of discharge	Total Cadmium	0.0005 mg/L
13/05/2025	Downstream of discharge	Total Chromium	0.005 mg/L
13/05/2025	Downstream of discharge	Total Copper	0.0027 mg/L
13/05/2025	Downstream of discharge	Total Lead	0.001 mg/L
13/05/2025	Downstream of discharge	Total Nickel	0.0011 mg/L
13/05/2025	Downstream of discharge	Total Zinc	0.01 mg/L
13/05/2025	Downstream of discharge	Dissolved Oxygen	9 mg/L
13/05/2025	Downstream of discharge	Total Nitrogen (as N)	0.67 mg/L
13/05/2025	Downstream of discharge	Total Phosphorus (as P)	0.089 mg/L
13/05/2025	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.12 mg/L
13/05/2025	Downstream of discharge	Nitrite (as N)	0.0043 mg/L
13/05/2025	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.156 mg/L
13/05/2025	Downstream of discharge	Dissolved Reactive Phosphorus	0.047 mg/L
13/05/2025	Downstream of discharge	Nitrate (as N)	0.15 mg/L
13/05/2025	Downstream of discharge	cBOD5	2.2 mg/L
13/05/2025	Downstream of discharge	Total Suspended Solids	11 mg/L
13/05/2025	Downstream of discharge	Chlorophyll A	0.0074 mg/L
13/05/2025	Downstream of discharge	Salinity	6.5 ppt
13/05/2025	Downstream of discharge	pH	7.1 pH unit
13/05/2025	Downstream of discharge	Temperature	15.8 °C
13/05/2025	Downstream of discharge	Conductivity	1170 mS/m

13/05/2025	Downstream of discharge	Faecal coliforms	460 cfu/100 mL
13/05/2025	Downstream of discharge	Escherichia coli	100 cfu/100 mL
13/05/2025	Downstream of discharge	Enterococci	2300 cfu/100 mL
13/05/2025	Downstream of discharge	Turbidity	9.1 NTU
10/06/2025	Control site	Turbidity	14 NTU
10/06/2025	Control site	Faecal coliforms	680 cfu/100 mL
10/06/2025	Control site	Escherichia coli	650 cfu/100 mL
10/06/2025	Control site	Enterococci	340 cfu/100 mL
10/06/2025	Control site	Conductivity	461 mS/m
10/06/2025	Control site	Temperature	12.8 °C
10/06/2025	Control site	Dissolved Oxygen	10.3 mg/L
10/06/2025	Control site	Salinity	2.4 ppt
10/06/2025	Control site	pH	7.9 pH unit
10/06/2025	Control site	Nitrate (as N)	0.18 mg/L
10/06/2025	Control site	cBOD5	0.58 mg/L
10/06/2025	Control site	Total Suspended Solids	9.8 mg/L
10/06/2025	Control site	Chlorophyll A	0.0006 mg/L
10/06/2025	Control site	Total Arsenic	0.001 mg/L
10/06/2025	Control site	Total Cadmium	0.0005 mg/L
10/06/2025	Control site	Total Chromium	0.005 mg/L
10/06/2025	Control site	Total Copper	0.0041 mg/L
10/06/2025	Control site	Total Lead	0.001 mg/L
10/06/2025	Control site	Total Nickel	0.0015 mg/L
10/06/2025	Control site	Total Zinc	0.01 mg/L
10/06/2025	Control site	Ammoniacal Nitrogen (as N)	0.028 mg/L
10/06/2025	Control site	Total Nitrogen (as N)	0.35 mg/L
10/06/2025	Control site	Total Phosphorus (as P)	0.025 mg/L
10/06/2025	Control site	Nitrite (as N)	0.0031 mg/L
10/06/2025	Control site	Total Oxidised Nitrogen (as N)	0.185 mg/L
10/06/2025	Control site	Dissolved Reactive Phosphorus	0.011 mg/L
10/06/2025	Upstream of discharge	pH	7.7 pH unit
10/06/2025	Upstream of discharge	Salinity	2.8 ppt
10/06/2025	Upstream of discharge	Total Copper	0.0032 mg/L
10/06/2025	Upstream of discharge	Total Lead	0.001 mg/L
10/06/2025	Upstream of discharge	Total Nickel	0.0013 mg/L
10/06/2025	Upstream of discharge	Total Zinc	0.01 mg/L
10/06/2025	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.028 mg/L
10/06/2025	Upstream of discharge	Total Nitrogen (as N)	0.35 mg/L
10/06/2025	Upstream of discharge	Total Phosphorus (as P)	0.027 mg/L
10/06/2025	Upstream of discharge	Nitrite (as N)	0.0028 mg/L
10/06/2025	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.169 mg/L
10/06/2025	Upstream of discharge	Dissolved Reactive Phosphorus	0.011 mg/L
10/06/2025	Upstream of discharge	Dissolved Oxygen	10.2 mg/L
10/06/2025	Upstream of discharge	Nitrate (as N)	0.17 mg/L
10/06/2025	Upstream of discharge	cBOD5	0.57 mg/L
10/06/2025	Upstream of discharge	Total Suspended Solids	11 mg/L
10/06/2025	Upstream of discharge	Chlorophyll A	0.00094 mg/L
10/06/2025	Upstream of discharge	Total Arsenic	0.001 mg/L
10/06/2025	Upstream of discharge	Total Cadmium	0.0005 mg/L
10/06/2025	Upstream of discharge	Total Chromium	0.005 mg/L
10/06/2025	Upstream of discharge	Temperature	13 °C
10/06/2025	Upstream of discharge	Conductivity	505 mS/m
10/06/2025	Upstream of discharge	Faecal coliforms	840 cfu/100 mL
10/06/2025	Upstream of discharge	Escherichia coli	660 cfu/100 mL
10/06/2025	Upstream of discharge	Enterococci	310 cfu/100 mL
10/06/2025	Upstream of discharge	Turbidity	14 NTU
10/06/2025	Downstream of discharge	Turbidity	11 NTU
10/06/2025	Downstream of discharge	Faecal coliforms	790 cfu/100 mL
10/06/2025	Downstream of discharge	Escherichia coli	580 cfu/100 mL
10/06/2025	Downstream of discharge	Enterococci	210 cfu/100 mL
10/06/2025	Downstream of discharge	Conductivity	596 mS/m
10/06/2025	Downstream of discharge	Temperature	14.1 °C
10/06/2025	Downstream of discharge	Salinity	2.4 ppt
10/06/2025	Downstream of discharge	pH	7.6 pH unit
10/06/2025	Downstream of discharge	Dissolved Oxygen	10.2 mg/L
10/06/2025	Downstream of discharge	Nitrate (as N)	0.14 mg/L
10/06/2025	Downstream of discharge	cBOD5	0.9 mg/L
10/06/2025	Downstream of discharge	Total Suspended Solids	31 mg/L
10/06/2025	Downstream of discharge	Chlorophyll A	0.0022 mg/L
10/06/2025	Downstream of discharge	Total Arsenic	0.001 mg/L
10/06/2025	Downstream of discharge	Total Cadmium	0.0005 mg/L
10/06/2025	Downstream of discharge	Total Chromium	0.005 mg/L
10/06/2025	Downstream of discharge	Total Copper	0.003 mg/L
10/06/2025	Downstream of discharge	Total Lead	0.001 mg/L
10/06/2025	Downstream of discharge	Total Nickel	0.0013 mg/L
10/06/2025	Downstream of discharge	Total Zinc	0.01 mg/L
10/06/2025	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.026 mg/L
10/06/2025	Downstream of discharge	Total Nitrogen (as N)	0.35 mg/L
10/06/2025	Downstream of discharge	Total Phosphorus (as P)	0.045 mg/L
10/06/2025	Downstream of discharge	Nitrite (as N)	0.003 mg/L
10/06/2025	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.147 mg/L
10/06/2025	Downstream of discharge	Dissolved Reactive Phosphorus	0.016 mg/L
8/07/2025	Control site	pH	6.7 pH unit
8/07/2025	Control site	Salinity	3.7 ppt
8/07/2025	Control site	Ammoniacal Nitrogen (as N)	0.02 mg/L
8/07/2025	Control site	Total Nitrogen (as N)	0.35 mg/L
8/07/2025	Control site	Total Phosphorus (as P)	0.025 mg/L
8/07/2025	Control site	Dissolved Reactive Phosphorus	0.014 mg/L
8/07/2025	Control site	Nitrite (as N)	0.0025 mg/L
8/07/2025	Control site	Total Oxidised Nitrogen (as N)	0.26 mg/L
8/07/2025	Control site	Dissolved Oxygen	10.7 mg/L
8/07/2025	Control site	Nitrate (as N)	0.26 mg/L
8/07/2025	Control site	cBOD5	1.5 mg/L
8/07/2025	Control site	Total Suspended Solids	4.2 mg/L
8/07/2025	Control site	Chlorophyll A	0.0006 mg/L
8/07/2025	Control site	Total Arsenic	0.001 mg/L
8/07/2025	Control site	Total Cadmium	0.0005 mg/L
8/07/2025	Control site	Total Chromium	0.005 mg/L
8/07/2025	Control site	Total Copper	0.002 mg/L
8/07/2025	Control site	Total Lead	0.001 mg/L
8/07/2025	Control site	Total Nickel	0.001 mg/L

8/07/2025	Control site	Total Zinc	0.01 mg/L
8/07/2025	Control site	Temperature	11.6 °C
8/07/2025	Control site	Conductivity	376 mS/m
8/07/2025	Control site	Faecal coliforms	380 cfu/100 mL
8/07/2025	Control site	Escherichia coli	340 cfu/100 mL
8/07/2025	Control site	Enterococci	60 cfu/100 mL
8/07/2025	Control site	Turbidity	10 NTU
8/07/2025	Upstream of discharge	Turbidity	10 NTU
8/07/2025	Upstream of discharge	Faecal coliforms	430 cfu/100 mL
8/07/2025	Upstream of discharge	Escherichia coli	420 cfu/100 mL
8/07/2025	Upstream of discharge	Enterococci	90 cfu/100 mL
8/07/2025	Upstream of discharge	Conductivity	443 mS/m
8/07/2025	Upstream of discharge	Temperature	11.9 °C
8/07/2025	Upstream of discharge	Salinity	4.8 ppt
8/07/2025	Upstream of discharge	pH	7 pH unit
8/07/2025	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.031 mg/L
8/07/2025	Upstream of discharge	Total Nitrogen (as N)	0.39 mg/L
8/07/2025	Upstream of discharge	Total Phosphorus (as P)	0.03 mg/L
8/07/2025	Upstream of discharge	Dissolved Reactive Phosphorus	0.015 mg/L
8/07/2025	Upstream of discharge	Nitrite (as N)	0.0029 mg/L
8/07/2025	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.19 mg/L
8/07/2025	Upstream of discharge	Dissolved Oxygen	10.4 mg/L
8/07/2025	Upstream of discharge	Nitrate (as N)	0.19 mg/L
8/07/2025	Upstream of discharge	cBOD5	0.63 mg/L
8/07/2025	Upstream of discharge	Total Suspended Solids	7 mg/L
8/07/2025	Upstream of discharge	Chlorophyll A	0.0006 mg/L
8/07/2025	Upstream of discharge	Total Arsenic	0.001 mg/L
8/07/2025	Upstream of discharge	Total Cadmium	0.0005 mg/L
8/07/2025	Upstream of discharge	Total Chromium	0.005 mg/L
8/07/2025	Upstream of discharge	Total Copper	0.002 mg/L
8/07/2025	Upstream of discharge	Total Lead	0.001 mg/L
8/07/2025	Upstream of discharge	Total Nickel	0.001 mg/L
8/07/2025	Upstream of discharge	Total Zinc	0.01 mg/L
8/07/2025	Downstream of discharge	pH	7.1 pH unit
8/07/2025	Downstream of discharge	Salinity	7.5 ppt
8/07/2025	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.048 mg/L
8/07/2025	Downstream of discharge	Total Nitrogen (as N)	0.42 mg/L
8/07/2025	Downstream of discharge	Total Phosphorus (as P)	0.046 mg/L
8/07/2025	Downstream of discharge	Dissolved Reactive Phosphorus	0.029 mg/L
8/07/2025	Downstream of discharge	Nitrite (as N)	0.0045 mg/L
8/07/2025	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.19 mg/L
8/07/2025	Downstream of discharge	Dissolved Oxygen	9.9 mg/L
8/07/2025	Downstream of discharge	Nitrate (as N)	0.19 mg/L
8/07/2025	Downstream of discharge	cBOD5	0.6 mg/L
8/07/2025	Downstream of discharge	Total Suspended Solids	6.2 mg/L
8/07/2025	Downstream of discharge	Chlorophyll A	0.0006 mg/L
8/07/2025	Downstream of discharge	Total Arsenic	0.001 mg/L
8/07/2025	Downstream of discharge	Total Cadmium	0.0005 mg/L
8/07/2025	Downstream of discharge	Total Chromium	0.005 mg/L
8/07/2025	Downstream of discharge	Total Copper	0.0025 mg/L
8/07/2025	Downstream of discharge	Total Lead	0.001 mg/L
8/07/2025	Downstream of discharge	Total Nickel	0.0015 mg/L
8/07/2025	Downstream of discharge	Total Zinc	0.01 mg/L
8/07/2025	Downstream of discharge	Temperature	12.3 °C
8/07/2025	Downstream of discharge	Conductivity	727 mS/m
8/07/2025	Downstream of discharge	Faecal coliforms	420 cfu/100 mL
8/07/2025	Downstream of discharge	Escherichia coli	410 cfu/100 mL
8/07/2025	Downstream of discharge	Enterococci	210 cfu/100 mL
8/07/2025	Downstream of discharge	Turbidity	9.7 NTU
5/08/2025	Control site	Turbidity	8.3 NTU
5/08/2025	Control site	Faecal coliforms	530 cfu/100 mL
5/08/2025	Control site	Escherichia coli	330 cfu/100 mL
5/08/2025	Control site	Enterococci	90 cfu/100 mL
5/08/2025	Control site	Conductivity	98.9 mS/m
5/08/2025	Control site	Temperature	11.2 °C
5/08/2025	Control site	Salinity	0.6 ppt
5/08/2025	Control site	pH	6.4 pH unit
5/08/2025	Control site	Ammoniacal Nitrogen (as N)	0.0096 mg/L
5/08/2025	Control site	Total Nitrogen (as N)	0.33 mg/L
5/08/2025	Control site	Total Phosphorus (as P)	0.014 mg/L
5/08/2025	Control site	Nitrite (as N)	0.0025 mg/L
5/08/2025	Control site	Total Oxidised Nitrogen (as N)	0.21 mg/L
5/08/2025	Control site	Dissolved Reactive Phosphorus	0.012 mg/L
5/08/2025	Control site	Dissolved Oxygen	10.9 mg/L
5/08/2025	Control site	cBOD5	0.95 mg/L
5/08/2025	Control site	Total Suspended Solids	6 mg/L
5/08/2025	Control site	Chlorophyll A	0.0006 mg/L
5/08/2025	Control site	Nitrate (as N)	0.21 mg/L
5/08/2025	Control site	Total Arsenic	0.001 mg/L
5/08/2025	Control site	Total Cadmium	0.0005 mg/L
5/08/2025	Control site	Total Chromium	0.005 mg/L
5/08/2025	Control site	Total Copper	0.002 mg/L
5/08/2025	Control site	Total Lead	0.001 mg/L
5/08/2025	Control site	Total Nickel	0.0013 mg/L
5/08/2025	Control site	Total Zinc	0.11 mg/L
5/08/2025	Upstream of discharge	pH	7 pH unit
5/08/2025	Upstream of discharge	Salinity	1.3 ppt
5/08/2025	Upstream of discharge	Ammoniacal Nitrogen (as N)	0.019 mg/L
5/08/2025	Upstream of discharge	Total Nitrogen (as N)	0.25 mg/L
5/08/2025	Upstream of discharge	Total Phosphorus (as P)	0.02 mg/L
5/08/2025	Upstream of discharge	Nitrite (as N)	0.0029 mg/L
5/08/2025	Upstream of discharge	Total Oxidised Nitrogen (as N)	0.21 mg/L
5/08/2025	Upstream of discharge	Dissolved Reactive Phosphorus	0.014 mg/L
5/08/2025	Upstream of discharge	Dissolved Oxygen	10.7 mg/L
5/08/2025	Upstream of discharge	cBOD5	0.8 mg/L
5/08/2025	Upstream of discharge	Total Suspended Solids	13 mg/L
5/08/2025	Upstream of discharge	Chlorophyll A	0.0006 mg/L
5/08/2025	Upstream of discharge	Nitrate (as N)	0.2 mg/L
5/08/2025	Upstream of discharge	Total Arsenic	0.001 mg/L
5/08/2025	Upstream of discharge	Total Cadmium	0.0005 mg/L
5/08/2025	Upstream of discharge	Total Chromium	0.005 mg/L

5/08/2025	Upstream of discharge	Total Copper	0.002 mg/L
5/08/2025	Upstream of discharge	Total Lead	0.001 mg/L
5/08/2025	Upstream of discharge	Total Nickel	0.0018 mg/L
5/08/2025	Upstream of discharge	Total Zinc	0.01 mg/L
5/08/2025	Upstream of discharge	Temperature	11.2 °C
5/08/2025	Upstream of discharge	Conductivity	286 mS/m
5/08/2025	Upstream of discharge	Faecal coliforms	800 cfu/100 mL
5/08/2025	Upstream of discharge	Escherichia coli	800 cfu/100 mL
5/08/2025	Upstream of discharge	Enterococci	230 cfu/100 mL
5/08/2025	Upstream of discharge	Turbidity	13 NTU
5/08/2025	Downstream of discharge	Turbidity	21 NTU
5/08/2025	Downstream of discharge	Faecal coliforms	680 cfu/100 mL
5/08/2025	Downstream of discharge	Escherichia coli	350 cfu/100 mL
5/08/2025	Downstream of discharge	Enterococci	64 cfu/100 mL
5/08/2025	Downstream of discharge	Conductivity	911 mS/m
5/08/2025	Downstream of discharge	Temperature	11.6 °C
5/08/2025	Downstream of discharge	Salinity	5.3 ppt
5/08/2025	Downstream of discharge	pH	7 pH unit
5/08/2025	Downstream of discharge	Ammoniacal Nitrogen (as N)	0.051 mg/L
5/08/2025	Downstream of discharge	Total Nitrogen (as N)	0.35 mg/L
5/08/2025	Downstream of discharge	Total Phosphorus (as P)	0.047 mg/L
5/08/2025	Downstream of discharge	Nitrite (as N)	0.0054 mg/L
5/08/2025	Downstream of discharge	Total Oxidised Nitrogen (as N)	0.21 mg/L
5/08/2025	Downstream of discharge	Dissolved Reactive Phosphorus	0.034 mg/L
5/08/2025	Downstream of discharge	Dissolved Oxygen	10.1 mg/L
5/08/2025	Downstream of discharge	cBOD5	0.5 mg/L
5/08/2025	Downstream of discharge	Total Suspended Solids	32 mg/L
5/08/2025	Downstream of discharge	Chlorophyll A	0.003 mg/L
5/08/2025	Downstream of discharge	Nitrate (as N)	0.21 mg/L
5/08/2025	Downstream of discharge	Total Arsenic	0.001 mg/L
5/08/2025	Downstream of discharge	Total Cadmium	0.0005 mg/L
5/08/2025	Downstream of discharge	Total Chromium	0.005 mg/L
5/08/2025	Downstream of discharge	Total Copper	0.0025 mg/L
5/08/2025	Downstream of discharge	Total Lead	0.001 mg/L
5/08/2025	Downstream of discharge	Total Nickel	0.0019 mg/L
5/08/2025	Downstream of discharge	Total Zinc	0.01 mg/L

Appendix B. Kendall test results

Location	Parameter	Pvalue	Trend
Control site	Temperature	0.16	Not Significant
Control site	cBOD5	0.26	Not Significant
Control site	Nitrite (as N)	0.32	Not Significant
Control site	Total Oxidised Nitrogen (as N)	0.70	Not Significant
Control site	Dissolved Reactive Phosphorus	0.00	Significant
Control site	Total Suspended Solids	0.51	Not Significant
Control site	Chlorophyll A	0.03	Significant
Control site	Nitrate (as N)	0.70	Not Significant
Control site	Ammoniacal Nitrogen (as N)	0.35	Not Significant
Control site	Total Phosphorus (as P)	0.09	Not Significant
Control site	Total Nitrogen (as N)	0.22	Not Significant
Control site	Dissolved Oxygen	0.37	Not Significant
Control site	Salinity	0.88	Not Significant
Control site	pH	0.56	Not Significant
Control site	Escherichia coli	0.30	Not Significant
Control site	Enterococci	0.65	Not Significant
Control site	Faecal coliforms	0.32	Not Significant
Control site	Conductivity	0.29	Not Significant
Control site	Turbidity	0.11	Not Significant
Upstream of discharge	Temperature	0.08	Not Significant
Upstream of discharge	cBOD5	0.11	Not Significant
Upstream of discharge	Nitrite (as N)	0.39	Not Significant
Upstream of discharge	Total Oxidised Nitrogen (as N)	0.48	Not Significant
Upstream of discharge	Dissolved Reactive Phosphorus	0.03	Significant
Upstream of discharge	Total Suspended Solids	0.36	Not Significant
Upstream of discharge	Chlorophyll A	0.00	Significant
Upstream of discharge	Nitrate (as N)	0.49	Not Significant
Upstream of discharge	Ammoniacal Nitrogen (as N)	0.17	Not Significant
Upstream of discharge	Total Phosphorus (as P)	0.28	Not Significant
Upstream of discharge	Total Nitrogen (as N)	0.29	Not Significant
Upstream of discharge	Salinity	0.34	Not Significant
Upstream of discharge	pH	0.03	Significant
Upstream of discharge	Dissolved Oxygen	0.05	Significant
Upstream of discharge	Escherichia coli	0.10	Not Significant
Upstream of discharge	Enterococci	0.17	Not Significant
Upstream of discharge	Faecal coliforms	0.14	Not Significant
Upstream of discharge	Conductivity	0.02	Significant
Upstream of discharge	Turbidity	0.16	Not Significant
Downstream of discharge	Temperature	0.16	Not Significant
Downstream of discharge	Salinity	0.20	Not Significant
Downstream of discharge	pH	0.04	Significant
Downstream of discharge	cBOD5	0.83	Not Significant
Downstream of discharge	Chlorophyll A	0.29	Not Significant
Downstream of discharge	Nitrite (as N)	0.57	Not Significant
Downstream of discharge	Total Oxidised Nitrogen (as N)	0.65	Not Significant
Downstream of discharge	Dissolved Reactive Phosphorus	0.47	Not Significant
Downstream of discharge	Total Suspended Solids	0.82	Not Significant
Downstream of discharge	Nitrate (as N)	0.64	Not Significant
Downstream of discharge	Ammoniacal Nitrogen (as N)	0.83	Not Significant
Downstream of discharge	Total Phosphorus (as P)	0.41	Not Significant
Downstream of discharge	Total Nitrogen (as N)	0.41	Not Significant
Downstream of discharge	Dissolved Oxygen	0.01	Significant
Downstream of discharge	Escherichia coli	0.18	Not Significant
Downstream of discharge	Enterococci	0.05	Significant
Downstream of discharge	Faecal coliforms	0.04	Significant
Downstream of discharge	Conductivity	0.04	Significant
Downstream of discharge	Turbidity	0.73	Not Significant

Appendix C. Warkworth - Ecological monitoring report 2024-2025

WARCKWORTH WASTEWATER TREATMENT PLANT: SEDIMENT AND ECOLOGICAL MONITORING 2025



**COAST &
CATCHMENT**

ENVIRONMENTAL CONSULTANTS

WARKWORTH WASTEWATER TREATMENT PLANT: SEDIMENT AND ECOLOGICAL MONITORING 2025

Carina Sim-Smith

Shane Kelly

April 2025

Client report for Watercare Services Ltd

Report Number: 2025-08

Disclaimer

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2 EXECUTIVE SUMMARY

Watercare Services Limited (Watercare) is required to monitor the ecological effects of discharging treated wastewater from the Warkworth Wastewater Treatment Plant (WWTP) to the upper Mahurangi Harbour. Coast and Catchment were therefore commissioned to conduct sediment quality and benthic macrofaunal sampling at three sites along the river (one reference site 400 m upstream of the discharge, an “impact” site 400 m downstream, and a remote reference site 1 km downstream of the discharge), and to carry out a visual riverbank inspection to check for the presence of nuisance macroalgae, in accordance with the revised 2021 ecological monitoring plan.

Monitoring originally began in 2018, but the revised 2021 monitoring plan included new requirements for benthic macrofaunal monitoring, replicated sediment sampling, and the monitoring of nuisance macroalgae to cover the riverbank between Warkworth and where the river broadens below Vialis Landing. This was the third survey carried out under the revised plan, with sampling carried out in February 2025.

The results show that sediment characteristics have varied considerably since monitoring began in 2018. Key changes include substantial increases in sediment mud content at all three monitoring sites between 2018 and 2020. This was followed by declines in sediment mud content at all sites between 2021 and 2023. Since 2024, mud content has increased again to a high of 89–91% in 2025.

Concentrations of total nitrogen, total phosphorus, total organic matter, and heavy metals have also fluctuated at all three sites, with no consistent patterns apart from substantial decreases in the concentrations of most sediment quality parameters in 2023, followed by increases in the following two years.

Mean values of total organic matter, total nitrogen and total phosphorus at all sites were indicative of ‘enriched or poor’ sediment quality in 2025. However, those thresholds are not formally recognised guidelines, so care needs to be taken in the interpretation of any exceedances.

Concentrations of arsenic at all sites exceeded the threshold effects level (TEL) guideline value in 2025, but were well below the ANZG (2018) default guideline value (DGV). It should be noted that arsenic concentrations at the Warkworth sites were similar to, or less than, the majority of sites monitored by Auckland Council in the Auckland Region, and the causes of elevated arsenic concentrations are likely to be natural.

Concentrations of copper at all sites also exceeded the TEL guideline value in 2025, but were well below the ANZG (2018) DGV. Elevated copper concentrations are most likely associated with copper-based antifoulants from vessels berthed on surrounding jetties and using nearby boat yard facilities. Concentrations of the other metal contaminants were relatively low, did not exceed guideline values, and were generally within ranges previously recorded.

The data gathered in 2025 showed that very low numbers of taxa were present at the sites and the overall benthic community was dominated by a few taxa, with 92% of specimens coming from three taxa: the small bivalve *Arthritica bifurca* (60%), a corophiid amphipod (24%), and the rag worm *Nicon aestuariensis* (8%). However, community composition varied amongst all sites and years. The most notable changes between 2024 and 2025 were:

- a large increase in the number of corophiid amphipods at all sites;
- a large decrease in the number of *A. bifurca* (following a large increase in 2024);
- a large decrease in the number of estuarine snails, *P. estuarinus*;

- a large increase in the number of mud crabs, *A. crassa*, at the 1000D site.

The monitoring suggests that sediment quality at the three monitoring sites has varied over time, with the greatest changes involving temporal variation in mud content. Sediment nutrient, total organic matter, and copper concentrations appear to be slightly elevated at the 400 m upstream and 400 m downstream sites. Arsenic concentrations also appear to be naturally elevated at all three monitoring sites, where they exceed TEL guideline values. Ecological patterns apparent in univariate and multivariate plots are consistent with variations in the dominance of a few, small, upper estuarine taxa, which display large fluctuations in abundance over relatively short periods and/or in response to river gradients. Overall, there is little evidence that the discharge from the WWTP is having a marked influence on any of these patterns.

3 BACKGROUND

Watercare Services Limited (Watercare) is required to monitor the ecological effects of discharging treated wastewater from the Warkworth Wastewater Treatment Plant (WWTP) to the upper Mahurangi Harbour. Up until 2021, monitoring was conducted in accordance with the 2018 Ecological Monitoring Plan (EMP; AECOM (2018)). While the approved 2018 EMP covered consent requirements, experience gained from three rounds of monitoring suggested that some of its methods and reporting requirements could be improved. In 2021, Watercare gained a new, short-term resource consent for the discharge from the WWTP and commissioned Coast and Catchment to review and update the 2018 EMP. Watercare sought an EMP that was: more informative; better integrated with other consents and monitoring being conducted; and used methods that were suited to the receiving environment and key environmental receptors. The approved 2021 EMP includes requirements for:

1. Annual sediment quality and benthic macrofaunal sampling at three sites (one site 400 m upstream of the discharge and two sites 400 m and 1 km downstream of the discharge).
2. An annual, summer riverbank survey to check for the presence of nuisance macroalgae blooms on open, intertidal mudflat areas along the Mahurangi River between the Warkworth boat ramp and the area where the river broadens below Vialis Landing.
3. The addition of chlorophyll-*a* analysis to the parameters measured in monthly water quality monitoring.
4. Monthly sampling of cultured Pacific oysters and adjoining seawater samples for the analysis for *Escherichia coli* (oysters) and faecal coliforms (seawater), from a sentinel sampling site on a Cowans Bay oyster farm.
5. An annual report that integrates and interprets the monitoring results and findings.

This interim report provides 2025 monitoring results for items 1 and 2 above.

4 METHODS

4.1 ECOLOGICAL AND SEDIMENT SAMPLING

Sampling was carried out on 24 February 2025, with three intertidal sites being sampled:

- A reference site approximately 400 m upstream of the discharge (400U);
- An “impact” site approximately 400 m downstream of the discharge (400D);
- A remote reference site approximately 1 km downstream of the discharge (1000D, Figure 1).

At each site, replicate samples were collected at 5 m intervals along two parallel lanes approximately 25 m in length and 3–5 m apart.

Ten cores (13 cm diameter × 15 cm deep) per site were collected for macrofaunal analyses. Each core was sieved to 0.5 mm in the field and preserved in isopropanol before being sent to an experienced benthic taxonomist for identification and enumeration.

Three, 2 cm deep sediment scoops were collected next to each macrofauna core and placed in one of three plastic bags to form three composite samples per site (each consisting of 10 sub-samples). The composite samples were thoroughly homogenised, placed on ice, and delivered chilled to the laboratory on the day of sampling. Composite samples were analysed for:

- grainsize by wet sieving (7 size fractions);
- total organic matter (TOM) and total organic carbon (TOC);
- total nitrogen (TN);
- total recoverable phosphorus (TP);
- total recoverable arsenic, cadmium, chromium, copper, lead, nickel, and zinc (trace levels).

In situ redox readings (n=3) were also obtained from each site using a Thermo Scientific™ Orion Star™ A324 multiparameter meter with a Sureflow Orion 9678BNWF Redox/ORP electrode. For comparability, the meter was calibrated to a standard hydrogen electrode (Eh) and values were recorded in mV.

4.2 NUISANCE MACROALGAE

A visual river survey was carried out at low tide on 24 February 2025 to check for the presence of nuisance macroalgae blooms on open, intertidal mudflat areas along the Mahurangi River between the Warkworth boat ramp and the area where the river broadens below Vialis Landing. The survey involved making observations and taking representative photos of the riverbanks while slowly motoring along the Mahurangi River channel.

Figure 1. Sample sites and discharge location.

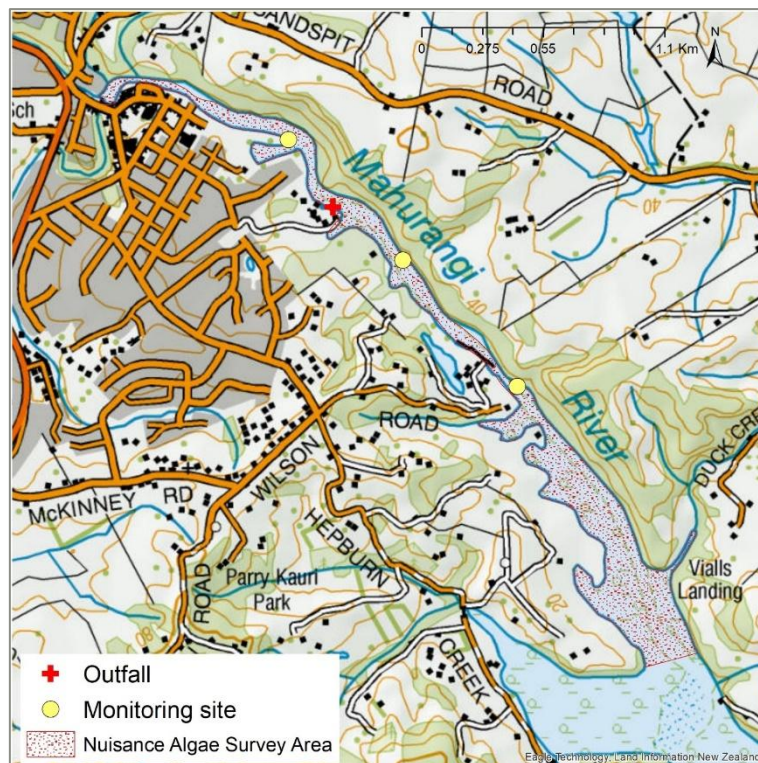
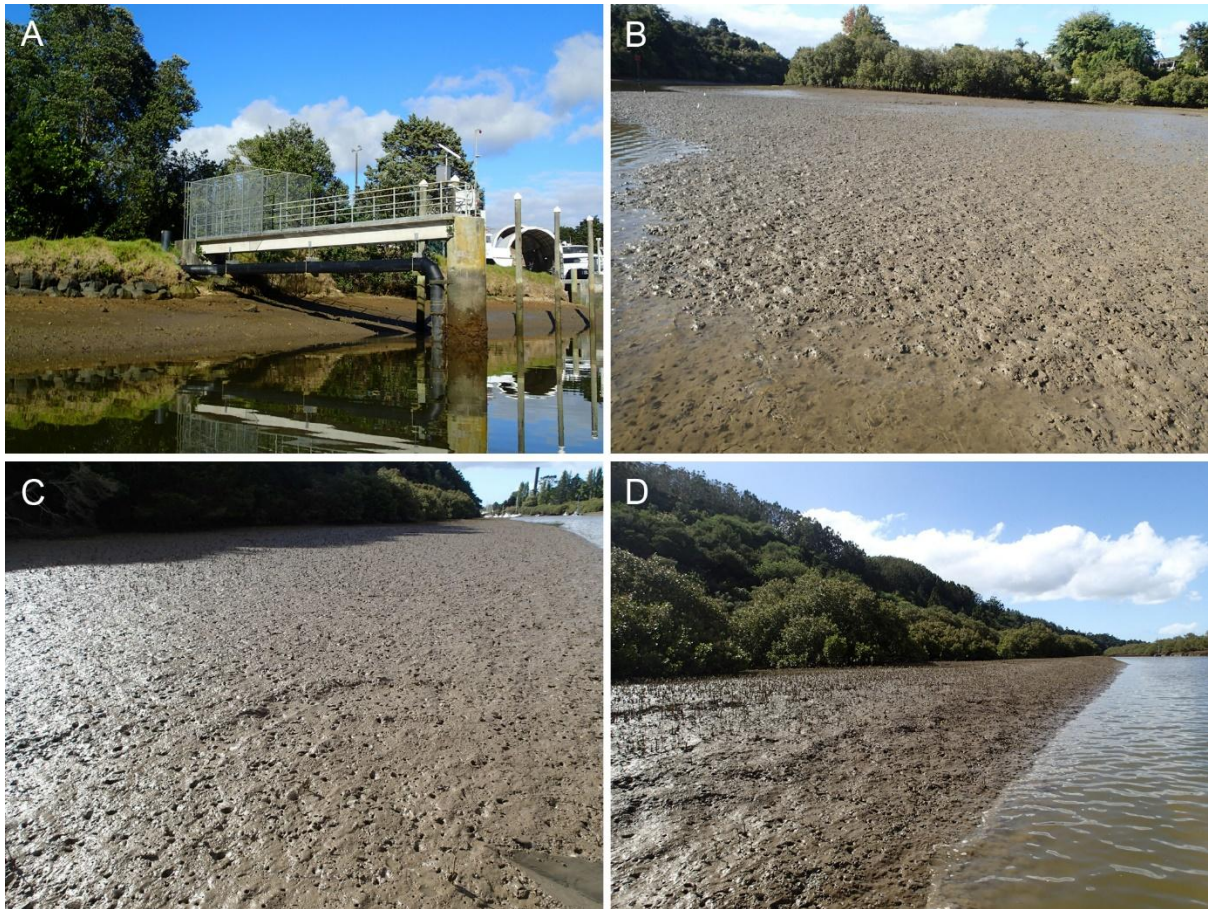


Figure 2. Site photos: A) outfall (not monitored); B) 400 m upstream site; C) 400 m downstream site; and D) 1 km downstream site.



4.3 DATA ANALYSIS

4.3.1 SEDIMENT QUALITY

Sediment quality data were analysed in the following manner:

1. Data were plotted and visually assessed for trends and patterns;
2. Heavy metals data were compared to the Threshold Effects Level (TEL) guidelines commonly used by Auckland Council, and the ANZG (2018) low-level default guideline values (DGVs) (see Table 1).
3. Principal Component Analysis (PCA) of normalised sediment quality data (mud, nutrients, and metals) was used to examine overall physico-chemical differences in sediment quality among sites and discriminate key drivers for those differences.

Table 1: Commonly used sediment quality guidelines. TEL and DVG guidelines are referred to in this report.

Metal/Metalloid	Guideline value (mg/kg)					
	Macdonald <i>et al.</i> (1996)		Long & Morgan (1990)		ANZG (2018)	
	TEL	PEL	ERL	ERM	DGV	DGV-High
Arsenic	7.2	41.6	8.2	70	20	70
Cadmium	0.68	1.2	1.2	9.6	1.5	10
Chromium	52	160	81	370	80	370
Copper	18.7	108	34	270	65	270
Lead	30.2	112	47	218	50	220
Nickel	15.9	43	21	52	21	52
Zinc	124	271	150	410	200	410

4.3.2 BENTHIC ECOLOGY

Ecological data were analysed using the following indices:

- number of taxa;
- total counts of individuals;
- Pielou's evenness; and,
- Shannon's diversity.

Shannon diversity (or Shannon entropy – denoted H') takes into account both the number of species (or taxa) and how evenly individuals are spread among those species (or taxa). It is a measure of the uncertainty associated with correctly predicting which species a randomly selected specimen belongs to. That uncertainty decreases as the number of taxa and evenness decreases. If nearly all individuals belong to a single species, Shannon diversity approaches zero (it equals zero if there is only one species). Conversely, Shannon diversity increases as the number of taxa and evenness increases, with the maximum value (H'_{max}) achieved when each taxa has the same number of individuals (H'_{max} equals the log of the number of species). Shannon diversity values are sensitive to sampling effort and the logarithm base used. Therefore, results should only be compared among studies with similar sampling designs and for results using the same logarithm base (Clarke & Warwick, 2001; Pla *et al.*, 2012).

Pielou's evenness (J') is a measure of how even (i.e., similar) the abundances of individual species are at a site. Low index values indicate that the site is dominated by a single, or a few, species which occur in high abundance(s). The remaining species occur in relatively low abundances. In contrast, high index values indicate that the abundances of all species are similar. Pielou's evenness is derived from the Shannon diversity value of a sample divided by the maximum possible Shannon diversity value of that sample (i.e. $J' = H'/H'_{max}$) (Clarke & Warwick, 2001; Pla *et al.*, 2012).

One-way ANOVAs were used to test for statistical differences in the ecological indicators among the sites, with post-hoc comparisons made using Tukey honestly significant differences. Assumptions of normality and equal variance were checked using normal probability plots of residuals, and scatterplots of predicted and observed residuals.

Differences in community composition were investigated with multivariate analyses, using Primer-E (v6). An initial analysis was carried out using non-metric multidimensional scaling (MDS) of square-root transformed count data using Bray Curtis similarity. This method provides an easily interpretable representation of community data. MDS plots provide a representation of overall

community composition, with points plotted close together being more similar than those plotted further apart. MDS analysis was complemented with hierarchical clustering and similarity profile analysis. Those methods allow similarity (and dissimilarity) among samples to be estimated and presented in dendrograms, with statistically significant clusters identified.

Finally, the similarity percentage routine (SIMPER) was used to determine the contributions of individual taxa to the average dissimilarity between clusters (using an 80% cut-off for the cumulative contributions of individual taxa).

5 RESULTS

5.1 SEDIMENT QUALITY

5.1.1 2025

Sediment quality analyses for 2025 show that:

- All three sites had a similar sediment texture with a very high mud content (89–91%) and almost no gravel-sized (>2 mm) pieces ($\leq 0.08\%$) (Figure 6A & Figure 6).
- TOM and TOC concentrations were high, with TOC at all sites indicative of ‘enriched or poor’ sediment conditions (Robertson & Stevens, 2008; Robertson *et al.*, 2016; Forrest *et al.*, 2023). Total organic carbon concentrations were slightly lower at the 1000D site than at the other two sites (Figure 3B–C).
- Total nitrogen concentrations at all sites were similar (0.24–0.25%) and were indicative of ‘enriched or poor’ sediment conditions (Figure 3D; Robertson & Stevens, 2008; Robertson *et al.*, 2016; Forrest *et al.*, 2023).
- Total phosphorus concentrations decreased within increasing distance downstream (Figure 3E). Concentrations at all sites were indicative of ‘enriched’ sediment conditions (Robertson & Stevens, 2008).
- Redox potential readings were highly variable but showed a decreasing trend downriver. All mean values were >100 mV, which is in the ‘Very Good’ category (Figure 3F; Robertson *et al.*, 2016).
- Arsenic concentrations exceeded the TEL guideline value, but were well below the ANZG (2018) DGV of 20 mg/kg (Table 1 & Figure 4A). Arsenic concentrations increased with increasing distance downriver. Concentrations at the Warkworth sites were similar to the majority of sites monitored by Auckland Council around the Auckland Region (Figure 5).
- Copper concentrations also exceeded the TEL guideline value, but were well below the ANZG (2018) DGV of 65 mg/kg (Table 1 & Figure 4D). Copper concentrations were slightly elevated compared to other monitored sites around the Auckland region (Figure 5). Copper concentrations decreased with increasing distance downriver, which is likely due to the presence of boatyards and vessels with copper-based antifouling near Warkworth.
- None of the other metal/metalloids exceeded their TEL guidelines (Figure 4). Concentrations of the other key metal contaminants (lead and zinc) were relatively low compared to concentrations at other sites around the Auckland Region (Figure 5).

- None of the sediment quality parameters showed substantially higher concentrations at the 400D site compared to the two reference sites, indicating that there is no apparent effect of the wastewater discharge on the monitored sediment quality parameters.

Figure 3. Mean \pm S.E.: A) mud; B) total organic matter (TOM); C) total organic carbon (TOC); D) total recoverable phosphorus; E) total nitrogen; and F; redox potential in composite samples obtained from sites 400 m upstream and downstream, and 1 km downstream of the Warkworth WWTP in 2025.

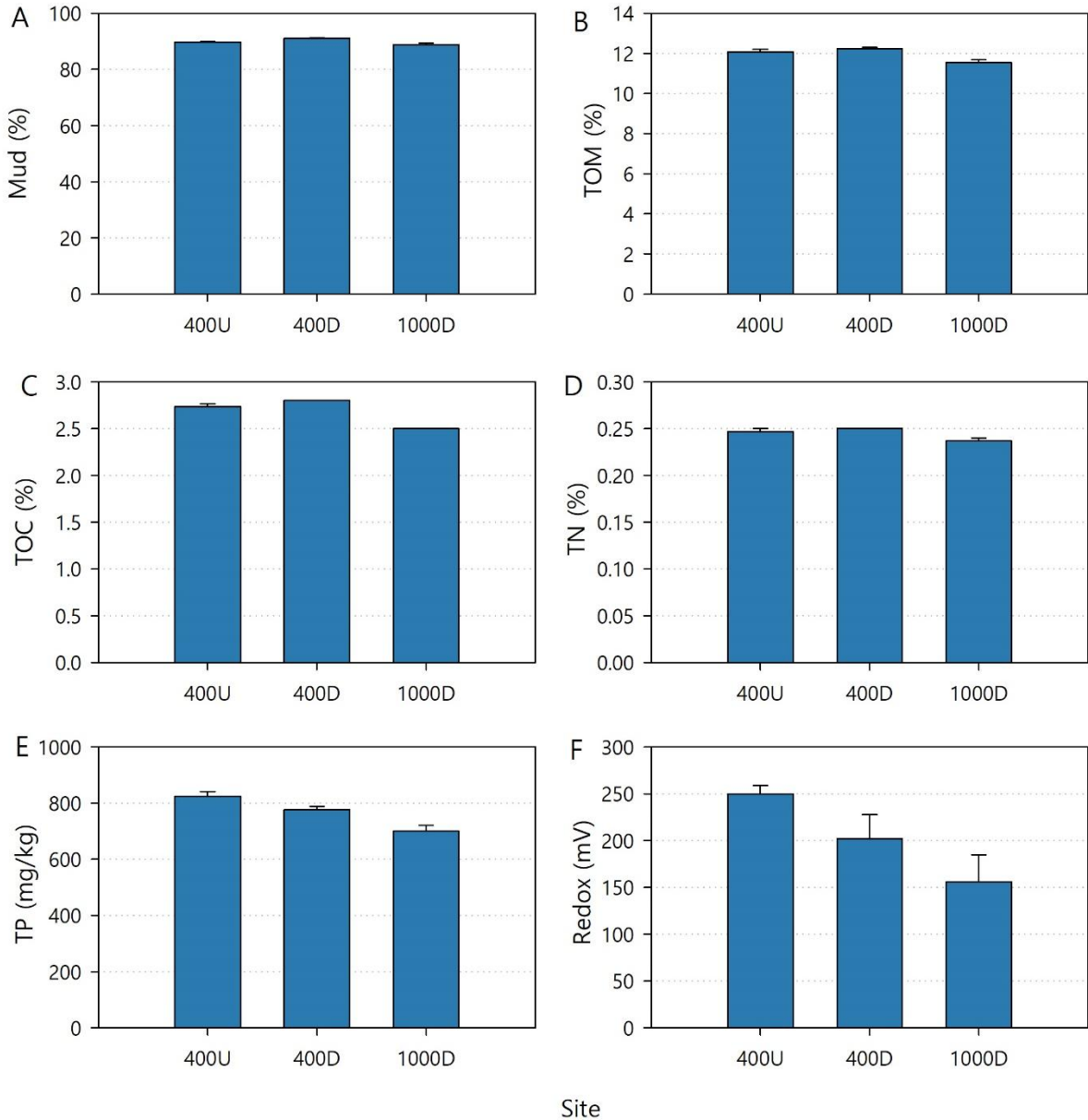


Figure 4. Mean \pm S.E. total recoverable: A) arsenic; B) cadmium; C) chromium; D) copper; E) lead; F) nickel; and G) zinc in composite samples obtained from sites 400 m upstream and downstream, and 1 km downstream of the Warkworth WWTP in 2025. Threshold effect level (TEL) guideline values are provided for reference (orange line).

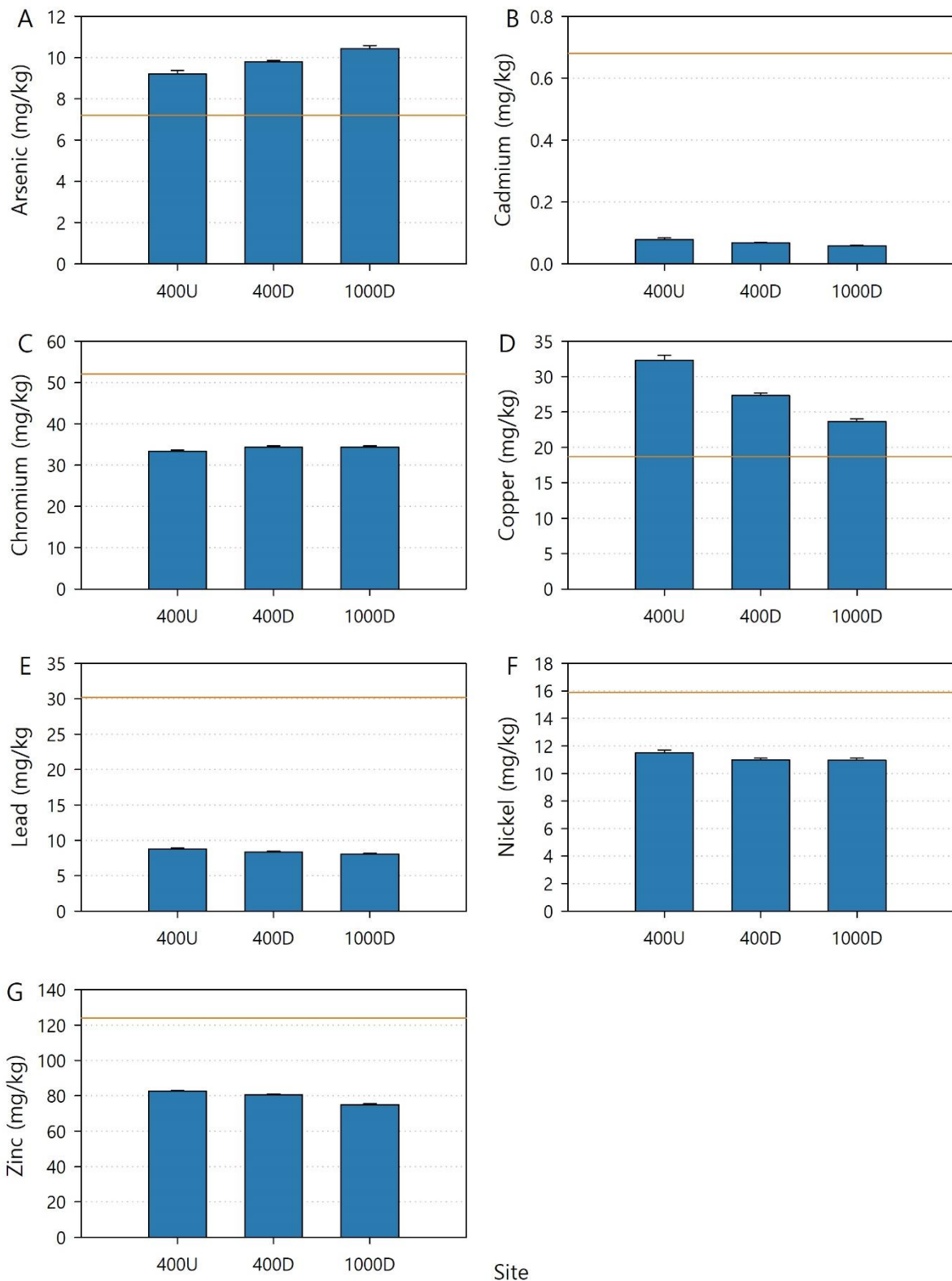
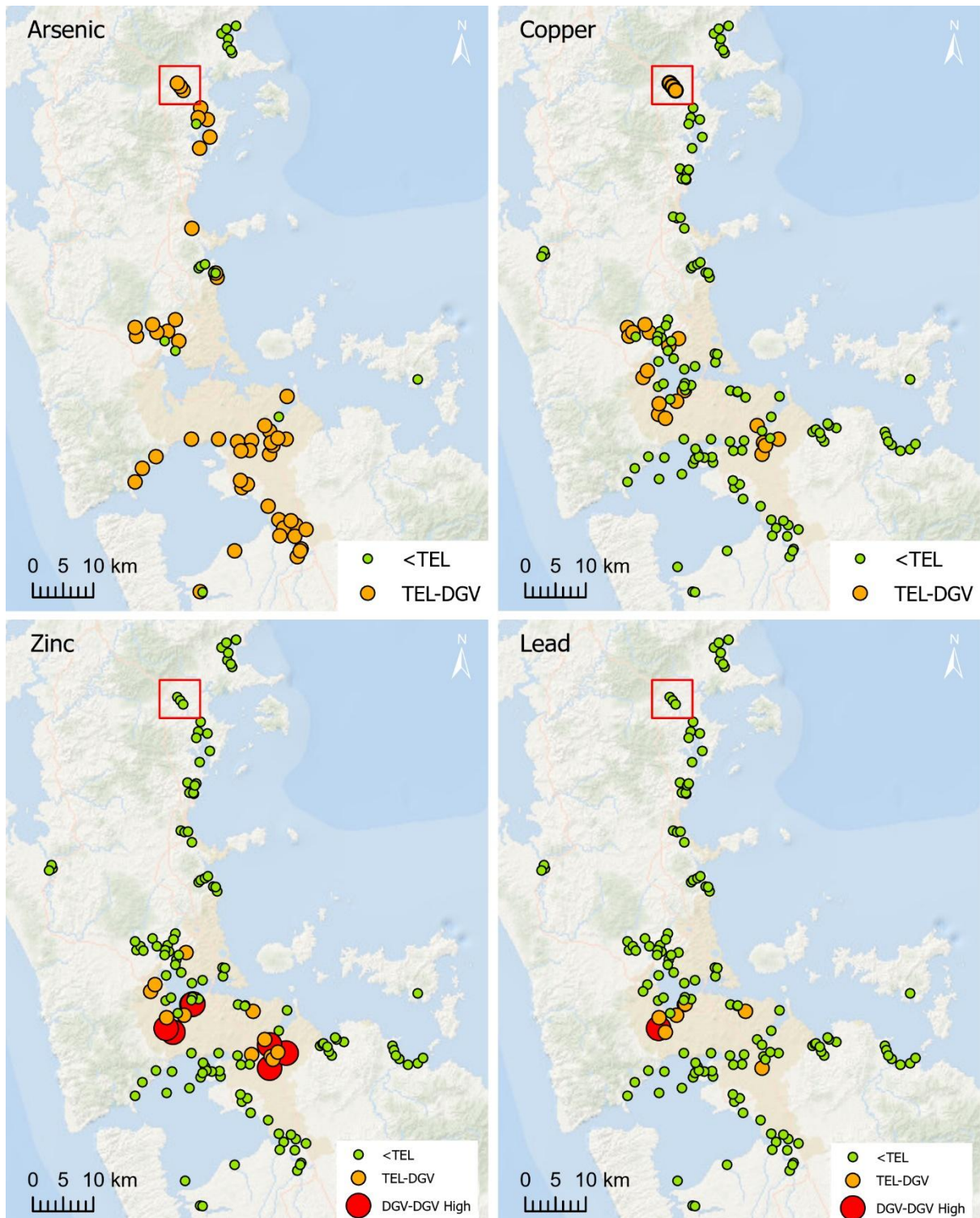


Figure 5: Bubble plot of A) arsenic B) copper, C) zinc and D) lead concentrations from the 2025 Warkworth WWTP monitoring sites (in red box), and from Auckland Council 2012–2022 sediment monitoring (data from Auckland Council). Bubble colours show concentrations: \leq TEL (green); TEL to DVG (orange); DVG to DGV-High (red).



5.1.2 CHANGES OVER TIME

Sediment texture has varied considerably over time. In 2018, sediments from the three sites comprised 39–48% sand and 52–61% mud. Sediment mud content increased to 87–90% by 2020 and remained around those levels in 2021. Mud percentages subsequently declined between 2021 and 2023 to between 64% and 82%, then increased to 89–91% in 2025 (Figure 6).

Similar patterns have been observed in sediment concentrations of TOM, TN, TP, and arsenic, with high concentrations between 2018 and 2021, declining markedly in 2023, and then increasing in 2024 and 2025 to around 2021 levels (Figure 7 & Figure 8). The magnitude of those changes was greatest at the 400U and 1000D sites. Many of the metals (chromium, copper, nickel and zinc) also showed substantial reductions in sediment concentrations in 2023 at the 400U and 1000D sites, but no or less, reduction at the 400D site.

There was no apparent trend in redox potential values.

Many of the parameters were highly correlated with one another. Zinc concentrations were highly correlated with TOM, TP, TN, arsenic, copper and lead (0.83–0.94). Total nitrogen concentrations were highly correlated with arsenic, copper, and lead (0.85–0.91), and TP and TN were highly correlated (0.91).

A PCA analysis of normalised TP, TN, TOM, mud, very fine sand, and key metals (arsenic, copper, lead and zinc) indicated that PC1 axis explained 80.1% of variation in sites and years, with the PC2 axis explaining a further 9.5% of variation (Figure 9). PC1 largely reflected variation in TP, TN, arsenic, copper, zinc and very fine sand, and, to a lesser extent, lead and TOM. PC2 reflected variation in mud, and, to a lesser extent, lead and TOM. Patterns of note include:

- Sediment quality results from all sites overlapped, but those from the 400U and 1000D sites were more variable than those at the 400D site;
- Year-to-year variation at the 400D site remained within the bounds of variation displayed by the other two sites.
- Results from 2018 were markedly different from those obtained in other years, largely reflecting the lower mud concentrations in that year.

Figure 6: Variation in sediment texture at sites 400 m upstream and downstream, and 1 km downstream of the Warkworth WWTP between 2018 and 2025.

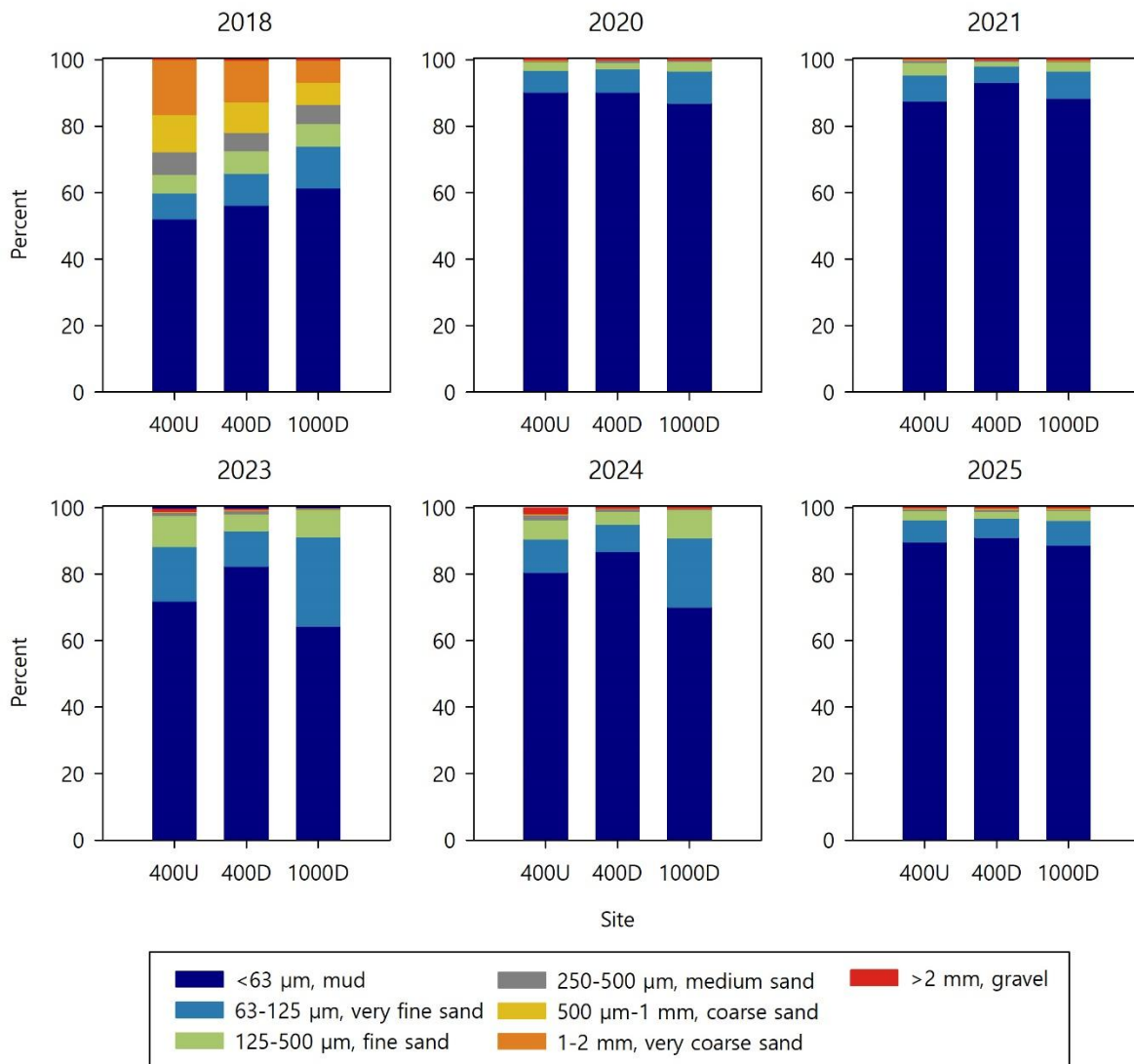


Figure 7. Mean concentrations or percentages of: A) total organic matter; B) total organic carbon (first measured in 2023); C) total nitrogen; D) total recoverable phosphorus; and E) redox potential at sites 400 m upstream and downstream, and 1 km downstream of the Warkworth WWTP between 2018 and 2025. Note that single composite samples were obtained between 2018 and 2021, so estimates of sample variation (\pm S.E.) could not be calculated for those years except for redox potential.

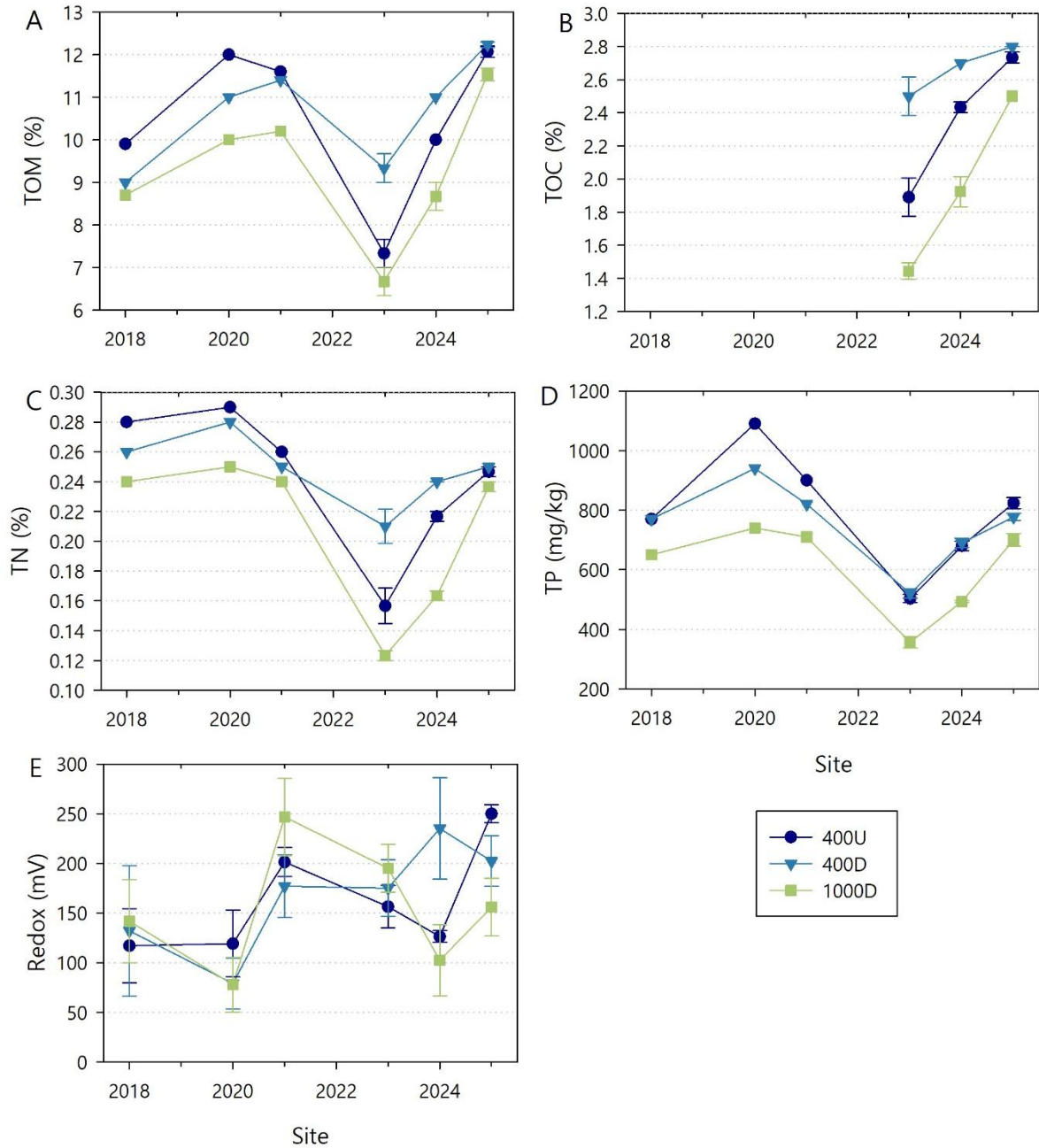


Figure 8. Mean total recoverable: A) arsenic; B) cadmium; C) chromium; D) copper; E) lead; F) nickel; and, G) zinc in composite samples obtained from sites 400 m upstream and downstream, and 1 km downstream of the Warkworth WWTP between 2018 and 2025. Threshold effect level (TEL) guideline values are provided for reference (orange line). Note that single composite samples were obtained between 2018 and 2021, so estimates of sample variation (\pm S.E.) could not be calculated for those years.

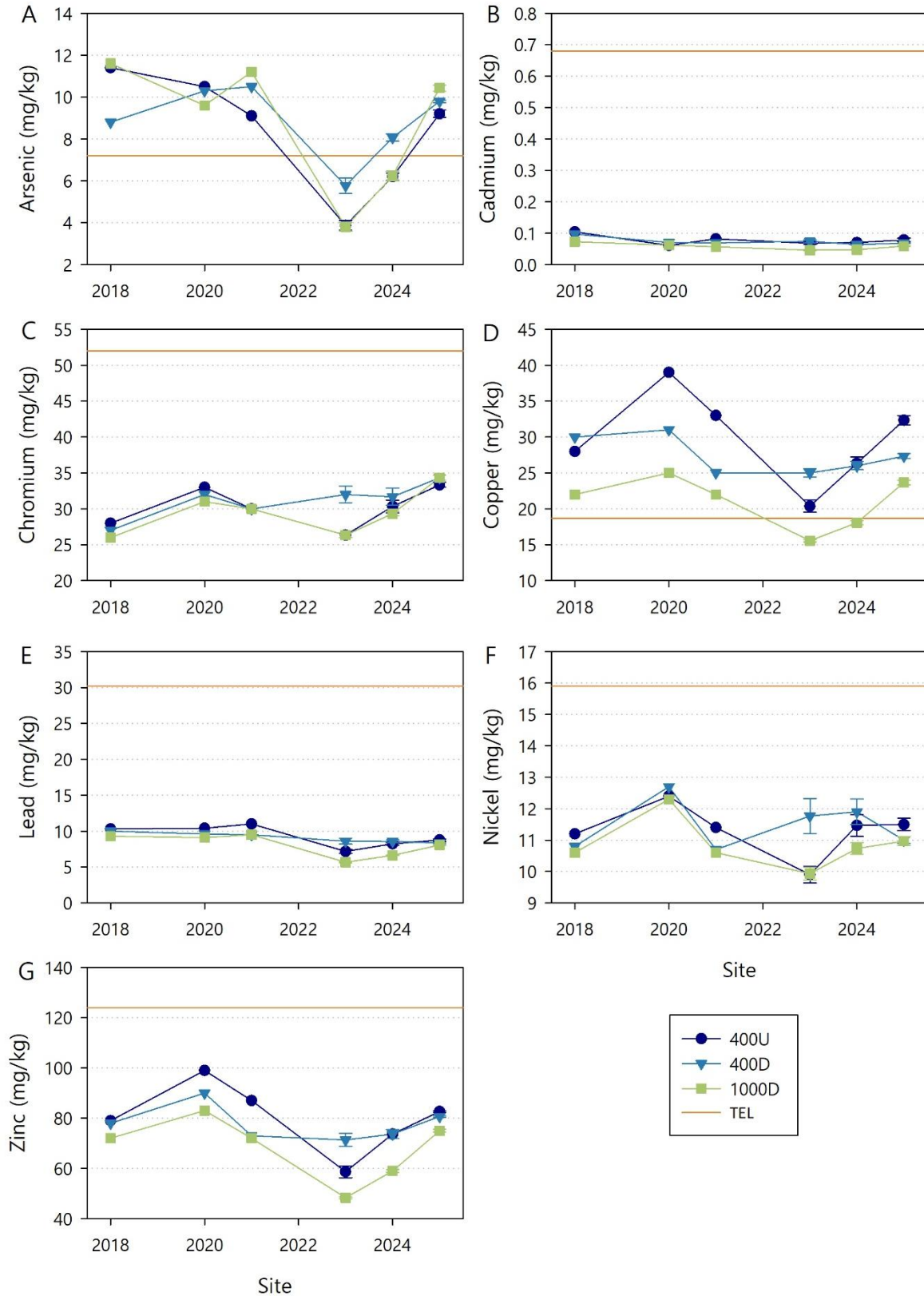
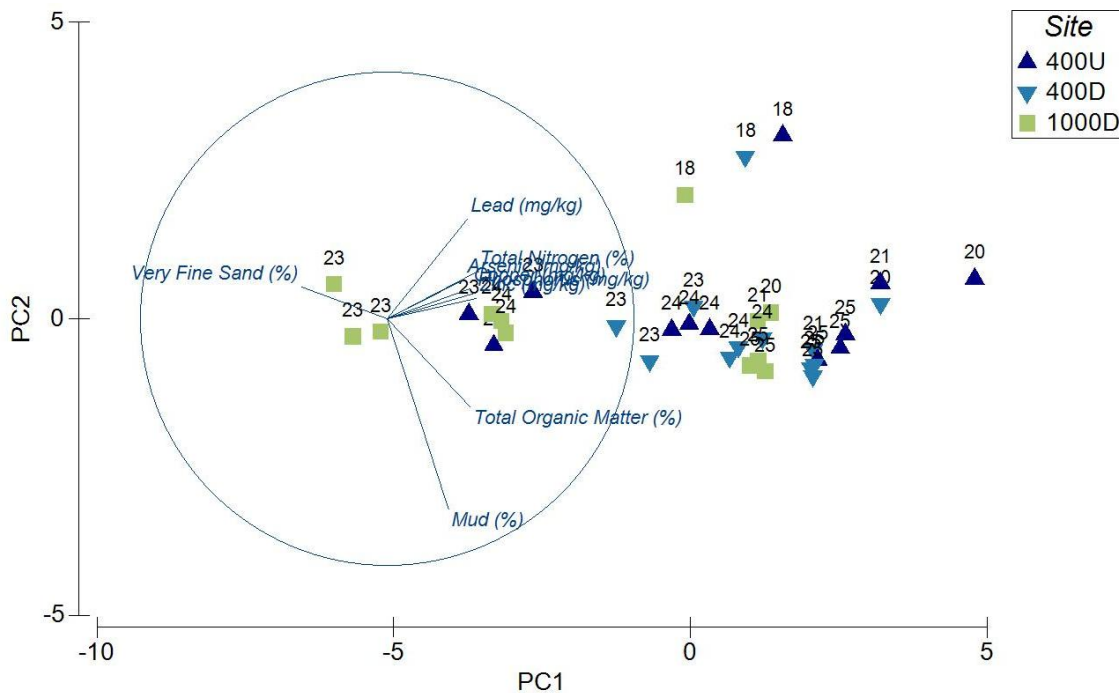


Figure 9: Principal component analysis (PCA) of normalised sediment quality data* with individual results identified using labels for year and coloured points for site. Vectors indicate the direction and relative strength of increases in the normalised value of each variable (e.g., mud content increases from top to bottom, and very fine sand increases from right to left).



* Total phosphorus, total nitrogen, total organic matter, mud, very fine sand, arsenic, copper, lead, and zinc concentrations.

5.2 BENTHIC ECOLOGY

5.2.1 2025

Benthic macrofaunal diversity in 2025 was characterised by very low numbers of taxa and high numbers of individuals in core samples, with a total of 19 taxa and 1994 individuals collected across the three sites. Three taxa comprised 92% of the total number of individuals: the small bivalve *Arthritica bifurca* (60%), a corophiid amphipod (24%), and the rag worm *Nicon aestuariensis* (8%).¹ Total counts of the remaining taxa obtained in 2025 ranged from 1 to 39 individuals.

The mean number of individuals per core ranged from 65–70 for the three sites (Figure 10A), the mean number of taxa per core ranged from 5–6 (Figure 10B), mean Shannon Diversity ranged from 0.76–0.95 (Figure 10C), and mean Pielou's Evenness ranged from 0.49–0.55 (Figure 10D). There were no significant differences ($p > 0.05$) among sites for all four indices. Both Shannon Diversity and Pielou's Evenness were low for all sites indicating that the sites were dominated by a few taxa.

A non-metric multidimensional scaling plot (nMDS) and cluster analysis showed that benthic communities at sites 400U and 400D were similar to one another, but could not be completely separated from 1000D (Figure 11 & Figure 12). Similarity percentages analysis indicated that the taxa with the greatest influence on dissimilarities between community clusters were: the small

¹ Note that Nereidae (juvenile) which made up 2.5% of all individuals are also likely to be *N. aestuariensis*, but the specimens could not be confidently identified to that taxonomic level.

bivalve *A. bifurca* and corophiid amphipods. The polychaetes *N. aestuariensis*, juvenile nerids, and *Polydora* sp., and the mud crab *A. crassa* had a minor influence on community differences between some clusters (Figure 12).

Figure 10. Mean \pm S.E. for the A) number of individuals per core; B) number of taxa per core; C) Shannon Diversity; and, D) Pielou's Evenness for the monitored sites.

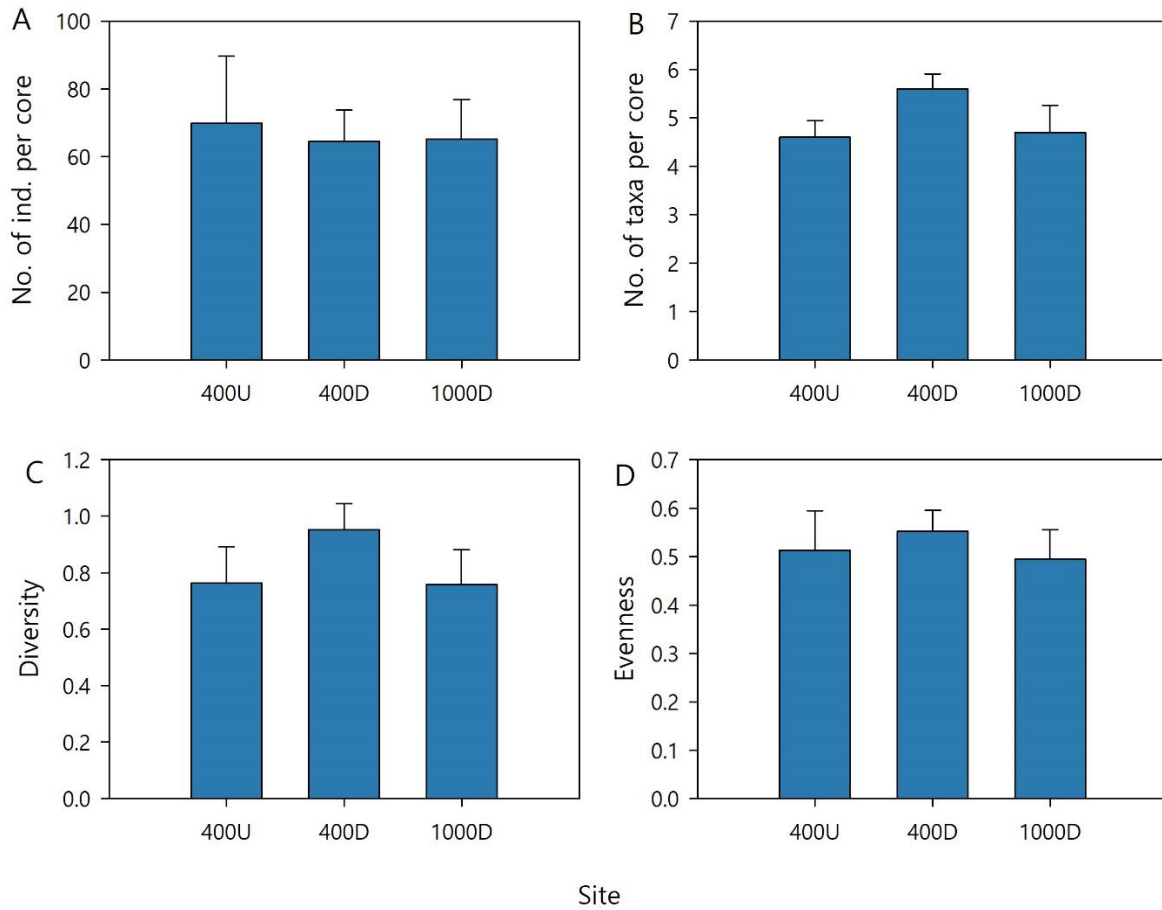


Figure 11. nMDS plot of the benthic community at the three monitoring sites overlaid with the results of the cluster analysis.

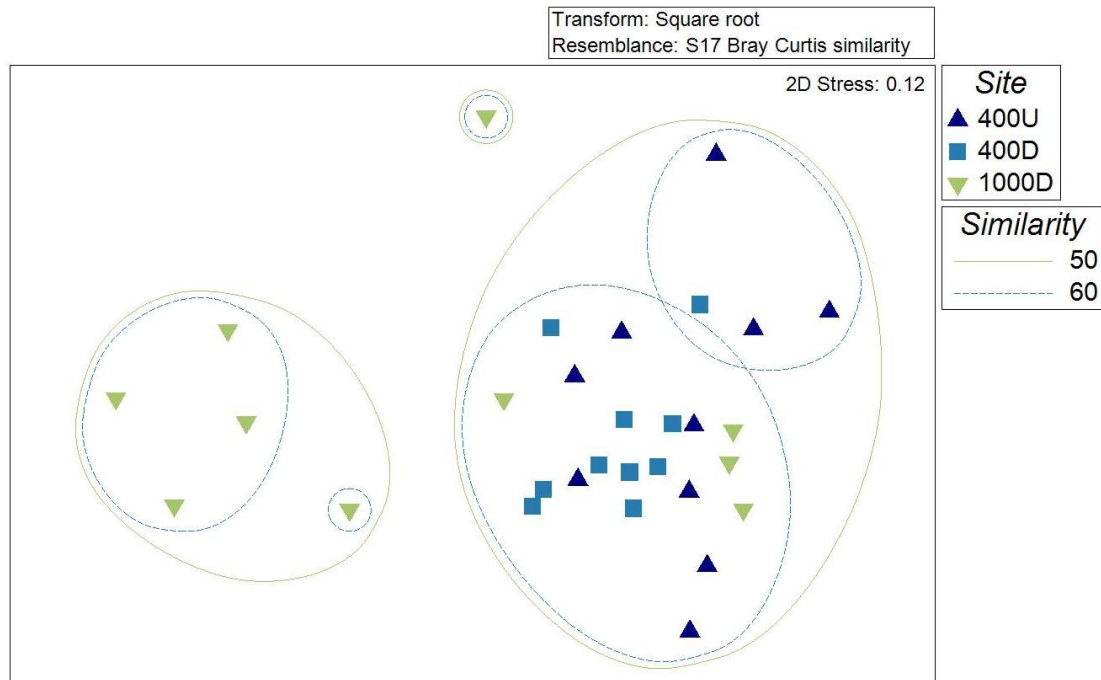
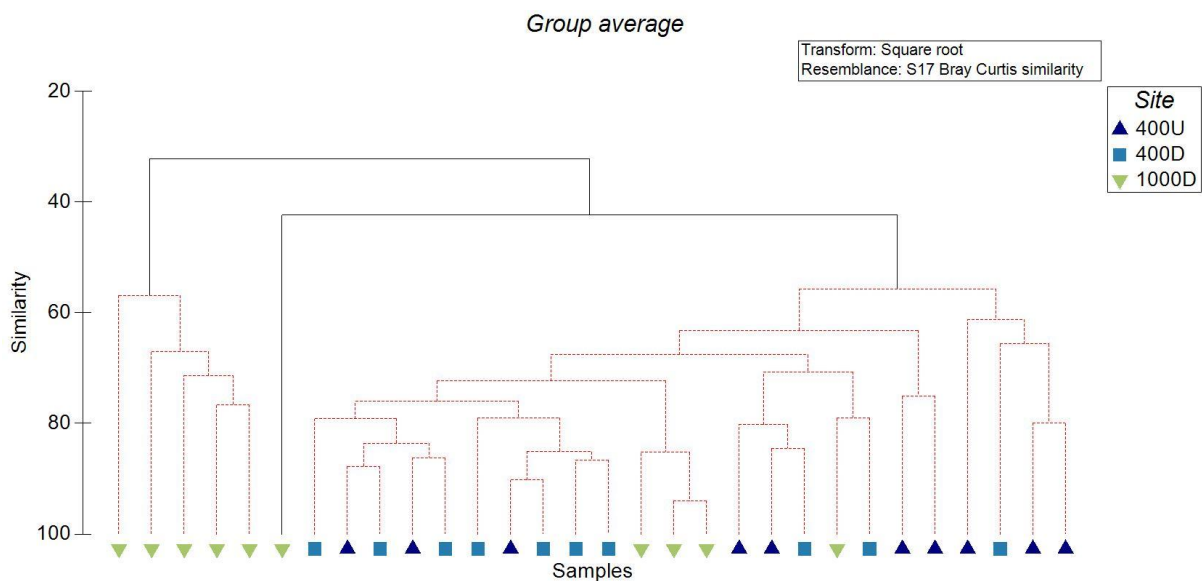


Figure 12. Cluster analysis of the benthic communities at the three monitoring sites. Replicates that are separated by black lines are significantly different.



5.2.2 CHANGES OVER TIME

The total number of individuals varied among sites in 2023 and 2024, with higher abundances at site 400D. However, in 2025 abundance was similar among sites (Figure 13A). The total number of taxa was similar across sites and years (Figure 13B). Diversity and Evenness were generally comparable amongst sites and years except for the two downstream sites in 2024, which had very low scores (Figure 13C–D).

The contributions that each taxa made to the total counts of individuals varied from site to site and between years (Figure 14). Key differences were:

- Numbers of *A. bifurca* were much higher in 2024, particularly at the 400D site.
- Numbers of the corophiid amphipods declined down the river in 2024 and 2025, but not in 2023. Their abundance was also higher in 2025.
- Numbers of estuarine snails (*P. estuarinus*) declined down the river in 2023 and 2024. Only one estuarine snail was collected in 2025.
- Numbers of *N. aestuariensis* were slightly higher at 400D than the other two sites. Numbers have remained relatively constant over time.
- Numbers of mud crabs (*Austrohelice crassa*) increased down the river in all years.

Figure 13. Mean \pm S.E. A) number of individuals; B) number of taxa; C) Shannon Diversity; and D) Pielou's Evenness at the three sites between 2023 and 2025.

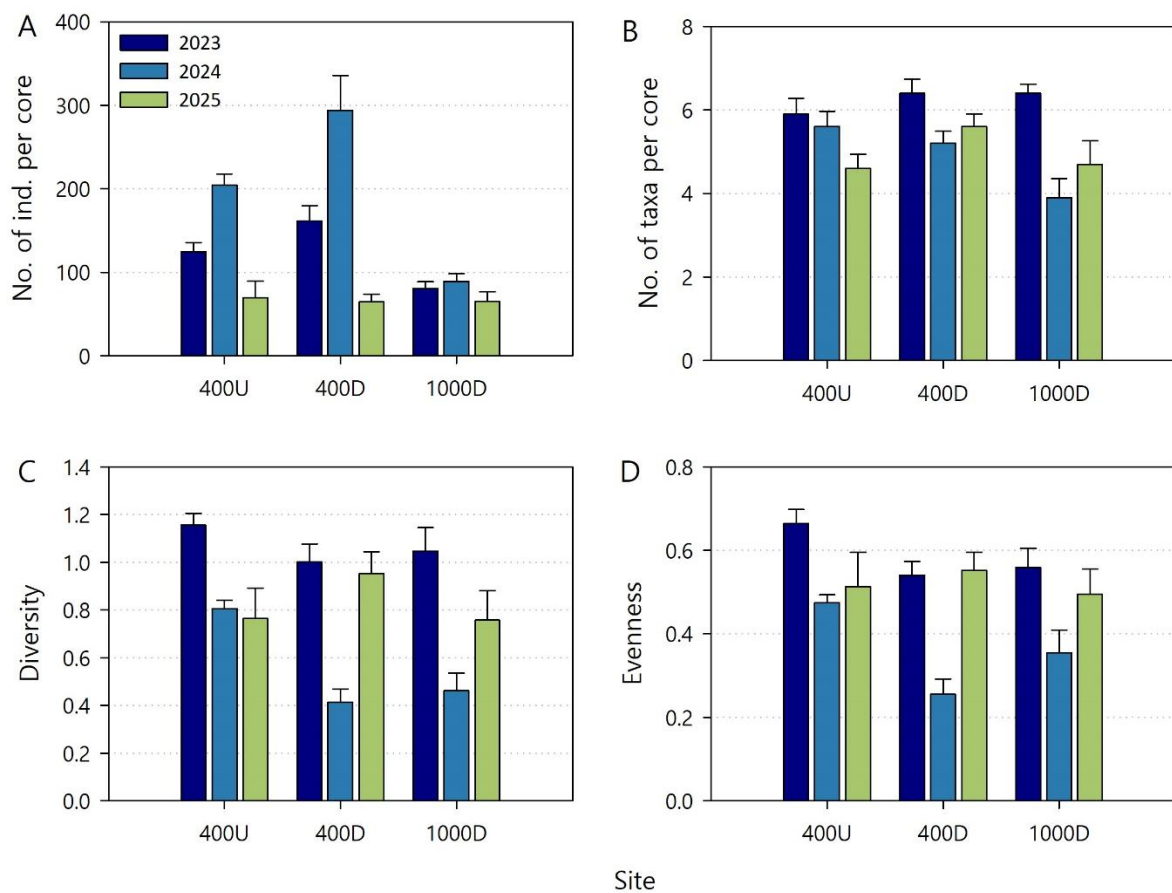
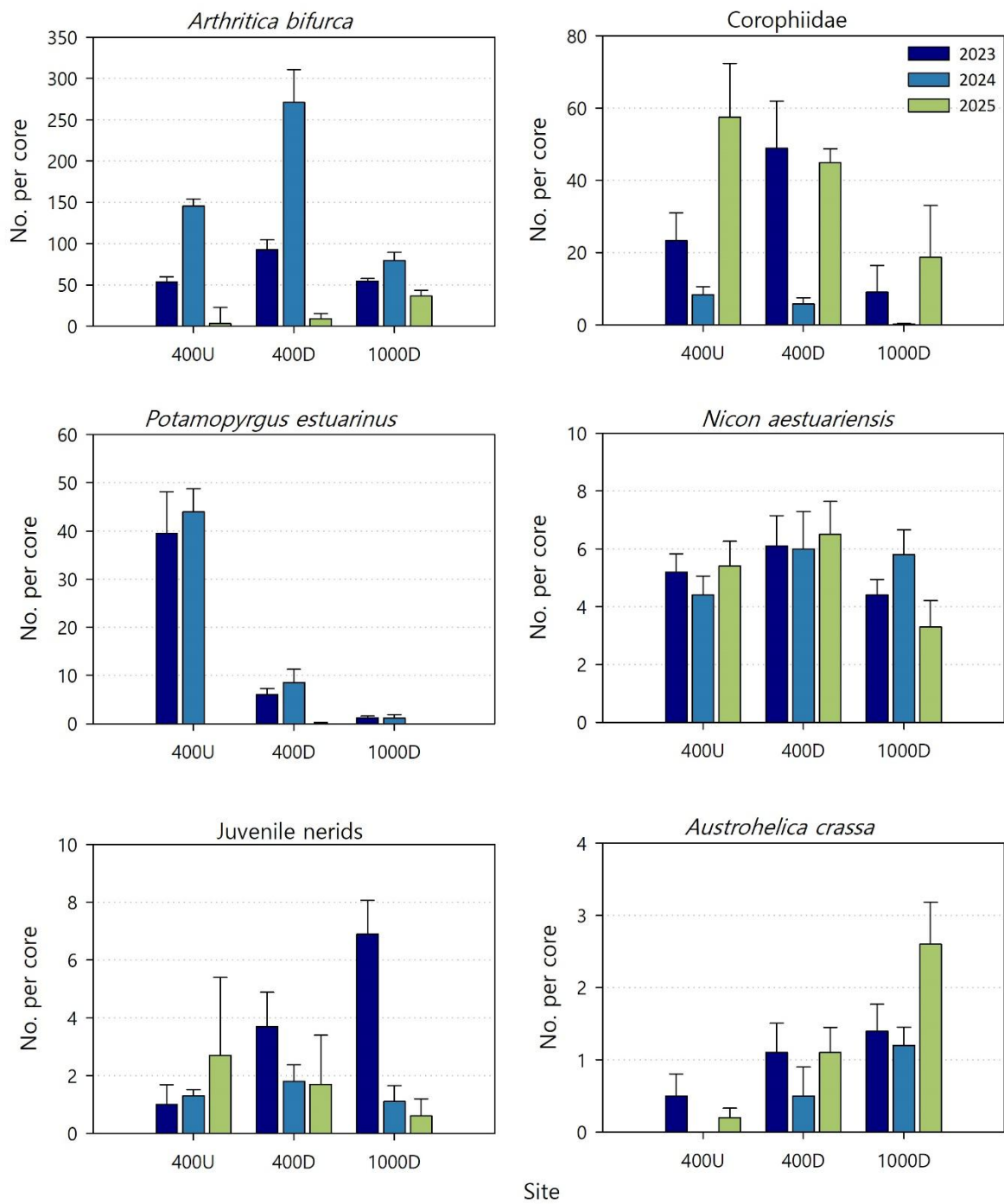


Figure 14. Mean \pm S.E. of the six most abundant species collected at the three sites between 2023 and 2025.



5.3 NUISANCE MACROALGAE

No nuisance macroalgae were observed during the visual riverbank survey conducted at low tide on 24 February 2025 between the Warkworth boat ramp and the area where the river broadens below Vialis Landing. Example photos taken of the river and its banks are provided in Figure 15.

Figure 15: Examples of photos taken of Mahurangi riverbank, during the February 2025 riverbank inspection to check for the presence of nuisance macroalgae. Images from top to bottom are from the upper to lower river.



The Warkworth WWTP outfall discharges into a narrow tidal creek in an upper-estuarine river system. Other activities with the potential to affect sediment quality and ecology in the vicinity of the treated wastewater discharge include sediment inputs from surrounding rural landuses and earthworks sites, contaminant inputs from surrounding boat yards and small marinas, and stormwater runoff from diffuse urban sources. Tidal creeks are also naturally subject to large fluctuations in salinity, sediment trapping, erosion, and high sediment fluxes. It is therefore unsurprising that sediments upstream and downstream of the discharge are very muddy with slightly elevated concentrations of some contaminants.

Sediment characteristics have varied considerably since monitoring began in 2018. Key changes include substantial increases in sediment mud content at all three monitoring sites between 2018 and 2020, and an associated reduction in the sand fractions. This was followed by declines in sediment mud content, with concomitant increases in fine and very fine sand at all sites between 2021 and 2023. Since 2024, mud content has increased again to a high of 89–91% in 2025.

Concentrations of TN, TP, TOM, and heavy metals have also fluctuated at all three sites, with no consistent patterns apart from substantial decreases in the concentrations of most sediment quality parameters in 2023, followed by increases in the following two years. Many of the sediment quality parameters were highly correlated.

Mean values of TOM, TN and TP at all sites were indicative of ‘enriched or poor’ sediment quality in 2025 (Robertson & Stevens, 2008; Robertson *et al.*, 2016; Forrest *et al.*, 2023). However, those thresholds are not formally recognised guidelines, so care needs to be taken in the interpretation of any exceedances.

Concentrations of arsenic at all sites exceeded the TEL guideline value in 2025, but were well below the ANZG (2018) DGV. It should be noted that arsenic concentrations at the Warkworth sites were similar to, or less than, the majority of sites monitored by Auckland Council in the Auckland Region. Arsenic concentrations commonly exceed the TEL guideline in Auckland’s marine sediments (and elsewhere). For instance, 22 of Auckland Council’s 27 State of the Environment (SoE) monitoring sites had concentrations above the guideline in 2010, with some of the highest concentrations being recorded at the “cleanest”, non-urbanised sites (Mills *et al.*, 2012). The occurrence of elevated arsenic concentrations at ‘clean’ sites suggests that the causes could be natural.

Concentrations of copper at all sites also exceeded the TEL guideline value in 2025, but were well below the ANZG (2018) DGV. Elevated copper concentrations are most likely associated with copper-based antifoulants from vessels berthed on surrounding jetties and using nearby boat yard facilities. Concentrations of the other metal contaminants were relatively low, did not exceed guideline values, and were generally within ranges previously recorded.

The data gathered in 2025 showed that very low numbers of taxa were present at the sites and the overall benthic community was dominated by a few taxa, with 92% of specimens coming from three taxa: the small bivalve *Arthritica bifurca* (60%), a corophiid amphipod (24%), and the rag worm *Nicon aestuariensis* (8%). However, community composition varied amongst all sites and years. The most notable changes between 2024 and 2025 were:

- a large increase in the number of corophiid amphipods at all sites;
- a large decrease in the number of *A. bifurca* (following a large increase in 2024);
- a large decrease in the number of estuarine snails, *P. estuarinus*;

- a large increase in the number of mud crabs, *A. crassa*, at the 1000D site.

The monitoring suggests that sediment quality at the three monitoring sites has varied over time, with the greatest changes involving temporal variation in mud content. Sediment nutrient, total organic matter and copper concentrations appear to be slightly elevated at the 400U and 400D sites. Arsenic concentrations also appear to be naturally elevated at all three monitoring sites, where they exceed TEL guideline values. Ecological patterns apparent in univariate and multivariate plots are consistent with variations in the dominance of a few, small, upper estuarine taxa, which display large fluctuations in abundance over relatively short periods and/or in response to river gradients. Overall, there is little evidence that the discharge from the WWTP is having a marked influence on any of these patterns, with no large increases in sediment quality parameters or substantial changes in the benthic community composition at the 400D site.

7 ACKNOWLEDGEMENTS

Many thanks to John McMeeking and Kayleb Himiona for their assistance with the field work. Sorting and taxonomic identification of the benthic infauna was conducted by Rod Asher, Biolive Ltd, sediment analyses were conducted by Hill Laboratories.

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R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Certificate of Analysis

Page 1 of 3

Client: Coast & Catchment Limited	Lab No: 3788081	SPV1
Contact: Shane Kelly	Date Received: 24-Feb-2025	
C/- Coast & Catchment Limited	Date Reported: 27-Mar-2025	
799 North Road	Quote No: 110199	
Beachlands	Order No:	
Clevedon 2582	Client Reference: Marine sediment	
	Add. Client Ref: Marine sediment (Sed),	
	Submitted By: Carina Sim-Smith	

Sample Type: Sediment

Sample Name:	400U-1 24-Feb-2025	400U-2 24-Feb-2025	400U-3 24-Feb-2025	400D-1 24-Feb-2025	400D-2 24-Feb-2025	
Lab Number:	3788081.1	3788081.2	3788081.3	3788081.4	3788081.5	
Individual Tests						
Organic Matter*	g/100g dry wt	12.2	12.2	11.8	12.1	12.3
Ash*	g/100g dry wt	88	88	88	88	88
Total Recoverable Phosphorus	mg/kg dry wt	810	800	860	760	800
Total Nitrogen*	g/100g dry wt	0.25	0.24	0.25	0.25	0.25
Total Organic Carbon*	g/100g dry wt	2.7	2.7	2.8	2.8	2.8
Heavy metal, trace level As,Cd,Cr,Cu,Ni,Pb,Zn						
Total Recoverable Arsenic	mg/kg dry wt	9.2	8.9	9.5	9.8	9.7
Total Recoverable Cadmium	mg/kg dry wt	0.072	0.074	0.089	0.069	0.067
Total Recoverable Chromium	mg/kg dry wt	33	34	33	34	34
Total Recoverable Copper	mg/kg dry wt	33	31	33	28	27
Total Recoverable Lead	mg/kg dry wt	8.8	8.5	9.0	8.5	8.1
Total Recoverable Nickel	mg/kg dry wt	11.7	11.1	11.7	11.2	10.8
Total Recoverable Zinc	mg/kg dry wt	83	82	83	81	81
7 Grain Sizes Profile as received*						
Dry Matter of Sieved Sample*	g/100g as rcvd	34	33	33	37	35
Fraction >= 2 mm*	g/100g dry wt	< 0.1	< 0.1	< 0.1	< 0.1	0.1
Fraction < 2 mm, >= 1 mm*	g/100g dry wt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fraction < 1 mm, >= 500 µm*	g/100g dry wt	0.2	0.2	0.2	0.2	0.2
Fraction < 500 µm, >= 250 µm*	g/100g dry wt	0.6	0.6	0.7	0.6	0.6
Fraction < 250 µm, >= 125 µm*	g/100g dry wt	2.7	2.6	2.9	2.2	2.1
Fraction < 125 µm, >= 63 µm*	g/100g dry wt	6.4	6.7	6.7	5.8	5.4
Fraction < 63 µm*	g/100g dry wt	90.0	89.9	89.4	91.1	91.4
Sample Name:	400D-3 24-Feb-2025	1000D-1 24-Feb-2025	1000D-2 24-Feb-2025	1000D-3 24-Feb-2025		
Lab Number:	3788081.6	3788081.7	3788081.8	3788081.9		
Individual Tests						
Organic Matter*	g/100g dry wt	12.3	11.3	11.5	11.8	
Ash*	g/100g dry wt	88	89	88	88	
Total Recoverable Phosphorus	mg/kg dry wt	770	740	690	670	
Total Nitrogen*	g/100g dry wt	0.25	0.24	0.23	0.24	
Total Organic Carbon*	g/100g dry wt	2.8	2.5	2.5	2.5	
Heavy metal, trace level As,Cd,Cr,Cu,Ni,Pb,Zn						
Total Recoverable Arsenic	mg/kg dry wt	9.9	10.4	10.2	10.7	
Total Recoverable Cadmium	mg/kg dry wt	0.069	0.060	0.058	0.059	
Total Recoverable Chromium	mg/kg dry wt	35	34	35	34	
Total Recoverable Copper	mg/kg dry wt	27	24	23	24	
Total Recoverable Lead	mg/kg dry wt	8.4	7.9	8.1	8.2	



This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised. The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked * or any comments and interpretations, which are not accredited.

Sample Type: Sediment					
Sample Name:	400D-3 24-Feb-2025	1000D-1 24-Feb-2025	1000D-2 24-Feb-2025	1000D-3 24-Feb-2025	
Lab Number:	3788081.6	3788081.7	3788081.8	3788081.9	
Heavy metal, trace level As,Cd,Cr,Cu,Ni,Pb,Zn					
Total Recoverable Nickel	mg/kg dry wt	11.0	11.0	10.7	11.2
Total Recoverable Zinc	mg/kg dry wt	80	75	76	74
7 Grain Sizes Profile as received*					
Dry Matter of Sieved Sample*	g/100g as rcvd	34	36	38	37
Fraction >/= 2 mm*	g/100g dry wt	< 0.1	< 0.1	0.1	< 0.1
Fraction < 2 mm, >/= 1 mm*	g/100g dry wt	< 0.1	0.1	0.1	< 0.1
Fraction < 1 mm, >/= 500 µm*	g/100g dry wt	0.2	0.2	0.2	0.1
Fraction < 500 µm, >/= 250 µm*	g/100g dry wt	0.7	0.5	0.5	0.3
Fraction < 250 µm, >/= 125 µm*	g/100g dry wt	2.4	3.0	3.2	2.6
Fraction < 125 µm, >/= 63 µm*	g/100g dry wt	5.8	7.9	7.7	6.9
Fraction < 63 µm*	g/100g dry wt	90.8	88.2	88.2	90.0

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Sediment			
Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-9
Environmental Solids Sample Preparation	Air dried at 35°C and sieved, <2mm fraction. Used for sample preparation May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-9
Organic Matter*	Calculation: 100 - Ash (dry wt).	0.04 g/100g dry wt	1-9
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	1-9
Ash*	Ignition in muffle furnace 550°C, 6hr, gravimetric. APHA 2540 G : Online Edition.	0.04 g/100g dry wt	1-9
Total Recoverable Phosphorus	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	40 mg/kg dry wt	1-9
Total Nitrogen*	Catalytic Combustion (900°C, O ₂), separation, Thermal Conductivity Detector [Elementar Analyser].	0.02 g/100g dry wt	1-9
Total Organic Carbon*	Acid pretreatment to remove carbonates present followed by Catalytic Combustion (O ₂), separation, Thermal Conductivity Detector [Elementar Analyser].	0.05 g/100g dry wt	1-9
Heavy metal, trace level As,Cd,Cr,Cu,Ni,Pb,Zn	Dried sample, <2mm fraction. Nitric/Hydrochloric acid digestion, ICP-MS, trace level.	0.010 - 0.8 mg/kg dry wt	1-9
7 Grain Sizes Profile as received			
Dry Matter for Grainsize samples (sieved as received)*	Drying for 16 hours at 103°C, gravimetry (Free water removed before analysis).	0.10 g/100g as rcvd	1-9
Fraction >/= 2 mm*	Wet sieving with dispersant, as received, 2.00 mm sieve, gravimetry.	0.1 g/100g dry wt	1-9
Fraction < 2 mm, >/= 1 mm*	Wet sieving using dispersant, as received, 2.00 mm and 1.00 mm sieves, gravimetry (calculation by difference).	0.1 g/100g dry wt	1-9
Fraction < 1 mm, >/= 500 µm*	Wet sieving using dispersant, as received, 1.00 mm and 500 µm sieves, gravimetry (calculation by difference).	0.1 g/100g dry wt	1-9
Fraction < 500 µm, >/= 250 µm*	Wet sieving using dispersant, as received, 500 µm and 250 µm sieves, gravimetry (calculation by difference).	0.1 g/100g dry wt	1-9
Fraction < 250 µm, >/= 125 µm*	Wet sieving using dispersant, as received, 250 µm and 125 µm sieves, gravimetry (calculation by difference).	0.1 g/100g dry wt	1-9
Fraction < 125 µm, >/= 63 µm*	Wet sieving using dispersant, as received, 125 µm and 63 µm sieves, gravimetry (calculation by difference).	0.1 g/100g dry wt	1-9
Fraction < 63 µm*	Wet sieving with dispersant, as received, 63 µm sieve, gravimetry (calculation by difference).	0.1 g/100g dry wt	1-9

Table 2. Macrofaunal results from the ecology cores from the site 400 m upstream of the WWTP.

General Group	Taxa	1	2	3	4	5	6	7	8	9	10
Amphipoda	Corophiidae	14	3	9	1	2	0	0	1	0	0
Bivalvia	<i>Arthritica bifurca</i>	53	20	20	73	201	15	6	39	21	126
Bivalvia	<i>Austrovenus stutchburyi</i>	0	0	1	0	0	0	0	0	0	0
Cirripedia	<i>Austrominius modestus</i>	0	0	0	0	0	0	0	0	0	0
Copepoda	Copepoda	0	0	0	0	2	0	0	0	0	0
Decapoda	<i>Alpheus</i> sp. (edwardsi group)	0	1	0	0	0	0	0	0	0	0
Decapoda	<i>Austrohelice crassa</i>	1	0	0	0	0	0	0	0	0	1
Decapoda	<i>Palaemon affinis</i>	0	0	0	0	0	0	0	0	0	1
Gastropoda	<i>Amphibola crenata</i>	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Potamopyrgus estuarinus</i>	0	0	0	0	0	0	0	0	0	0
Nemertea	Nemertea	0	0	0	0	1	1	0	1	1	0
Oligochaeta	Oligochaeta	0	1	0	0	0	0	1	0	0	0
Polychaeta: Capitellidae	<i>Capitella capitata</i>	0	0	0	0	0	0	0	0	0	0
Polychaeta: Nereidae	Nereidae (juvenile)	4	6	6	1	3	1	0	2	0	4
Polychaeta: Nereidae	<i>Nicon aestuariensis</i>	11	6	7	4	3	5	4	7	1	6
Polychaeta: Polynoidae	Polynoidae	0	0	0	0	0	0	0	0	0	0
Polychaeta: Spionidae	<i>Polydora</i> sp.	0	0	0	0	0	0	0	0	0	0
Polychaeta: Spionidae	<i>Prionospio aucklandica</i>	0	0	0	0	0	0	0	0	0	0
Polychaeta: Spionidae	<i>Scolecopelides benhami</i>	0	0	0	0	0	0	0	0	0	0

Table 3. Macrofaunal results from the ecology cores from the site 400 m downstream of the WWTP.

General Group	Taxa	1	2	3	4	5	6	7	8	9	10
Amphipoda	Corophiidae	38	23	1	2	4	0	7	5	3	6
Bivalvia	<i>Arthritica bifurca</i>	73	50	55	39	61	12	44	19	31	65
Bivalvia	<i>Austrovenus stutchburyi</i>	0	0	0	0	0	0	0	0	0	0
Cirripedia	<i>Austrominius modestus</i>	0	0	0	0	0	0	0	0	0	0
Copepoda	Copepoda	0	1	0	0	1	0	0	1	0	0
Decapoda	<i>Alpheus</i> sp. (edwardsi group)	0	0	0	0	0	0	0	0	1	0
Decapoda	<i>Austrohelice crassa</i>	1	4	1	0	0	1	1	1	1	1
Decapoda	<i>Palaemon affinis</i>	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Amphibola crenata</i>	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Potamopyrgus estuarinus</i>	0	0	0	1	0	0	0	0	0	0
Nemertea	Nemertea	0	0	0	0	0	0	0	0	0	1
Oligochaeta	Oligochaeta	0	0	0	0	2	0	0	3	0	0
Polychaeta: Capitellidae	<i>Capitella capitata</i>	0	0	0	0	0	1	0	0	0	0
Polychaeta: Nereidae	Nereidae (juvenile)	1	1	2	2	3	3	1	1	3	0
Polychaeta: Nereidae	<i>Nicon aestuariensis</i>	10	8	7	3	4	4	14	3	8	4
Polychaeta: Polynoidae	Polynoidae	0	0	0	0	0	0	0	0	0	0
Polychaeta: Spionidae	<i>Polydora</i> sp.	0	0	0	0	0	0	0	0	0	0
Polychaeta: Spionidae	<i>Prionospio aucklandica</i>	0	0	0	0	0	0	0	2	0	0
Polychaeta: Spionidae	<i>Scolecopelides benhami</i>	0	0	0	0	0	0	0	0	0	0

Table 4. Macrofaunal results from the ecology cores from the site 1 km downstream of the WWTP.

General Group	Taxa	1	2	3	4	5	6	7	8	9	10
Amphipoda	Corophiidae	19	41	0	45	66	0	43	0	2	146
Bivalvia	<i>Arthritica bifurca</i>	18	1	36	6	4	48	0	63	11	0
Bivalvia	<i>Austrovenus stutchburyi</i>	0	0	0	0	0	0	0	0	0	0
Cirripedia	<i>Austrominius modestus</i>	0	0	0	9	0	0	0	0	0	0
Copepoda	Copepoda	0	0	0	0	0	0	0	0	0	0
Decapoda	<i>Alpheus</i> sp. (edwardsi group)	0	0	0	0	0	0	0	0	0	0
Decapoda	<i>Austrohelice crassa</i>	3	1	3	6	5	3	1	2	0	2
Decapoda	<i>Palaemon affinis</i>	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Amphibola crenata</i>	0	0	0	0	0	0	0	1	0	0
Gastropoda	<i>Potamopyrgus estuarinus</i>	0	0	0	0	0	0	0	0	0	0
Nemertea	Nemertea	0	0	0	0	0	0	0	0	0	0
Oligochaeta	Oligochaeta	2	2	0	0	0	0	0	0	1	0
Polychaeta: Capitellidae	<i>Capitella capitata</i>	0	0	0	0	0	0	0	0	0	0
Polychaeta: Nereidae	Nereidae (juvenile)	1	0	0	3	2	0	0	0	0	0
Polychaeta: Nereidae	<i>Nicon aestuariensis</i>	5	1	8	4	0	6	0	4	0	5
Polychaeta: Polynoidae	Polynoidae	0	0	0	1	0	0	0	0	0	0
Polychaeta: Spionidae	<i>Polydora</i> sp.	0	5	0	0	5	0	2	0	3	4
Polychaeta: Spionidae	<i>Prionospio aucklandica</i>	0	1	0	0	0	0	0	0	0	0
Polychaeta: Spionidae	<i>Scolecopelides benhami</i>	0	0	0	1	0	0	0	0	0	0

Appendix D. Compliance assessment for the Warkworth WWTP

Table 8: Assessment of Compliance with Consent Conditions Warkworth WWTP Discharge to Air (#REG-67903)

Condition Number	Consent Conditions Warkworth WWTP Discharge to Air (#REG-67903)	Compliance Rating	Comment
21	The Consent Holder shall ensure that all processes on site are operated, maintained, supervised, monitored and controlled to ensure that emissions to air authorised by this consent are maintained at the minimum practicable level.	1	Ongoing
22	Beyond the boundary of the site, there shall be no odour or dust caused by discharges from the site which, in the opinion of an enforcement officer, is noxious, offensive or objectionable.	1	
23	No discharges from any activity on site shall give rise to visible emissions, other than clean water vapour, to an extent which, in the opinion of an enforcement officer, is noxious, dangerous, offensive or objectionable.	1	
24	Beyond the boundary of the site, there shall be no hazardous air pollutant, caused by discharges from the site, which is present at a concentration that causes, or is likely to cause adverse effects to human health, the environment or property.	1	
25	All processes on site shall be operated in accordance with the Odour Management Plan submitted and accepted in accordance with Condition 29 of this consent.	1	Ongoing
26	No part of the process shall be operated without the associated emissions control equipment being fully operational and functioning correctly.	1	Ongoing
27	All processing equipment, buildings, ducting and emissions control equipment shall be maintained in good condition and as far as practicable be free from leaks in order to prevent the escape of fugitive emissions.	1	Ongoing
28	The meteorological conditions and proximity of sensitive receptors shall be considered prior to undertaking any potentially-odorous activities at the site.	1	Ongoing
29	A walkover inspection of the WWTP site shall be undertaken at least once per week to identify any odours that may be originating from the site. The results shall be recorded and any odour potentially detectable off-site investigated immediately. Where necessary, remedial action shall be undertaken as soon as practicable.	1	Ongoing

Condition Number	Consent Conditions Warkworth WWTP Discharge to Air (#REG-67903)	Compliance Rating	Comment
30	<p>The Consent Holder shall prepare and maintain an Odour Management Plan, as part of the Management Plan, to describe measures to control and reduce the potential for odour generation to occur, which could give rise to off-site effects. The Odour Management Plan shall as a minimum include the following:</p> <ul style="list-style-type: none"> a. Identification of all fugitive and point sources for discharges of contaminants into air, including a site plan showing the locations of each point source and the specifications of all odour control devices; b. Details of procedures to minimise discharges of contaminants into air, including details of the inspection, maintenance, monitoring and contingency procedures in place; c. Monitoring and maintenance requirements for odour treatment equipment, e.g. moisture content and pH for biofilter media and pressure drop across biofilter media; d. The procedures for the walkover, recording of the results and any remedial actions taken in accordance with Condition 28 e. Complaints investigation, monitoring and reporting in accordance with Condition 39; and f. The identification of key staff and contractors’ responsibilities and contact details. g. A requirement that an Auckland Council enforcement officer to be notified as soon as practicable in the event of any significant discharge to air, which results or has the potential to result in a breach of these conditions or adverse effects on the environment. The following information shall be included: <ul style="list-style-type: none"> i. Details of the nature of the discharge; ii. An explanation of the cause of the incident; and iii. Details of remedial action taken. 	1	Submitted in July 2017
31	<p>The Odour Management Plan shall be submitted to the Team Leader Northern Monitoring, Auckland Council for approval in a certification capacity within three months from the date of commencement of this consent and shall be reviewed at least once every year. The Consent Holder shall implement the approved Odour Management Plan.</p>	1	Submitted

Table 9: Assessment of Compliance with Consent Conditions Warkworth WWTP Discharge to Water (#REG-67905)

Condition Number	Consent Condition Warkworth Discharge to Water (#REG-67905)	Compliance Rating	Comment
05	<p>The Consent Holder shall ensure that all staff and contractors undertaking works on site are aware of, and adhere to, all conditions of this consent.</p>	1	
06	<p>Discharge permits DIS60386349 and DIS60386547 shall expire 3 years from the date of granting unless it has lapsed, been surrendered or been cancelled at an earlier date pursuant to the RMA.</p>	1	October 2020 is the date from which the plant started to be operational.

Condition Number	Consent Condition Warkworth Discharge to Water (#REG-67905)	Compliance Rating	Comment
07	Within one month of the completion of each WWTP upgrade proposed, the Consent Holder shall notify the Team Leader Northern Monitoring, Auckland Council in writing that the works are completed and shall provide 'as-built certification' from a suitably qualified engineer that the side stream MBR plant has been installed and is operating in accordance with industry standard.	1	
08	Terms (a) to (c) in this condition shall apply for the duration of this consent: a. The maximum daily treated wastewater discharge volume from the Warkworth WWTP to the Mahurangi River shall not exceed a maximum daily flow of 8,000 m ³ per day (at peak wet weather flow). b. Average daily dry-weather flow shall not exceed 1,600 m ³ per day. Average dry-weather flow shall mean the flow in the wastewater network that would occur during a normal day in a dry weather period (i.e. three consecutive days of less than 5mm rainfall per day), including wastewater, trade waste and groundwater infiltration. c. The population serviced shall not exceed 7,100 PE.	1	
09	All treated wastewater discharged from the Warkworth WWTP shall be of a quality equal to or better than the limit specified for that parameter as set out in Table 1 below. Collection of treated wastewater samples shall occur weekly and take place following UV treatment and prior to discharge to the Mahurangi River. See Table 1 on page 23/95 of consent document.	1	
10	In accordance with the monitoring requirements outlined in Condition 31(c), the consent holder shall ensure that the WWTP achieves a 4-log reduction (influent to effluent) of viruses based on FRNA-Bacteriophage indicator virus for dry and wet weather flows.	1	
11	Further to those parameters identified in Table 1, the Consent Holder shall also undertake discharge quality monitoring following UV treatment and prior to discharge to the Mahurangi River for the parameters identified in Table 2 below. See Table 2 on page 23/95 of consent document.	1	
12	The Consent Holder shall ensure that all chemical analyses and sampling techniques are carried out in accordance with the latest edition of "Standard Methods for the Examination of Water and Wastewater", APHA AWWA WEF, or other standards approved in writing by the Team Leader Northern Monitoring, Auckland Council.	1	
13	If no discharge is occurring on a scheduled sampling day, a sample shall be collected as soon as reasonably practicable following resumption of normal operation.	1	

Condition Number	Consent Condition Warkworth Discharge to Water (#REG-67905)	Compliance Rating	Comment
14	The Consent Holder shall advise the Team Leader Northern Monitoring, Auckland Council in writing immediately in the event that problems are detected in association with the exercise of this consent that could pose an environmental risk by affecting discharge quality and shall outline a schedule of action to remedy issues. In the event that the 92nd percentile limit is exceeded for any analyte shown in Table 1 above, an additional grab sample shall be collected and tested for the analyte within 5 working days of receipt of the laboratory result. If the second grab sample returns an exceedance, an investigation shall also be undertaken into the cause of the exceedance, the significance of the effect of the exceedance on the receiving environment, and the remedial action undertaken (if required) in response to the exceedance and the findings of this investigation report to the Team Leader Northern Monitoring, Auckland Council within one month of the exceedance occurring.	1	
15	The Consent Holder shall maintain flow meters to measure the total daily inflow to the Warkworth WWTP and the total daily discharge volume to the Mahurangi River. The flow meters must be maintained to ensure an accuracy of plus or minus 5 percent. Records shall be kept of the volumes discharged to the Mahurangi River, the date and the wastewater treatment plant inflow. Recorded data shall be reported in accordance with Condition 36.	1	Ongoing
16	The Consent Holder shall measure and record the approximate volume of sludge / biosolids generated by the wastewater treatment system (m ³), the mass of the sludge / biosolids (kg), and the percentage dry solids (%DS), the general treatment methodology used and the disposal destination. The records shall be made available to the Team Leader Northern Monitoring, Auckland Council upon request.	1	
17	The Consent Holder shall ensure that no new trade, industrial, non-domestic or other strong wastes shall be permitted to be discharged into the Warkworth WWTP except in accordance with the Trade Waste Bylaw / Te Ture a RoheWaiparui a Mahi 2013 or any Operative Trade Waste By-Law that may supersede this.	1	
18	The Consent Holder shall ensure that for the duration of this consent, the wastewater treatment system is maintained and operated by a suitably qualified and experienced wastewater plant operator. This operator shall oversee the operation and management of the wastewater treatment system and perform the operational and maintenance responsibilities specified in the Management Plan (Condition 31).	1	

Condition Number	Consent Condition Warkworth Discharge to Water (#REG-67905)	Compliance Rating	Comment
19	<p>The Consent Holder shall design and implement a Receiving Environment Water Quality Monitoring Programme for the Mahurangi River and upstream and downstream of the discharge point of the Warkworth WWTP. The purpose of the Programme is to measure water quality in the receiving environment and surrounding catchments to ascertain any changes in water quality attributable to the discharges from the WWTPs and to confirm predictions on effects. The Programme shall be implemented within one month of the commencement of this consent as follows:</p> <ul style="list-style-type: none"> a. The Programme shall, as a minimum, monitor on a monthly basis the following parameters: SEE TABLE ON PAGE 25/95 OF CONSENT DOCUMENT. b. The Programme shall be designed and implemented such that any obvious temporal trends in water quality in the vicinity of the treated water discharges can be delineated, and shall include as a minimum: <ul style="list-style-type: none"> i. The parameters which are being monitored (as identified in (a) above); ii. The location, methodology and frequency of all receiving environment water quality monitoring; iii. The review and reporting methods; and iv. A procedure for reviewing the Programme, including details as to when removal of monitoring parameters, changes to sampling locations or the sampling frequency may occur, and the monitoring results that may substantiate this. 	1	Approved in August 2017
20	<p>Revisions to the Receiving Environment Water Quality Monitoring Programme shall be to a standard acceptable to the Team Leader Northern Monitoring, Auckland Council and shall be submitted to the Team Leader for approval in a certifying capacity prior to the proposed date of commencement.</p>	1	Approved in August 2017