

Seaview Wastewater Treatment Plant and HCC/UHCC Trunk Main

Annual Resource Consents Report 2019/2020



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Control Sheet

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Executive Summary

This report has been prepared on behalf of the Hutt City Council (HCC) for compliance with several resource consents. The resource consents have been divided into the following categories:

- Plant Discharge
 - o WGN050359 [24539]
- Wet Weather Discharge
 - o WGN 110494 [31241]
 - o WGN 1010101 [20893]
 - o WGN 960002 [23747]
 - o WGN 960002 (02)
 - o WGN180461 [35592]
 - o WGN 120142 [33406]
- Maintenance Discharge
 - o WGN 120142 [33407]
 - o WGN 120142 [33408]
 - o WGN 120142 [31740]
- Discharge to Air
 - o WGN 950162 (01)
 - o WGN 930193 (01)
 - o WGN 930193 (02)
 - o WGN 110494
- Others
 - o WGN 930194
 - o WGN 020159 [35957]
 - o WGN 120108 [314587]

This annual report will cover the period from 1 July 2019 to 30 June 2020.

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Resource Consents

This report has been prepared on behalf of the Hutt City Council (HCC) for compliance with the following resource consents:

WGN050359 [24539]

Effluent discharge from the Seaview WWTP is governed by the resource consent under the Greater Wellington Regional Council consent file number WGN050359 [24539]. In general, this coastal permit allows the discharge of treated and disinfected wastewater to the coastal marine area through an existing outfall at Bluff Point. The outfall is located at map location NZMS 260: R27; 649.808.

The following report will outline the conditions in this resource consent that are required for that annual report.

WGN110494 [31241]

This discharge permit allows HCC to discharge screened and settled wastewater from the Wainuiomata pump station storm tank outlet structure to the Wainuiomata River during and/or immediately after heavy rain events when the quantity of wastewater exceeds the storage capacity of the storm tank. The Wainuiomata Pump Station storm tank at map location NZTM: 1763084.5427479.

The following report will outline the conditions in this resource consent that are required for that annual report.

WGN 1010101 [20893]

This discharge permit allows HCC to discharge sewage overflows from the Wellington Road pump station to the Black Stream during extreme wet weather events. The discharge is located at map location NZMS 260:R27;732.931.

The following report will outline the conditions in this resource consent that are required for that annual report.

WGN 960002 [23747]

This discharge permit allows HCC to intermittently discharge wastewater to the Hutt River from the river crossing at Silverstream. The discharge location is located at map reference NZMS 260:R27:755.047.

The following report will outline the conditions in this resource consent that are required for that annual report.

WGN 960002 (02)

This discharge permit allows HCC to intermittently discharge wastewater to the Hutt River from the Barber Grove Pump Station. The discharge location is at map reference NZMS 260:R27:694.958.

The following report will outline the conditions in this resource consent that are required for that annual report.

WGN180461 [35592]

The restricted coastal activity permit under the Greater Wellington Regional Council consent file number WGN030100 [33837] allows the discharge of comminuted wastewater to the coastal marine area, at times when the Eastern Bays sewer is operating at full capacity due to extreme wet weather, up to a maximum for rate of 100L/s through an existing outfall structure. The outfall structure is located at map reference NZTM 1754840.5419043. This consent was renewed on 31st May 2019.

The following report will outline the conditions in this resource consent that are required for that annual report.

WGN120142 [33406]

In addition to the above resource consent, the discharge from the Seaview WWTP is governed by the resource consent under the Greater Wellington Regional Council consent file number WGN120142 [33406]. This discharge permit allows the temporary discharge of treated wastewater to the Waiwhetu Stream during and/or immediately after heavy rain events when flows exceed the capacity of the main outfall pipeline and the storm tank system is fully utilized. The location of the discharge is at map reference NZTM 1759407.5433210.

The following report will outline the conditions in this resource consent that are required for that annual report.

WGN120142 [33407]

Another resource consent that governs the discharge from the Seaview WWTP is under the Greater Wellington Regional Council consent file number WGN120142 [33407]. This discharge permit allows the temporary discharge of treated wastewater from Seaview Wastewater Treatment Plant to the coastal marine area, and onto the land where it may enter streams or coastal marine area from:

- Planned repairs
- Unplanned repairs
- Leaks associated with temporary repairs, and
- Minor leaks

in relation to the main outfall pipeline from Seaview Wastewater Treatment Plant to Pencarrow Head.

The following report will outline the conditions in this resource consent that are required for that annual report.

WGN120142 [33408]

Another resource consent that governs the discharge from the Seaview WWTP is under the Greater Wellington Regional Council consent file number WGN120142 [33408]. This discharge permit allows the temporary discharge of treated wastewater from Seaview Wastewater Treatment Plant to the Waiwhetu Stream when the main outfall pipeline is being repaired. The location of the discharge is at map reference NZTM 1759407.5433210.

The following report will outline the conditions in this resource consent that are required for that annual report.

WGN120142 [31740]

The coastal permit under the Greater Wellington Regional Council consent file number WGN120142 [31740] allows the construction of a temporary channel on the foreshore to direct treated wastewater discharged from the scour valves on the main outfall pipeline into the sea to allow pipeline repair to be undertaken. The locations for these discharges are between map locations NZTM 1759804.5433065 and NZTM 1754999.5420657.

The following report will outline the conditions in this resource consent that are required for that annual report.

WGN950162 (01)

The discharge to air resource consent permits the Seaview WWTP to discharge contaminants to the air from operation. The plant can discharge up to 7m³/s of combustion products and up to 53m³/s of air from the facility.

The following report will outline the conditions in this resource consent that are required for that annual report.

WGN930193 (1)

The coastal permit allows the Seaview WWTP to continuously discharge contaminants to the air from the outfall venting structures and vents. The discharge location is at map reference NZMS 260 R27:650.808.

This resource consent does not contain any conditions that require annual reporting.

WGN930193 (2)

The coastal permit allows the Seaview WWTP to continuously discharge contaminants to the air from the sewage outfall structure and the sewage effluent. The discharge location is at map reference NZMS 260 R27:650.808.

This resource consent does not contain any conditions that require annual reporting.

WGN110494

The discharge permit allows the Wainuiomata WWTP to discharge contaminants to the air from operations. The discharge location is at map reference NZMS 260 R27:732.891.

This resource consent does not contain any conditions that require annual reporting.

WGN930194

The coastal permit allows the HCC to occupy the foreshore and seabed of the coastal marine area for the purposes of continued use of the existing sewage pipeline and outfall structure. The location is at map reference NZMS 260 R27:650.808.

This resource consent does not contain any conditions that require annual reporting.

WGN020159 [35957]

The discharge permit allows the HCC to discharge contaminants to land and water from a contaminated site created by the use of the site as a wastewater treatment plant and incidental discharge of contaminants to land arising from on-site remediation activities. The location of the discharge is at map reference NZMS 260:R27;732.891.

The following report will outline the conditions in this resource consent that are required for that annual report.

WGN120108 [31457]

The land use consent allows the HCC to place, use and maintain an erosion protection structure in the bed of the Hutt River including any associated disturbance and deposition of material onto the bed of the river, during construction and any ongoing maintenance. The location is at map reference NZTM 1767316.5442917. This consent was amended on 7th June 2019 to remove the requirement for ground water and soil samples.

This resource consent does not contain any conditions that require annual reporting.

WGN050359 [24539]

Condition (2)

The rate of discharge shall not exceed:

3,100L/s or 268,000 m³/day (peak wet weather flow)

Below is a summary of the effluent flow for FY2019/2020. The flows are well below the consent limit of 268,000 cubic meters/day.

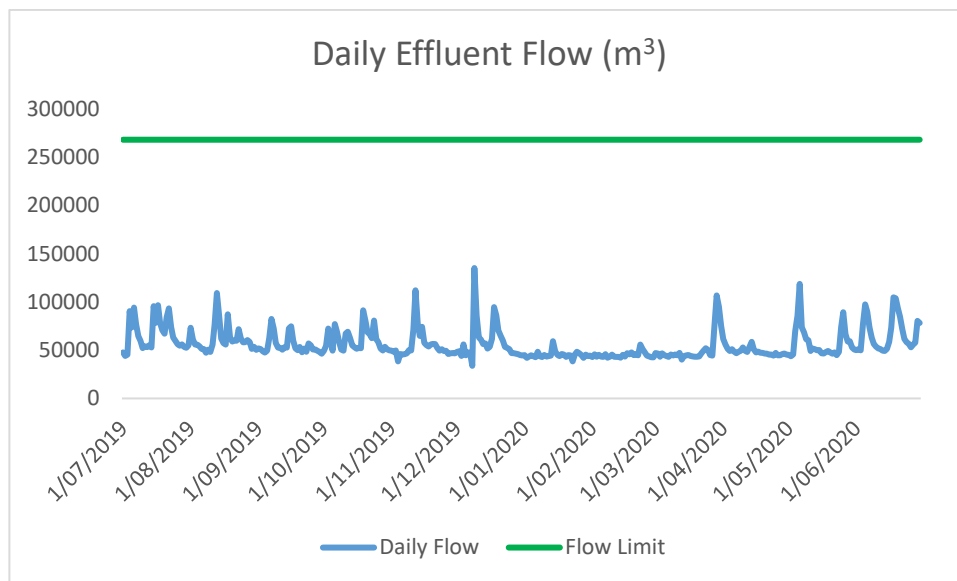


Chart 1: Effluent Flow Summary

Condition (9)

The following effluent standards shall apply at all times:

Carbonaceous Biochemical Oxygen Demand (cBOD5)

Compliance is based on daily 24 hour flow proportioned composite sampling, with a running geometric mean and eighty-percentile calculated each day using 90 consecutive daily test results.

The geometric mean of 90 consecutive daily cBOD5 values shall not exceed 50g/m³ and more than 20% of 90 consecutive daily values shall exceed 85g/m³.

Suspended solids

Compliance is based on daily 24 hour flow proportioned composite sampling, with a running geometric mean and eighty-percentile calculated each day using 90 consecutive daily test results.

The geometric mean of 90 consecutive daily suspended solids values shall not exceed 50g/m³ and more than 20% of 90 consecutive daily values shall exceed 85g/m³.

Faecal Coliforms

Compliance is based on daily grab samples to be taken between the hours of 10am and 4pm with a running geometric mean and eighty percentile calculated each day using 90 consecutive daily test results.

The geometric mean of 90 consecutive daily faecal coliform values shall not exceed 1000 per 100mL and no more than 20% of 90 consecutive daily values shall exceed 5000 per 100mL.

Below is a summary of the 90-day geometric mean and 90-day 80th percentile for the effluent Carbonaceous Biochemical Oxygen Demand (cBOD5). The facility has been compliant to cBOD5 requirements this FY2019/2020. Daily values can be viewed in the quarterly reports.

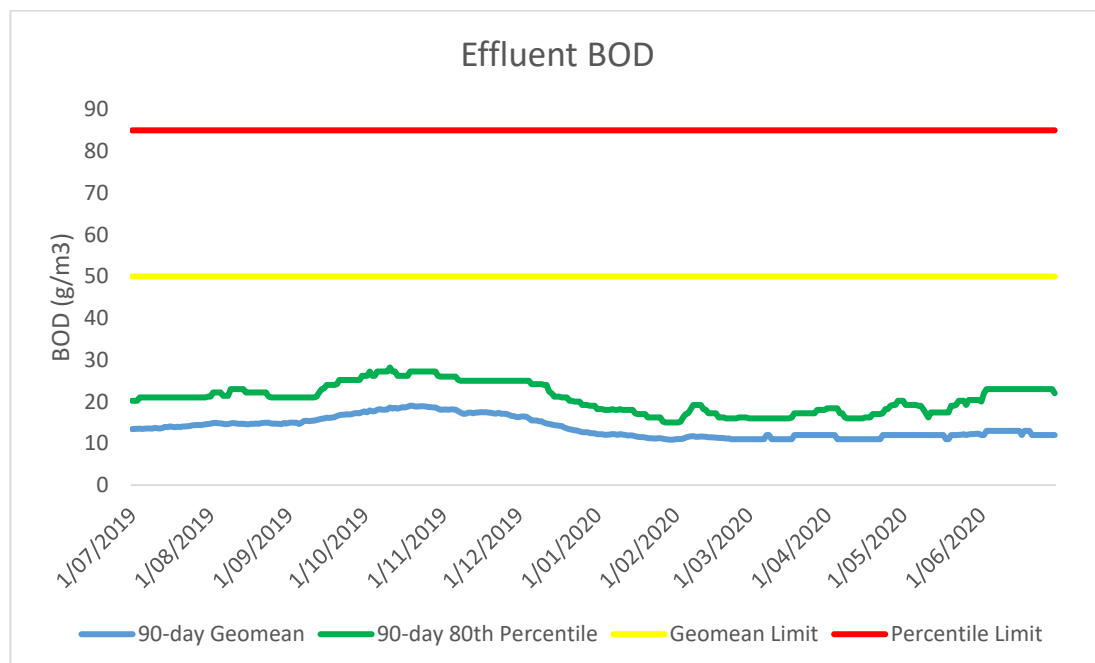


Chart 2: Effluent CBOD5 Summary

Below is a summary of the 90-day geometric mean and 90-day 80th percentile for the effluent total suspended solids. The facility has been compliant to the effluent suspended solids requirements this FY2019/2020. Daily values can be viewed in the quarterly reports.

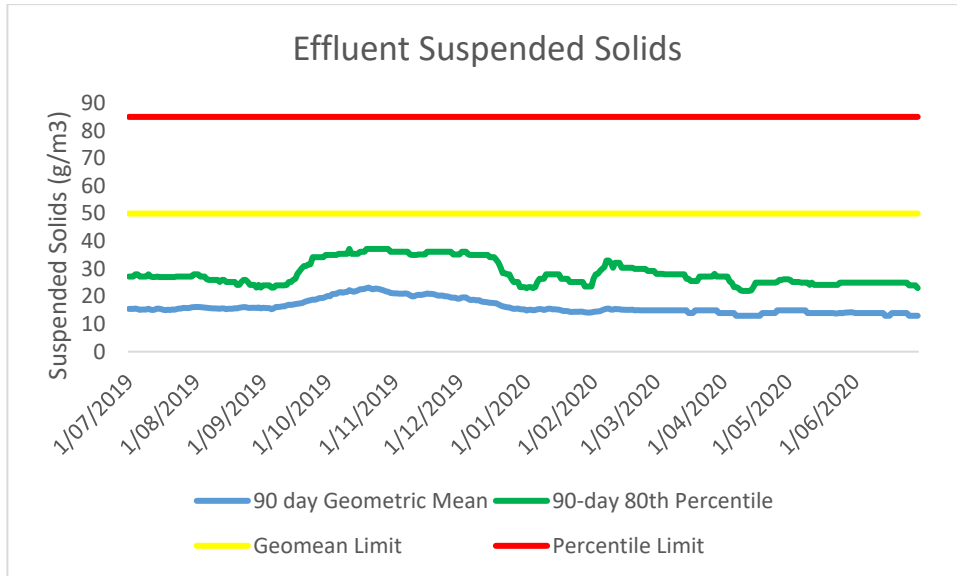


Chart 3: Effluent TSS Summary

Below is a summary of the 90-day geometric mean and 90-day 80th percentile for the effluent faecal coliform. The facility has been compliant to the effluent faecal coliform requirements this FY2019/2020. Daily values can be viewed in the quarterly reports.

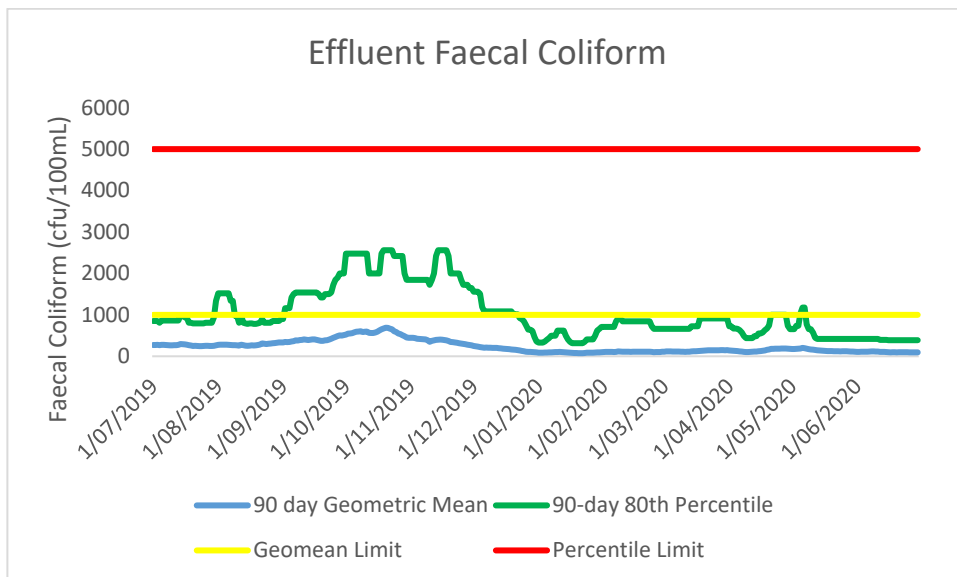


Chart 4: Effluent Faecal Coliform Summary

Condition (10)

The permit holder shall notify the Manager, Environmental Regulation, Wellington Regional Council immediately in the event that a running geometric mean and/or 80 percentile calculated daily from the monitoring programme exceeds the values stipulated in condition 9 for more than three consecutive days. Such a report shall include the likely reason for exceedance, and measures to be undertaken by the permit holder to remedy the situation. The permit holder shall also immediately notify the Medical Officer of Health of any such event.

There have not been exceedances for three (3) consecutive days of any final effluent parameter therefore the Seaview WWTP is compliant with this condition.

Condition (11)

Based on 24 hour flow-proportioned composite samples collected and analysed once each month in accordance with conditions 6, 7 and 8 and Schedule 1 of this permit, all wastewater discharged through the outfall shall meet the following standards:

Analyte	Units	Standard:
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Over each 12-month period, from 1 July to 30 June, no more than 2 sample results shall exceed:

Dissolved Arsenic	mg/L	0.115
Dissolved Cadmium	mg/L	0.035
Dissolved Chromium	mg/L	0.220
Dissolved Copper	mg/L	0.065
Dissolved Nickel	mg/L	0.350
Dissolved Lead	mg/L	0.220
Dissolved Zinc	mg/L	0.750
Dissolved Mercury	mg/L	0.005
Cyanide		0.200
Phenol		0.500

Note:

1. Two exceedances out of 12 samples is permitted to meet a 95-percentile discharge compliance standard, based on a discharger's risk of no more than 10% (from 'New Zealand Municipal Wastewater Monitoring Guidelines' NZWERF/MfE 2002)
2. The treated wastewater standards above are based on the ANZECC (2000) marine water trigger levels for 'slightly to moderately disturbed ecosystems' multiplied by a factor of 50 to allow for reasonable mixing (the 50:1 dilution contour extends approximately 400 meters from the outfall).

Below is a summary of the monthly heavy metal analysis for the effluent. The results are well below the resource consents limits for the respective analytes. The results has been consistent for FY2019/2020.

Analyte	Limit	Unit	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
Oil and Grease	n/a	n/a	17	4	4	5	4	8	4	7	4	4	4	n/a
Cyanide	0.2	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.007	0.005	0.005
Dissolved Arsenic	0.115	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.001	0.001	0.0013
Dissolved Cadmium	0.035	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0004
Dissolved Chromium	0.22	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.001	0.001	0.0019
Dissolved Copper	0.065	mg/L	0.0126	0.0073	0.0104	0.006	0.0041	0.0043	0.0061	0.0064	0.0047	0.0051	0.0044	0.0092
Dissolved Lead	0.22	mg/L	0.0006	0.0005	0.0007	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Dissolved Mercury	0.005	mg/L	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Dissolved Nickel	0.35	mg/L	0.0018	0.0018	0.0013	0.0015	0.0015	0.0021	0.0013	0.0057	0.0032	0.0027	0.0018	0.0027
Dissolved Zinc	0.75	mg/L	0.028	0.026	0.025	0.016	0.015	0.023	0.019	0.025	0.022	0.013	0.021	0.032
Phenol	0.5	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.002
pH	n/a		7.6	7.3	7.6	7.9	7.4	7.4	7.8	7.5	7.5	7.5	7.6	7.6
Conductivity	n/a	mS/m	158	117	160	95.5	148	144	159	212	269	196	136	126
Nitrate-Nitrogen	n/a	mg/L	1.8	0.01	0.02	0.01	0.01	0.01	0.01	0.05	0.16	0.01	0.81	0.005
Dissolved Reactive Phosphorus	n/a	mg/L	2.05	1.56	2.31	1.48	2.47	2.18	2.72	2.44	2.85	2.29	2.6	1.2
Ammonia Nitrogen	n/a	mg/L	24.1	21.4	27.6	21.4	27.9	26.3	27.3	23.8	21.4	28.1	27.1	22
Total Phosphorus	n/a	mg/L	2.73	2.08	2.83	1.68	2.6	2.04	2.97	2.5	3.01	2.4	2.89	2
Formaldehyde	n/a	mg/L	see appendix ii											
Volatile Organic Compounds	n/a	mg/L												
Semi Volatile Organic Compounds	n/a	mg/L												

Table 1: Effluent Heavy Metal and other compounds analysis

Condition (13)

The permit holder shall collect representative coastal water samples from knee deep water at the following locations, once each month for six months through November to April inclusive each year, for the duration of this permit:

Fitzroy Bay 400 m SE of outfall (R27:651.807)
 Fitzroy Bay 100 m SE of outfall (R27:650.808)
 Fitzroy Bay 100 m NW of outfall (R27:648.808)
 Fitzroy Bay 400 m NW of outfall (R27:647.810)
 Pencarrow Head at Lighthouse (R27:647.816)
 Inconstant Point (R27:650.825)
 Hinds Point (R27:655.839)

The water samples shall be analysed for faecal coliform and enterococci bacteria.

Below is a summary of the coastal water sampling from November 2019 to April 2020 as required by the resource consent.

Location	Analyte	Unit	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20
Fitzroy Bay 400 m SE of outfall	Faecal Coliform	cfu/100mL	4	4	4	12	4	4
Fitzroy Bay 400 m SE of outfall	Enterococci	cfu/100mL	4	4	4	8	8	4
Fitzroy Bay 100 m SE of outfall	Faecal Coliform	cfu/100mL	4	4	4	4	12	160
Fitzroy Bay 100 m SE of outfall	Enterococci	cfu/100mL	4	4	4	8	4	120
Fitzroy Bay 100 m NW of Outfall	Faecal Coliform	cfu/100mL	24	12	4	16	4	4
Fitzroy Bay 100 m NW of Outfall	Enterococci	cfu/100mL	20	4	4	4	4	4
Fitzroy Bay 400 m NW of Outfall	Faecal Coliform	cfu/100mL	4	4	4	8	4	4
Fitzroy Bay 400 m NW of Outfall	Enterococci	cfu/100mL	4	4	4	4	4	4
Pencarrow Head at Lighthouse	Faecal Coliform	cfu/100mL	4	4	4	8	4	4
Pencarrow Head at Lighthouse	Enterococci	cfu/100mL	4	4	100	8	4	4
Inconstant Point	Faecal Coliform	cfu/100mL	4	4	4	4	4	4
Inconstant Point	Enterococci	cfu/100mL	4	4	4	4	4	4
Hinds Point	Faecal Coliform	cfu/100mL	8	4	4	4	4	8
Hinds Point	Enterococci	cfu/100mL	4	4	4	4	4	4

Table 2: Coastal Water Sampling

Condition (14)

The permit holder shall collect three replicate composite samples of the green-lipped mussel (*Perna canaliculus*) from the near shore waters at each of the following location during February or March of every second year, for the duration of this permit:

Fitzroy Bay 100 m NW of outfall (R27:648.808)

Fitzroy Bay 400 m NW of outfall (R27:647.810)

Pencarrow Head at Lighthouse (R27:647.816)

The flesh of the mussel samples shall be analysed for arsenic and trace metal (cadmium, chromium, copper, mercury, lead, nickel and zinc) concentrations.

The last analysis for the green lipped mussel conducted in 2019. No analysis has been required for this reporting period.

Condition (18)

The permit holder shall provide to the Wellington Regional Council an annual monitoring report by 31 July each year summarising compliance with the conditions of this permit. This report shall include as a minimum:

- a) A summary of all monitoring undertaken in accordance with the conditions of this permit and a critical analysis of the information in terms of compliance and adverse environmental effects;
- b) A comparison of data with previously collected data in order to identify any emerging trends;
- c) Any reasons for non-compliance or difficulties in achieving compliance with the conditions of this permit;
- d) Any measures that have been undertaken, to improve the environmental performance of the wastewater treatment and disposal system; and
- e) Any other issues considered to be important;

Section (a)

All monitoring performed at the Seaview WWTP has been provided in the previous sections of this report under the designated resource consent conditions. The following is a summary of the monitoring parameters, the resource consent condition the data is listed under, the monitoring frequency, the limits for each parameter, and compliance with the resource consent:

Monitoring Parameter	WGN980003 [31505] Condition	Monitoring Frequency	Limits	Compliance
WWTP Effluent Flow Rate	(2)	Daily	268,000m ³ /day	Compliant
Carbonaceous Biological Oxygen Demand	(9)(a)	Daily	Geometric Mean < 50g/m ³ 80th Percentile < 85g/m ³	Compliant
Suspended Solids	(9)(b)	Daily	Geometric Mean < 50g/m ³ 80th Percentile < 85g/m ³	Compliant
Faecal Coliforms	(9)(c)	Daily	Geometric Mean < 1000cfu/100mL 80th Percentile < 5000cfu/100mL	Compliant
Dissolved Arsenic	(11)	Monthly	0.115 mg/L	Compliant
Dissolved Cadmium		Monthly	0.035 mg/L	Compliant
Dissolved Chromium		Monthly	0.220 mg/L	Compliant
Dissolved Copper		Monthly	0.065 mg/L	Compliant
Dissolved Nickel		Monthly	0.350 mg/L	Compliant
Dissolved Lead		Monthly	0.220 mg/L	Compliant
Dissolved Zinc		Monthly	0.750mg/L	Compliant
Dissolved Mercury		Monthly	0.005 mg/L	Compliant
Cyanide		Monthly	0.200 mg/L	Compliant
Phenol		Monthly	0.500 mg/L	Compliant
Schedule 1 additional analytes monitored monthly	(11)	Monthly	n/a	Compliant
Schedule 1 additional analytes monitored yearly	(11)	Yearly	n/a	Compliant
Coastal Water Sampling	(13)	Nov to April	n/a	Compliant
Mussel Sampling	(14)	Every 2 nd Year	n/a	Compliant

Table 3: Summary of Monitoring Requirements

Section (b)

Below is the comparison of the effluent flow rates in the previous reporting period. The flows has been similar from the previous financial year.

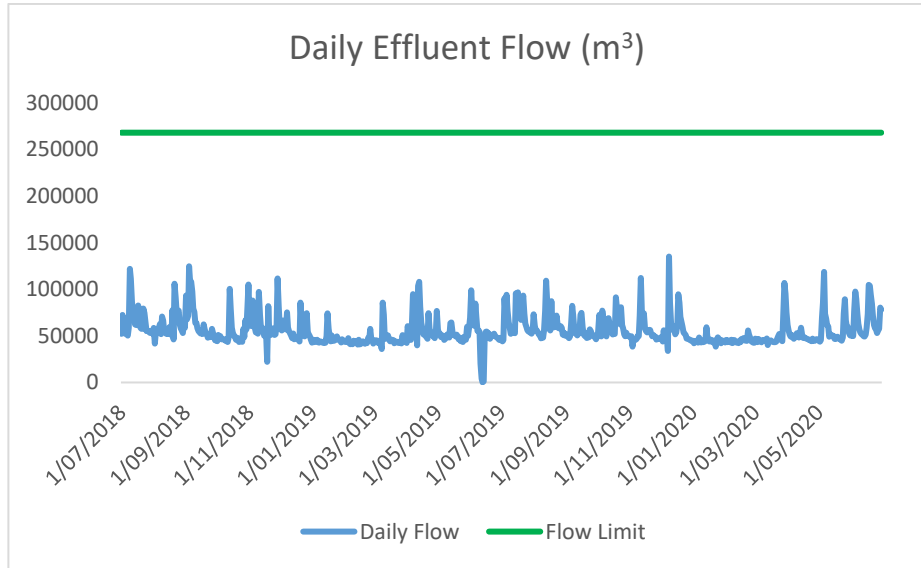


Chart 5: Effluent Flow

Below is the comparison of the effluent cBOD5 in the previous reporting period. The effluent cBOD5 continues to be below the resource consent limits.

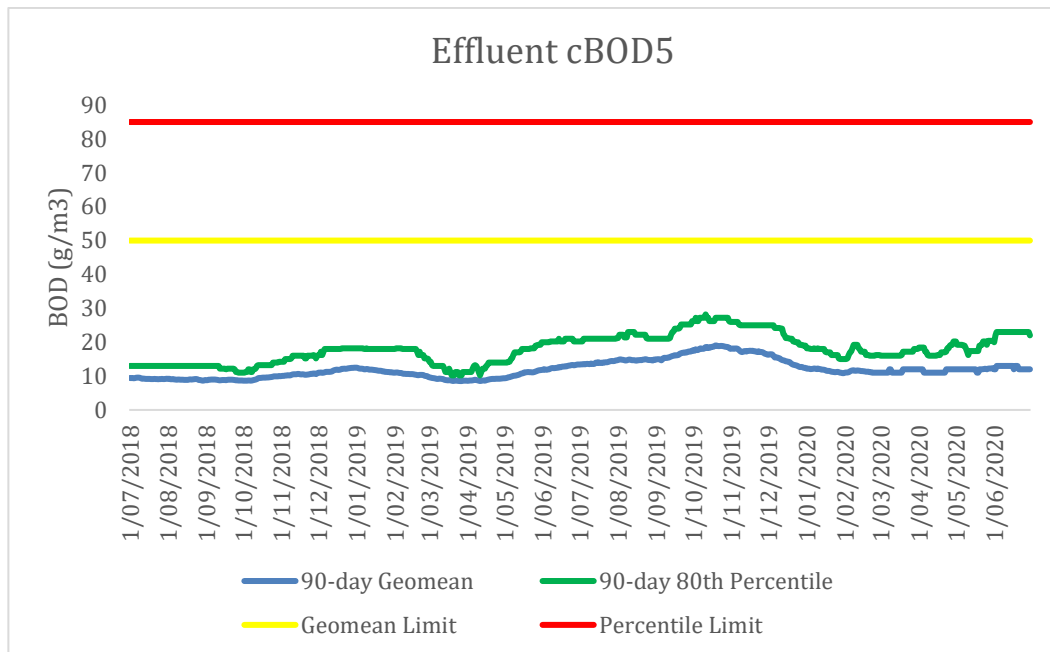


Chart 6: Effluent cBOD5

Below is the comparison of the effluent total suspended solids in the previous reporting period. The effluent total suspended solids continues to be below the resource consent limits.

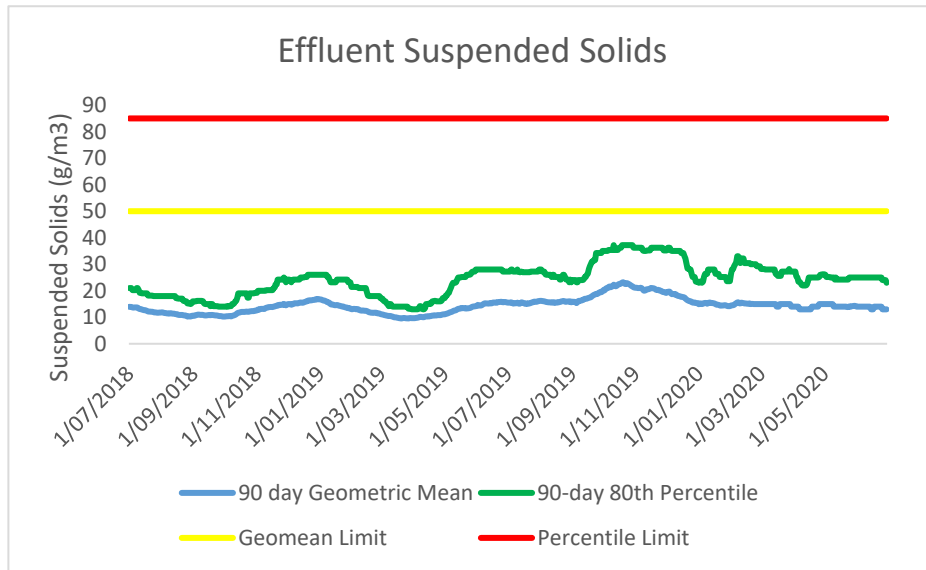


Chart 7: Effluent Suspended Solids

Below is the comparison of the effluent faecal coliform in the previous reporting period. The effluent faecal coliform continues to be below the resource consent limits.

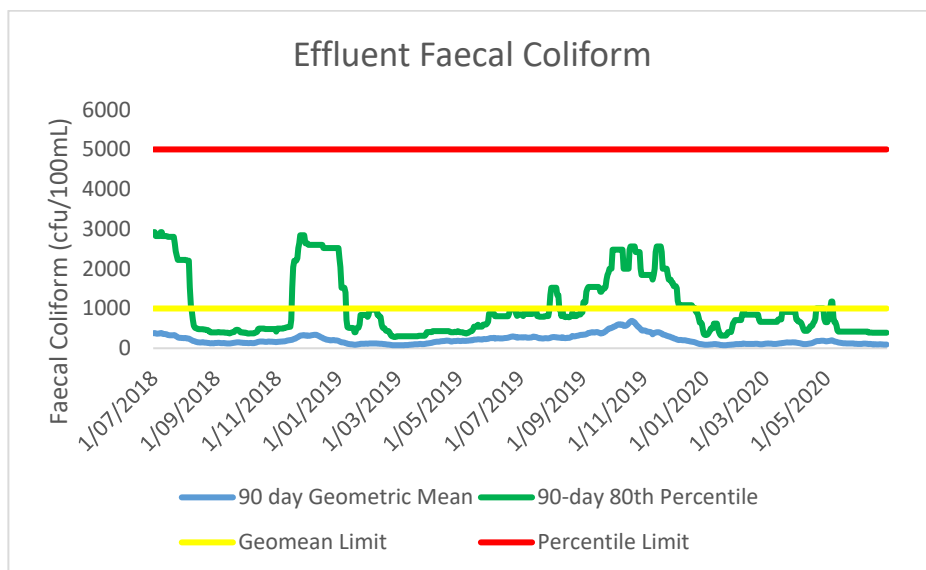


Chart 8: Effluent Faecal Coliforms

Below is the statistical analysis of the analyte monitoring requirements as stated in schedule 11. The values are well below the limits throughout FY2019/2020.

Analyte	Limit	Unit	Geomean	Min	Max
Oil and Grease	n/a	n/a			
Cyanide	0.2	mg/L	0.005	0.005	0.007
Dissolved Arsenic	0.115	mg/L	0.001	0.001	0.002
Dissolved Cadmium	0.035	mg/L	0.000	0.0002	0.0004
Dissolved Chromium	0.22	mg/L	0.001	0.001	0.002
Dissolved Copper	0.065	mg/L	0.006	0.0041	0.0126
Dissolved Lead	0.22	mg/L	0.001	0.0005	0.0007
Dissolved Mercury	0.005	mg/L	0.001	0.0005	0.0005
Dissolved Nickel	0.35	mg/L	0.002	0.0013	0.0057
Dissolved Zinc	0.75	mg/L	0.021	0.013	0.032
Phenol	0.5	mg/L	0.038	0.002	0.05
pH	n/a		8	7.3	7.9
Conductivity	n/a	mS/m	154	95.5	269
Nitrate-Nitrogen	n/a	mg/L	0.032	0.005	1.8
Dissolved Reactive Phosphorus	n/a	mg/L	2	1.2	2.85
Ammonia Nitrogen	n/a	mg/L	25	21.4	28.1
Total Phosphorus	n/a	mg/L	2	1.68	3.01
Formaldehyde	n/a	mg/L	see appendix ii		
Volatile Organic Compounds	n/a	mg/L			
Semi Volatile Organic Compounds	n/a	mg/L			

Table 4: Heavy metals and other monitoring compounds statistical analysis.

Below is the statistical analysis of the analyte monitoring requirements for coastal water sampling. The results are consistent throughout FY2019/2020.

Location	Analyte	Unit	Geomean	Min	Max
Fitzroy Bay 400 m SE of outfall	Faecal Coliform	cfu/100mL	5	4	12
Fitzroy Bay 400 m SE of outfall	Enterococci	cfu/100mL	5	4	8
Fitzroy Bay 100 m SE of outfall	Faecal Coliform	cfu/100mL	9	4	160
Fitzroy Bay 100 m SE of outfall	Enterococci	cfu/100mL	8	4	120
Fitzroy Bay 100 m NW of Outfall	Faecal Coliform	cfu/100mL	8	4	24
Fitzroy Bay 100 m NW of Outfall	Enterococci	cfu/100mL	5	4	20
Fitzroy Bay 400 m NW of Outfall	Faecal Coliform	cfu/100mL	4	4	8
Fitzroy Bay 400 m NW of Outfall	Enterococci	cfu/100mL	4	4	4
Pencarrow Head at Lighthouse	Faecal Coliform	cfu/100mL	4	4	8
Pencarrow Head at Lighthouse	Enterococci	cfu/100mL	8	4	100
Inconstant Point	Faecal Coliform	cfu/100mL	4	4	4
Inconstant Point	Enterococci	cfu/100mL	4	4	4
Hinds Point	Faecal Coliform	cfu/100mL	5	4	8
Hinds Point	Enterococci	cfu/100mL	4	4	4

Table 5: Coastal Water Monitoring statistical analysis

Section (c)

The seaview treatment plant has been compliant for FY2019/2020.

Section (d)

The treatment plant had encountered challenges in the activated sludge process this FY2019/2020 but has been effectively managed. This resulted to the continued compliance of the treatment plant to the resource consent conditions.

Section (e)

GWRC has commented on the selection of the effluent faecal coliform results from several samples taken each day last October to December 2019 reporting period. GWRC had advised to use the first sample result taken each day.

Condition (19)

The permit holder shall take reasonable steps to investigate ways and means of minimizing infiltration and stormwater ingress into the sewerage system and provide the Manager, Environmental Regulation, Wellington Regional Council, with an annual report by 31 July on progress.

A report for inflow and infiltration can be found in Appendix i: Inflow and Infiltration Report.

Condition (20)

The permit holder shall take reasonable steps to monitor and manage trade waste inflows into the sewerage system so as to minimize the risk of disruption to the wastewater treatment process. The permit holder shall provide the Manager, Environmental Regulation, Wellington Regional Council, with an annual report on trade waste which summarises issues arising and actions taken by 31 July.

Please note that the trade waste annual report is generated by HCC Trade Waste Team. Unfortunately, the report wasn't available yet during the submission of this report. The report will be provided once it is already available.

Condition (22)

The permit holder shall submit an annual report for the main outfall pipeline, which addresses activities undertaken during the previous year, to the Manager, Environmental Regulation, Wellington Regional Council, by 31 July each year. This report shall include, but not be limited to, the following elements:

- (a) Details of works (including any repairs and replacements) undertaken during the past year; and
- (b) Collation and assessment of the results of any environmental monitoring undertaken during the year.

Section (a)

No repair has been conducted this FY2019/2020.

Section (b)

All the collation and assessments of the results of the environmental monitoring has been provided under the specific resource consent conditions.

WGN110494 [31241]

Condition (6)

The consent holder shall monitor the flow rate, duration and total volume of all overflows discharged from the Wainuiomata storm tank into the Wainuiomata River and shall report the results to Wellington Regional Council in accordance with conditions 9 and 17 of this consent, or upon request.

The flow monitoring devices shall be capable of measuring wastewater flows of magnitudes up to and beyond peak instantaneous flow rates, and need to be calibrated and maintained to ensure that the measurement error is no more than +/- 10%.

The following is a summary of the discharge events from the Wainuiomata pump station storm tank outlet structure to the Wainuiomata River for the 2019/2020 reporting period:

Date	Duration	Volume	Mean Flow	Peak Flow	Wainuiomata River Minimum Flow	Wainuiomata River Maximum Flow	Consented	Comments
	hrs:mins	m ³	L/s	L/s	m ³ /s	m ³ /s		
28 Mar 2020	51hr 33m	17,343	93	216	6	37	Y	Heavy rain in catchment

Table 6: Wainuiomata Discharge Events from 2019/2020 Reporting Period

Condition (7)

The consent holder shall record the minimum and maximum daily flow of Wainuiomata River recorded at Leonard Wood Park monitoring site (m³/s) each day a discharge occurs.

The minimum and maximum flow rates for the Wainuiomata River can be found in Table 3: Wainuiomata Discharge Events from 2019/2020 Reporting Period under WGN110494 [31241] Condition (6).

Condition (12)

The consent holder shall keep a record of any complaints received. The record shall contain the following details:

- Name and address of complaint (if provided)
- Identification of the nature of the complaint
- Date and time of the complaint and the alleged event
- Weather conditions at the time of the alleged event, and
- Any measure taken to address the cause of the complaint

The consent holder shall notify the Manager, Environmental Regulation, Wellington Regional Council of any complaints relating to the exercise of this consent within 24 hours of being received by the consent holder or the next working day.

The consent holder shall forward to the Manager, Environmental Regulation, Wellington Regional Council a copy of the complaints record in the annual report required by condition 17 of this consent.

Notification shall be sent to the Manager, Environmental Regulation, Wellington Regional Council at notifications@gw.govt.nz. Please include the consent reference WGN110494 [31241] and the name and phone number of a contact person responsible for the discharge.

There were no complaints lodged regarding the discharge to the Wainuiomata River during the 2019/2020 reporting period.

Condition (15)

The consent holder shall prepare and submit an infiltration and inflow report to the Manager, Environmental Regulation, Wellington Regional Council by 1 December 2017, 1 December 2020, 1 December 2023, 1 December 2026 and six months prior to the expiry of the consent. The reports shall include but not limited to:

- In the 2017 report, the status of influent and inflow work scheduled and reported in I/I Management Work Programme in Wainuiomata Catchment (dated September 2014)
- The status of scheduled infiltration and inflow work as reported to the Manger, Environmental Regulation, Wellington Regional Council for the previous three years
- An assessment of the effectiveness of the infiltration and inflow works completed to date, including whether overflows have reduced or increased in frequency, duration or volume, and what is to be done to minimize overflows
- Infiltration and inflow work scheduled for the next three years in Wainuiomata including specifying the sub-catchments where CCTV inspection are pressure testing (if applicable) and pipe renewal/rehabilitation that shall be carried out; and
- Any alternatives investigated or implemented to minimize overflows to the Wainuiomata River

The reports shall be to the satisfaction of the Manger, Environmental Regulation, Wellington Regional Council.

Note 1: The purpose of conditions 14 and 15 is to require the consent holder to report to Wellington Regional Council on the effectiveness of works undertaken to maintain or reduce the frequency, duration and/or volume of overflows into the Wainuiomata River.

Note 2: When assessing compliance with conditions 14 and 15 consideration must be given by Wellington Regional Council to the impact of long term planning processes on I/I work programmes and subsequent changes to scheduled I/I works reported under this condition. Updates are provided under condition 17.

An update regarding infiltration and inflow can be found in Appendix i: Inflow and Infiltration Report.

Condition (16)

The consent holder shall use a suitably experienced person to assist them with the development and implementation of a Tangata Whenua Values Monitoring Plan (TWVMP) in consultation with Iwi. The plan shall be developed in accordance with the Tangata Whenua Values Monitoring Framework developed by Wellington Regional Council and where relevant the Ministry for Environment's 'Cultural Health Index for Streams and Waterways, 2006' and be to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

The purpose of the TWVMP is to identify cultural indicators and sites of significance and outline a monitoring programme that is reasonable for the scale and nature of the discharge. The Manager, Environmental Regulation, Wellington Regional Council can request the TWVMP to be updated to include any changes or additions necessary to provide an adequate understanding of the effects of the discharge.

If the consent holder cannot develop the TWVMP following the grant of this consent, it shall be completed within a timeframe that is to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

The consent holder shall implement the plan and report the results to Iwi within a timeframe to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

Note 1: At the time of granting the consent Wellington Regional Council has engaged a consultant to develop a monitoring framework to assist the consent holder with their responsibilities under this consent condition.

Note 2: At the time of granting consent the Iwi to be consulted regarding the development and implementation of the TWVMP include Te Runanganui o Taranaki Whanui ki te Upoko o te Ika Maui and Port Nicholson Block Settlement Trust. However the consent holder may involve other interested Iwi in the future.

Development of the TWVMP has been stalled. GWRC is to provide further information in order for this to proceed.

Condition (17)

The consent holder shall prepare and submit an annual report to the Manager, Environmental Regulation, Wellington Regional Council by 1 August each year (covering the year 1 July to 30 June). The annual report shall include:

- A summary of overflow events
- Flow monitoring results (carried out under conditions 6 and 7 of this consent)
- The complaints record (as required by condition 12 of this consent)
- Any maintenance or repair work that have been carried out on the storm tank, screens and overflow structure
- Any update to the programme of I/I work outline in reports required by condition 15 of this consent
- Outcomes from Tangata Whenua Value Monitoring undertaken that year (if applicable); and
- Any other matters the consent holder considers relevant

The report shall be to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

The following table summarises the report requirements and the resource consent condition the data would be listed under:

Report Requirements	WGN110494 [31241] Condition
Summary of Overflow Events	6
Flow Monitoring Results	7
Record of Complaints	12
Inflow and Infiltration	15
Tangata Whenua Value Monitoring	16

Table 7: Reporting Requirements

The following is a summary of the maintenance performed at the Wainuiomata pump station.

Month	Maintenance Activity Description
July 2019	Wet well level transducer repositioned due to interference
May 2020	Wainuiomata PS – incoming pole fuses replaced
June 2020	Operation transferred from HVWS to WWL Customer Operations Group

Table 8: Maintenance/Repair Work at Wainuiomata Pump Station

WGN1010101 [20893]

Condition (7)

The permit holder shall undertake monitoring to determine the time, duration and approximate volume of each overflow event. The permit holder shall report the results of this monitoring to the Manager, Consents Management, Wellington Regional Council, within six months of the date of commencement of this permit, and six monthly thereafter, or on request.

The following is a summary of the discharge events from the Wellington Road pump station to the Black Stream for the 2019/2020 reporting period:

Date	Duration	Volume	Mean Flow	Peak Flow	Consented	Comments
	hrs:mins	m ³	L/s	L/s		
14/07/2019	02hr 54m	347	33	45	Y	Heavy rain in catchment
16/07/2019	01hr 59m	469	65	72	Y	Heavy rain in catchment
12/08/2019	03hr 33m	937	91	73	Y	Heavy rain in catchment
6/09/2019	01hr 59m	361	50	65	Y	Heavy rain in catchment
11/11/2019	13hr 11m	725	15	139	Y	Heavy rain in catchment
25/11/2019	01hr 19m	68	14	n/a	N	Both pumps blocked by plastic debris
8/12/2019	07hr 53m	2,128	75	156	Y	Heavy rain in catchment
28/03/2020	41hr 59m	3,964	26	191	Y	Heavy rain in catchment
5/05/2020	06hr 59m	709	28	62	Y	Heavy rain in catchment
4/06/2020	06hr 01m	840	41	126	Y	Heavy rain in catchment
18/06/2020	26hr 16m	1,455	15	71	Y	Heavy rain in catchment

Table 9: Wellington Road Pump Station Discharge Events

Condition (10)

The permit holder shall take all reasonable steps to investigate and implement ways and means of minimizing infiltration and stormwater ingress into the sewerage system. In particular, the permit holder shall complete work by 2007 to reduce stormwater inflow in the Wainuiomata Catchment. The permit holder shall also provide the Manager, Consents Management, Wellington Regional Council with an annual report detailing what process has been made to reduce infiltration and stormwater ingress. The report shall be submitted to the Manager, Consents Management, Wellington Regional Council within six months of the date of commencement of this permit, and annually thereafter.

A report regarding infiltration and inflow can be found in Appendix i: Inflow and Infiltration Report.

Condition (11)

The permit holder shall provide the Wellington Tenth Trust and Te Runanganui o Taranaki Whanui kit e Upoko o Te Ika a Maui with a report on the overflows entering the Black Stream. The report shall include, but is not limited to, details of the flow rates and duration of overflows and the measures to minimize infiltration and stormwater ingress recorded and reported under conditions 7 and 10 respectively. The report shall be forwarded to both groups within six months of the date of commencement of this permit, and annually thereafter.

The following table summarises the report requirements and the resource consent condition the data would be listed under:

Report Requirements	WGN110494 [31241] Condition
Summary of Overflow Events	6
Inflow and Infiltration	15

Table 10: Reporting Requirements

Condition (12)

The permit holder shall keep a record of any complaints that are received. The record shall contain the following details, where practical:

- (a) Name and address of complaint;
- (b) Identification of the nature of the complaint;
- (c) Date and time of the complaint and the alleged event, and
- (d) Weather conditions at the time of the alleged event, and

The permit holder shall notify the Manager, Environmental Regulation, Wellington Regional Council of any complaints relating to the exercise of this permit, within twenty-four hours of being received by the permit holder or the next working day. The permit holder shall forward to the Manager, Environmental Regulation, Wellington Regional Council a copy of the complaints record on request.

There were no complaints lodged regarding the discharge to the Black Stream during the 2019/2020 reporting period.

WGN960002 [02]

Condition (7)

The permit holder shall keep a record of any complaints that are received. The complaints shall be forwarded to the Manager, Consents Management, Wellington Regional Council within twenty-four hours of being received by the permit holder. The permit holder shall record the complainants name, time of incident that caused the complaint, and weather conditions.

The table below summarises the complaints receive in FY2019/2020 in the operation of the Barber Grove Pumping Station.

Date	Complainant	Details	Action Taken	Notification and Report sent
30/10/2019	Anonymous	Phone call received from neighbour of Barber Grove Pump Station "It stinks"	The HVWS Shift Engineer called two Mechanical Engineers who attended Barber Grove pump Station. They checked and confirmed that the Biofilter fan was running. They reported that the odour at the site was normal.	Sent to GW, WWL by BCo 17:00 30/10/19.

3/12/2019	HCC Call Centre	Reece from Hutt city call center phoned the HVWS Shift Engineer to report an odour complaint that is believed to be coming from Barber Grove pump station. The smell making them feel sick. The HVWS Shift Engineer phoned the on-call Engineer to attend.	The HVWS on-call engineer called went to Barber Grove and found that the biofilter smells a bit possibly due to the rain earlier. All fans working fine. Completed at 11:00pm. The following morning (4th December) another engineer carried out a secondary odour check at Barber Grove station, they also checked the Air Release Valve. Found no defects and no odour. Completed 08:53am	Sent to GW, WWL by BCo 16:00 05/12/19.
5/12/2019	HCC Call Centre	Call from Hutt city call center to the HVWS Process supervisor. Complaint from Barber Grove about odour from the Wastewater Treatment Plant. The smell is making them feel sick. (The HVWS Process	The HVWS Process Supervisor spoke to the HVWS Operations Manager who asked him to speak to staff who had been working at Barber Grove and had just returned to site. These staff had not noticed anything unusual and the fans and air release valve had been checked the previous day. They did note that there were a lot of earthworks and exposed pipes in the area but did not identify any odour. The HVWS Electrician was returning to site	Sent to GW, WWL by BCo 16:00 05/12/19.
13/02/2020	Neighbour – Barber Grove	Odour from the pump station has been bad today (Thursday 13 th) and the night before (Wednesday 12 th)	Investigation found odour fan turned off during maintenance. Maintenance completed and fan restarted by 16:30 on the 13/02/2020.	Sent to GW, WWL by BCo 16:00 14/02/2020.

14/02/2020	HCC Property Manager	Email Complaint received from complainant via Hutt City Council (HCC) and Wellington Water Limited.	Investigated by HVWS Operations Manager. Complaint relates to maintenance on 13th February. HVWS responded by email to complainant.	Sent to GW, WWL by BCo 14/02/20.
20/02/2020	Neighbour Barber Grove	Odour from the pump station has been bad today.	Site investigated and no odour detected. Confirmed odour fan was working.	Sent to GW, WWL by BCo 20/ 02/ 20.
09/03/2020	Anonymous	Complaint received by Hutt Valley Water Services Reception for odour at Barber Grove pump station	HVWS unable to confirm the odour was present. HVWS to increase monitoring to identify odour source.	Sent to GW, WWL by BCo 09/03/20.

Table 11: Summary of Complaints in Barber Grove Pumping Station

Condition (10)

The permit holder shall take all reasonable steps to investigate and implement ways and means of minimizing infiltration and stormwater ingress into the sewerage system and provide the Manager, Consents Management, Wellington Regional Council with an annual progress report.

A report regarding infiltration and stormwater ingress can be found in Appendix i: Inflow and Infiltration Report.

Condition (11)

The permit holder shall provide the Wellington Tenth Trust with a report on the overflows, and the status of the pumping stations as they are upgraded, on an annual basis.

For a summary of the overflows that have occurred during the 2019/2020 reporting period see WGN 960002 [02] Condition (13).

The following is a summary of the maintenance activities performed at the Barber Grove PS:

Date	Maintenance Activity Description
July 2019	Assistance in pump performance testing with Cardno
Sep 2019	#2 Effluent Pump VSD replaced
Feb 2020	Odour fan suction transition spool piece replaced
March 2020	Wet well potable water line replaced
June 2020	Transfer of operation from HVWS to Wellington Water Customer Operations Group

Table 12: Maintenance/Repair Work at Barber Grove PS

Condition (13)

The permit holder shall monitor the flow rate and duration of any overflows, and shall report the results of this monitoring to the Manager, Consents Management, Wellington Regional Council, at three monthly intervals, or upon request.

Although not a requirement for the annual report, the overflows at the Barber Grove PS location have been listed below:

Date	Duration	Volume	Mean Flow	Peak Flow	Consented	Comments
	hrs:mins	m ³	L/s	L/s		
8/12/2019	14hr 29m	2,536	48	100	Y	Heavy rain to the Hutt Valley Catchment

Table 13: Barber Grove Discharge Events

WGN960002 (23747)

Condition (7)

The permit holder shall keep a record of any complaints that are received. The complaints shall be forwarded to the Manager, Consents Management, Wellington Regional Council within twenty-four hours of being received by the permit holder. The permit holder shall record the complainants name, time of incident that caused the complaint, and weather conditions.

There were no complaints in the operation of the Silverstream storm tank in FY2019/2020.

Condition (10)

The permit holder shall take all reasonable steps to investigate and implement ways and means of minimizing infiltration and stormwater ingress into the sewerage system and provide the Manager, Consents Management, Wellington Regional Council with an annual progress report.

A report regarding infiltration and stormwater ingress can be found in Appendix i: Inflow and Infiltration Report.

Condition (11)

The permit holder shall provide the Wellington Tenth Trust with a report on the overflows, and the status of the pumping stations as they are upgraded, on an annual basis.

For a summary of the overflows that have occurred during the 2019/2020 reporting period see WGN 960002 (23747) Condition (13).

The following is a summary of the maintenance activities performed at the Silverstream Storm tank during the 2019 reporting period:

Date	Maintenance Activity Description
June 2020	Transfer of operations from HVWS to WWL Customer Operations Group

Table 13: Maintenance/Repair Work at Silverstream Storm Tank

Condition (13)

The permit holder shall monitor the flow rate and duration of any overflows, and shall report the results of this monitoring to the Manager, Consents Management, Wellington Regional Council, at three monthly intervals, or upon request.

The following is a summary of the discharge events from the Silverstream storm tank for the 2019/2020 reporting period:

Date	Duration	Volume	Mean Flow	Peak Flow	Consented	Comments
	hrs:mins	m ³	L/s	L/s		
16/07/2019	14hr 18m	2,975	58	274	Y	Heavy rain in the catchment
13/08/2019	00hr 34m	25	12	23	Y	Heavy rain in the catchment
11/11/2019	18hr 05m	4,953	76	206	Y	Heavy rain in the catchment
8/12/2019	13hr 18m	5,610	117	252	Y	Heavy rain in the catchment
28/03/2020	32hr 59m	6,164	52	143	Y	Heavy rain in the catchment
5/05/2020	14hr 08m	5,359	105	145	Y	Heavy rain in the catchment
25/05/2020	12hr 33m	3,727	83	125	Y	Heavy rain in the catchment
5/06/2020	17hr 58m	6,480	101	185	Y	Heavy rain in the catchment
18/06/2020	24hr 00m	7,674	88	188	Y	Heavy rain in the catchment

Table 14: Silverstream storm Tank Discharge Events

WGN180461 [35592]

Condition (12)

The permit holder shall keep a record of any complaints received. The records shall contain the following details:

- Name and address of complainant (if provided)
- Identification of the nature of the complaint
- Date and time of the complaint and the alleged event
- Weather conditions at the time of the alleged event, and
- Any measure taken to address the cause of the complaint

The permit holder shall notify the Manager, Environmental Regulation, Wellington Regional Council of any complaints relating to the exercise of this permit within 24 hours of being received by the permit holder or the next working day.

Notification must be sent to notifications@gw.govt.nz. Please include consent reference WGN180461.

There were no complaints lodged regarding the discharge from Point Arthur pump station to the MOP during the 2019/2020 reporting period.

Condition (13)

The permit holder shall submit the following to the Manager, Environmental Regulation, Wellington Regional Council via email by 1 August each year (covering the year 1 July to 30 June):

- The number of overflow events that occurred during the year
- The duration, maximum flow rate, mean flow rate and total volume for each overflow event
- An assessment of the frequency and volume of the overflow events in the previous 12 months against the average frequency and volume for the period 2004 – 2018 to demonstrate that there is no increasing trend in overflow discharges
- Confirmation that the Overflow Contingency Plan has been reviewed and, if updates were required, an updated OCP as required by Condition 6 (if applicable that year).

Note 1: At the time of granting consent, overflows from the previous consent period had occurred in a range of 0 to 5 times per year, with an average discharge volume per event of 2,400m³ and a maximum of 6,947m³. A significant increase in the frequency of overflows over a period of time may require a new resource consent, a change of consent conditions pursuant to section 127 of the Resource Management Act 1991 or a review of conditions pursuant to section 128 of the Resource Management Act 1991.

Note 2: The intent of this condition is not to require an annual report; an email containing the information required is sufficient. The information required by this condition must be emailed to notifications@gw.govt.nz. Please include consent reference WGN180461.

The following is a summary of the discharge events from the Point Arthur Pump Station for the 2019/2020 reporting period:

Date	Duration	Volume	Mean Flow	Peak Flow	Consented	Comments
	hrs:mins	m ³	L/s	L/s		
14/07/2019	04hr 23m	71	1	24	Y	Extreme rainfall in catchment.
16/07/2019	01hr 18m	2	0	2	Y	Extreme rainfall in catchment.
12/08/2019	00hr 35m	50	24	77	Y	Extreme rainfall in catchment.
11/11/2019	09hr 06m	82	3	74	Y	Extreme rainfall in catchment.

Table 15: Point Arthur Pump Station Discharge Events

WGN120142 [33406]

Condition (4)

The consent holder shall establish a consultation group by 1 March 2013 or within a longer timeframe approved by the Manager, Environmental Regulation, Wellington Regional Council. As a minimum the group shall be made up of those individuals/community groups that submitted on this consent who wish to participate and interested persons put forward by those submitters who wish to participate.

The functions of the consultation group is to provide:

- Comment on the Public Notification Strategy required by condition 5 of this consent
- Comment on the Overflow Contingency Plan required by condition 22 of this consent
- Comment on the option assessment report required by condition 26 of this consent directly to Wellington Regional Council, and
- Be a line of communication between the consent holder, the submitters, and the wider community for the duration of the consent

The consent holder shall notify the Manager, Environmental Regulation, Wellington Regional Council of the establishment of consultation group by 1 March 2013.

Note 1: The consultation group is considered “established” when the consent holder has collated contact details for all submitters/interested persons joining the group, and the group has been provided with a plan of how the consultation process will be facilitated.

Note 2: The consultation group is not a decision making group, but is a forum for the dissemination of information from the consent holder and provides an opportunity for the group to comment on consent compliance and the development of specific plans.

Note 3: The consultation group is expected to provide comments to the consent holder within two weeks of being sent information/plans to review.

Note 4: The need for and the frequency of the meetings shall be determined by the consultation group following the receipt of the reports/plans received in accordance with this condition.

There was one consultation group meeting during the 2019/2020 reporting period which was conducted on the 22nd of August.

Condition (9)

The consent holder shall monitor the flow rate, duration and total volume of all overflows discharged from the treatment plant into the Waiwhetu Stream and shall report the results to Wellington Regional Council in accordance with condition 25 of this consent, or upon request.

The flow monitoring devices shall be capable of measuring wastewater flows of magnitudes up to and beyond peak instantaneous flow rates, and calibrated and maintained to ensure that the measurement error is no more than +/- 10%.

The following is a summary of the flow rates, duration, and total volume of overflow discharges from the Seaview WWTP to the Waiwhetu Stream.

Date	Duration	Volume	Mean Flow	Peak Flow	Consented	Comments
	hrs/mins	m ³	L/s	L/s		
14/07/2019	05hr 08m	1,123	61	275	Y	Overflow due to heavy rain in the catchment.
16/07/2019	07hr 12m	1,765	68	539	Y	Overflow due to heavy rain in the catchment.
12/08/2019	04hr 10m	6,360	424	709	Y	Overflow due to heavy rain in the catchment.
11/11/2019	16hr 46m	22,799	378	1,163	Y	Overflow due to heavy rain in the catchment.
8/12/2019	20hr 25m	33,078	450	1,686	Y	Overflow due to heavy rain in the catchment.
18/12/2019	02hr 56m	951	90	456	Y	Overflow due to heavy rain in the catchment.
12/03/2020	00hr 06m	91	251	895	N	Due to power outage , emergency provision has been applied
28/03/2020	33hr 41m	28,917	239	1,304	Y	Overflow due to heavy rain in the catchment.

Date	Duration	Volume	Mean Flow	Peak Flow	Consented	Comments
	hrs/mins	m ³	L/s	L/s		
5/05/2020	24hr 00m	23,105	267	1,359	Y	Overflow due to heavy rain in the catchment.
25/05/2020	09hr 06m	3,050	93	822	Y	Wet weather
4/06/2020	15hr 26m	23,615	428	1,055	Y	Overflow due to heavy rain
17/06/2020	70hr 23m	109,209	635	1,659	Y	wet weather

Table 16: Seaview WWTP Discharge Events to Waiwhetu Stream

Assessments were performed on the overflow discharges of treated wastewater from the Seaview main pumping to Waiwhetu Stream. The assessment of the wet weather overflow discharges in the Waiwhetu Stream can be found in appendix iv.

Condition (10)

The consent holder shall install, commission and operate a flow sensor as close as practicable to the discharge point in the Waiwhetu Stream by 1 August 2013 to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council that is capable of continuously monitoring and logging flow in the stream during a discharge event.

Note: It is recommended that the design, specification and operation of the flow sensor are discussed with Greater Wellington Flood Protection and Environmental Monitoring and Investigation Departments prior to installation.

The Waiwhetu River flow rates were submitted to GWRC as trends in the discharge notifications. The average, minimum, and maximum flow rates of the Waiwhetu Stream are included in every discharge reports.

Condition (11)

The consent holder shall take a grab sample of treated wastewater as it leaves the treatment plant prior to entering the overflow pipe each day that a discharge occurs for more than one hour. The sample shall be analyzed for parameters specified in condition 14.

A summary of the results of sampling can be found in appendix v: Overflow Sampling Monitoring

Condition (12)

Each day a discharge occurs and one day after the cease of a discharge the consent holder shall take representative grab samples of Waiwhetu Stream water at ~~two levels in the water column, namely 0.5 centimetres and 15 centimetres~~ below the surface. The samples shall be collected from the true left bank of the Waiwhetu Stream at locations specified in Table 1.1:

Table 1.1 Water quality monitoring locations

Site	NZTM	
	Easting	Northing
Immediately upstream of the port Road Bridge	1759345	5433136
Adjacent to the Waiwhetu Pa site and downstream of the public walkway	1759539	5433352
Immediately downstream of the Bell Road Bridge	1760431	5433523

The consent holder shall record the date, time (NZ standard time), weather (in particular wind direction and strength) and tidal conditions (low/medium/high and ebb/flood tide) at the stream mouth when the samples are taken. Where practicable, the sampling should be undertaken at least three hours after any ebb tide starts.

Note: This condition does not apply to overflows with a duration of less than one hour.

An assessment was performed on the overflow discharges of treated wastewater from the Seaview main pumping to Waiwhetu Stream. The report contains a map of the sampling sites and all the environmental conditions at the time of sampling. A copy of the report can be found in Appendix iii:

Condition (14)

The samples collected in accordance with conditions 11 and 12 shall be analyzed for:

- Faecal Coliforms (cfu/100mL)
- Carbonaceous Biochemical Oxygen Demand (g/m³)
- Enterococci(no./100mL)
- Escherichia coli (no./100mL)
- Dissolved Reactive Phosphorus (g/m³)
- Ammoniacal Nitrogen (g/m³)
- Nitrate Nitrogen (g/m³)
- Nitrite Nitrogen (g/m³)

In addition, on each sampling occasion at the three locations along the Waiwhetu Stream as described in condition 12 the consent holder shall ensure the following in-situ measurements are recorded:

- Water temperature
- pH
- Salinity, and
- Dissolved oxygen.

An assessment of the above results shall be provided in the annual report required by condition 25. Copies of the water quality monitoring results shall be provided in both electronic and hardcopy format to the Manager, Environmental Regulation, Wellington Regional Council upon request.

A summary of the results of sampling can be found in appendix iv : Overflow Sampling Monitoring

Condition (15)

- (a) The discharge shall not result in any of the following effects on the water of the Waiwhetu Stream beyond the reasonable mixing zone boundary defined as 100m downstream of the Waiwhetu Stream outfall (i.e. immediately upstream of Port Road Bridge) and 100m upstream the Waiwhetu Stream outfall (i.e. adjacent to Lot 2 DP 421395):
- 1) The product of any conspicuous oil or grease or grease films, scums or foams or floatable or suspended materials, or
 - 2) Any conspicuous change in colour or clarity
 - 3) Any emission of objectionable odour, or
 - 4) Any significant adverse effects on aquatic life
- (b) During each sampling event required by condition 12, the consent holder shall take photographs of the point of discharge and immediate receiving waters around the point of discharge to show the presence of any of effects (1-4) listed in condition 15 (a) and any obvious undesirable biological growths or visible die-offs. The consent holder shall forward to the Manager, Environmental Regulation, Wellington Regional Council a copy of the photographs in the annual report required by condition 25 of this consent or upon request.

All photographs were submitted to GWRC as part of the quarterly resource consent compliance reports. Please refer to the following documents:

Wastewater Project – Resource Consent Compliance Report: July – September 2019/2020

Wastewater Project – Resource Consent Compliance Report: October – December 2019/2020

Wastewater Project – Resource Consent Compliance Report: January – March 2019/2020

Wastewater Project – Resource Consent Compliance Report: April – June 2019/2020

Condition (16)

The consent holder shall keep a record of any complaints received. The record shall contain the following details, where practicable:

- Name and address of complaint (if provided)
- Identification of the nature of the complaint
- Date and time of the complaint and of the alleged event
- Weather conditions at the time of alleged event, and
- Any measures taken to address the cause of the complaint

The consent holder shall notify the Manager, Environmental Regulation, Wellington Regional Council of any complaints relating to the exercise of this consent, within 24 hours of being received by the consent holder or the next working day.

Notification can be sent to the Manager, Environmental Regulation, Wellington Regional Council at notifications@gw.govt.nz. Please include the consent reference WGN120142 [31523] and the name and phone number of a contact person responsible for the discharge. The consent holder shall forward to the Manager, Environmental Regulation, Wellington Regional Council a copy of the complaints record, in the annual report required by condition 25 of this consent.

No complaints were recorded regarding the discharge of treated wastewater from the Seaview WWTP to the Waiwhetu Stream during the 2019/2020 reporting period.

Condition (20)

The results of the monitoring required by the TWVMP, shall be reported to the Manager, Environmental Regulation, Wellington Regional Council, on an annual basis, by 1 August, once the TWVMP has been approved. The assessment of the monitoring results shall be undertaken by a suitably qualified person that is to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

The TWVM report shall include, but not be limited to, the following:

- The results of all monitoring undertaken under the TWVMP
- A discussion of the likely impact the discharges are having/had on the cultural values of the waterbody including cumulative effects, if possible
- A comparison of these results with any previous monitoring undertaken in accordance with the TWVMP
- Any recommendations for changes to the TWVMP (e.g. indicator species, monitoring sites), and why
- Any recommendations for mitigation and minimizing the impact of the discharges on cultural values of the waterbody, if possible
- Copies of any comments on the monitoring results that have been received from the organisations included in condition 18, and
- Any other relevant information

The report shall be to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

A copy of the TWVM report shall be provided to the Te Runanganui o Taranaki Whanui ki te Upoko o te Ika Maui, Port Nicholson Block Settlement Trust and the Wellington Regional Council.

Development of the TWVMP has been stalled. GWRC is to provide further information in order for this to proceed.

Condition (23)

The consent holder shall investigate and implement ways and means of reducing stormwater infiltration and inflow (I&I) into the sewerage system with the aim of minimising overflow discharges. Investigations shall include but not be limited to:

- CCTV and pressure testing monitoring to identify faulty mains requiring replacement, and
- Flow monitoring and system assessment to identify the sources of inflow and infiltration, system performance and options to reduce the infiltration and inflow

The investigations and works undertaken to reduce I&I shall be reported on in the annual report required by condition 25.

An update regarding infiltration and inflow can be found in Appendix i: Inflow and Infiltration Report.

Condition (25)

The consent holder shall prepare and submit comprehensive annual report to the Manager, Environmental Regulation, Wellington Regional Council, Regional Public Health and members of the consolation group as required by condition 4 of this consent by 1 August each year (covering the year 1 July to 30 June). The annual report shall include as a minimum:

- A summary of overflow events (including dates, volumes discharged, duration and cause)
- A summary of consolation group involvement
- The flow monitoring results (carried out under conditions 9 and 10 of this consent)
- The treated wastewater and water quality monitoring results (carried out under conditions 11 and 12 of this consent)
- A critical evaluation by an appropriately qualified and experienced scientist of the previous years monitoring results, in particular the environmental effects of each overflow discharge event. This evaluation shall utilize the treated wastewater and stream quality and flow monitoring data for each overflow event comparing the data against relevant environmental guidelines
- Photographs from the visual inspections undertaken under condition 15(b) of this consent
- Complaints record as required by condition 16
- Summary of I investigations, and work undertaken to reduce I&I into the sewerage network as required by condition 23
- Summary of investigations undertaken, a list of investigations scheduled for the upcoming year (required by condition 24), and timeframes for implementation of any upgrades and/or consent applications, and
- Any other matters the consent holder considers relevant.

The report shall be to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

An assessment was performed on the overflow discharges of treated wastewater from the Seaview main pumping to Waiwhetu Stream. The majority of the reporting requirements are contained within that report. A copy of the report can be found in Appendix iv : Seaview Wastewater Treatment Plant Assessment of Effects of Overflow Discharges to Waiwhetu Stream.

Other reporting requirements not found in the Stantec report can be found under the various conditions of resource consent WGN 120142 [33406].

WGN 120142 [33407]

The permit allows the temporary discharge of treated wastewater to the coastal marine area, and onto land where it may enter streams or the coastal marine area from:

- Planned repairs
- Unplanned repairs
- Leaks associated with temporary repairs and
- Minor leaks

In relation to the main outfall pipeline from Seaview WWTP to Pencarrow Head.

There was no maintenance/repair works in FY2019/2020 period so the permit was not exercised.

WGN120142 [33408]

To temporarily discharge treated wastewater from the Seaview WWTP to the Waiwhetu Stream when the main outfall pipeline is being repaired.

There was no maintenance/repair works in FY2019/2020 period so the permit was not exercised.

WGN950162 (01)

Condition (22)

Emissions from any combustion appliances, excluding stand-by equipment shall be tested for the following parameters annually:

- (a) Oxides of nitrogen
- (b) Carbon monoxide
- (c) Sulphur dioxide

The testing shall be carried out by a standard method to the satisfaction of the Manager, Consents Management, Wellington Regional Council.

All exhaust from the sludge dryer is captured, condensed and then discharged. This condition was not initiated.

WGN020159 [35957]

Condition (3)

Within 10 days of the commencement date of this permit, the permit holder shall monitor the Wainuiomata River at a site upstream and downstream of the Wainuiomata Wastewater Treatment Plant site. After the first sampling round, monitoring shall be carried out on a quarterly basis for three years and then yearly thereafter for the following parameters:

	Unit
Ammoniacal Nitrogen	g/m ³
Dissolved Chloride	g/m ³
Total Iron	g/m ³
Total Manganese	g/m ³
Dissolved Arsenic	g/m ³
Dissolved Cadmium	g/m ³
Dissolved Chromium (Cr VI)	g/m ³
Dissolved Copper	g/m ³
Dissolved Nickel	g/m ³
Dissolved Lead	g/m ³
Dissolved Zinc	g/m ³
Nitrate	g/m ³
Total Kjeldahl Nitrogen	
Dissolved Reactive Phosphorus	
Conductivity	
Temperature	
pH	
Date and Time	

The permit holder shall forward the results of sampling carried out under this, to the Manager, Consents Management, Wellington Regional Council, within five days of the receipt of the results from the laboratory.

Monitoring sites for this condition are to be mutually agreed with the Manager, Consents Management, Wellington Regional Council.

The summary of the results from the Wainuiomata River samples below can be found in appendix vi.

Appendix i:
Inflow and Infiltration Report

Condition (19)

The permit holder shall take reasonable steps to investigate ways and means of minimizing infiltration and stormwater ingress into the sewerage system and provide the Manager, Environmental Regulation, Wellington Regional Council, with an annual report by 31 July on progress.

Inflow and Infiltration Report

The applications made and conditions stipulated for each of the discharge permits proposed a variety of mitigation measures to be undertaken to reduce inflow and infiltration (I/I) and to contain wastewater within the reticulated wastewater network.

In addition both Hutt City Council (HCC) and Upper Hutt City Council (UHCC) have ongoing programs of work to reduce inflow and infiltration (I/I) in the period. Details of works undertaken have been split based on council area and for the reporting year have been provided by Wellington Water Ltd and are described below.

Hutt City Council

Inflow Surveys

An inflow survey map showing previous work and work proposed for this financial year is provided below in Figure 1. In 2019-2020 HCC completed the inflow surveys of private properties in catchments 8.05 and 8.09 in the Western Hills and 07.08 in the Central Hutt Valley. These catchments are highlighted in green on the map and noted as 'Survey Completed 100%'. No further inflow survey work was undertaken in 2019-2020. The yellow highlighted catchments noted as 'Survey Completed' refer to those that have been undertaken in previous years prior to 2019-2020.

Catchments planned for the coming financial year 2020-2021 are highlighted in pink in Figure 1. The catchments that will be assessed include 07.09 in the Central Hutt Valley and 04.02 in Stokes Valley. A consultant specialising in Inflow and Infiltration Management was also engaged to support regional strategic work in 2019-2020 and is continuing some work in 2020-2021.

Flow Monitoring and Rain Gauge Monitoring

Long Term Flow and Overflow Monitoring activities have been continued for another year as Wellington Water have recently renewed the monitoring contract for Hutt City Council area monitors. There are no changes to the long term monitoring sites from 2019-2020 financial year and 2020-2021. The sites that are currently monitored in the Hutt City Council area shown in Table 1 below.

There are currently 6 rain gauges installed and operating in the Hutt City Council area. Wellington Water and Hutt City Council utilise this data to assist in a variety of ways such as aligning with flow monitoring data to understand impact on inflow and infiltration. The rain gauges sites are listed below;

- Orongorongo River at Orongo Swamp
- Wainuiomata River at Wainui Reservoir
- Hutt River at Mabey Road Depot
- Hutt River at Birch Lane

- Hutt River at Shandon Golf Club
- Hutt River at Regent Street

Table 1 - List of Long Term Flow and Overflow Monitoring Sites in Hutt City Council

No.	Site Name	Type
1	PARENGA	Flow
2	TELECOM	Flow
3	MOOHAN	Flow
4	ROWE	Overflow
5	MAIN	Overflow
6	HEATH	Overflow
7	HYDE	Overflow
8	FRASER	Overflow
9	BLACKCREEK	Stream Level
10	ROSSITEROF	Overflow
11	ROSSITERBIF	Bifurcation

Wastewater Modelling

The Hutt Valley model is in the final stages of calibration with system performance to commence in 2020-2021. The Wainuiomata Catchment Model is the most recent model with a Network Improvement Plan recently undertaken. The model for HCC and UHCC Trunk Network is currently being reviewed and calibrated with completion due in 2020-2021. The Seaview WWTP Model has also been developed and is being reviewed by consultants.

CCTV Inspections

CCTV of wastewater networks are an ongoing program with 16.3km of CCTV inspections carried out in 2019-2020 and 15.3km of CCTV of wastewater networks planned for 2020-2021. Figure 1 shows a map of the wastewater mains surveyed in 2019-2020 financial year. Figure 2 shows a map of the wastewater mains planned for 2020-2021 financial year. The CCTV footage is used to identify faults and determine the condition of assets.

Figure 1 - 2020-2021 Hutt City Council Inflow Survey Works

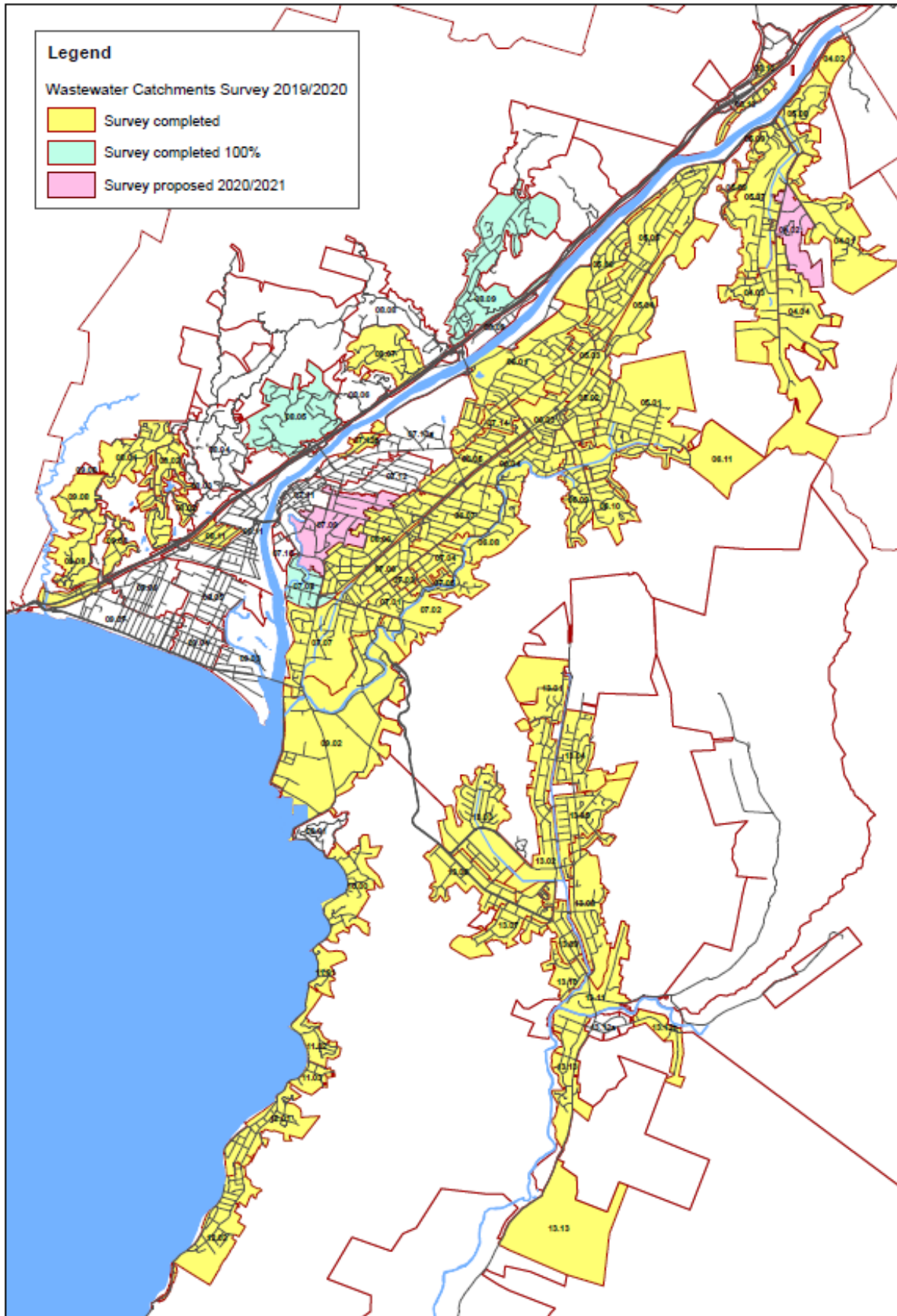
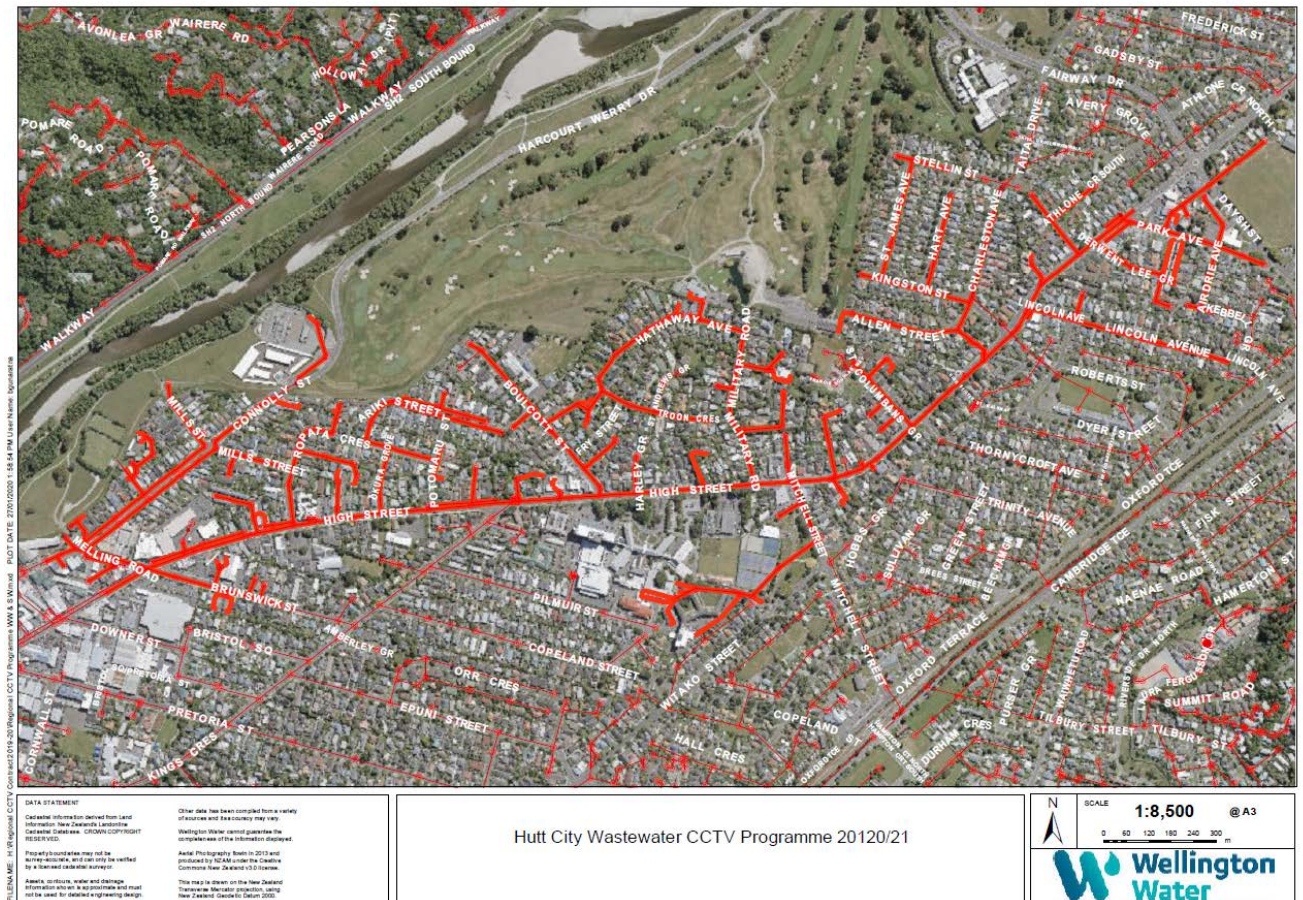


Figure 2 - Map of CCTV of Wastewater Mains completed in HCC in 2019-2020



Figure 3 - Map of CCTV of Wastewater Mains planned for HCC in 2020-2021



Specific Works Targeting Overflows in Waiwhetu Stream Catchment

In April 2010, Hutt City Council was granted consent for a period of 15 years to continue operating the overflow structures at Hinemoa Street and Malone Road into the Waiwhetu Stream. In granting consent the Greater Wellington Regional Council acknowledged the substantial amount of work done to reduce inflow and infiltration, but the expectation is that the number and volume of overflows will continue to decrease as the works in the private drains connected to the public network are completed. Approximately 99% of private drain inspections, testing and upgrades are complete.

Stormwater and Wastewater Capital Projects

The following table provides a summary of capital projects for wastewater (reticulation and trunk network) and stormwater assets that were undertaken in 2019-2020 or planned for 2020-2021.

Table 2 - HCC Capital Projects for Stormwater and Wastewater

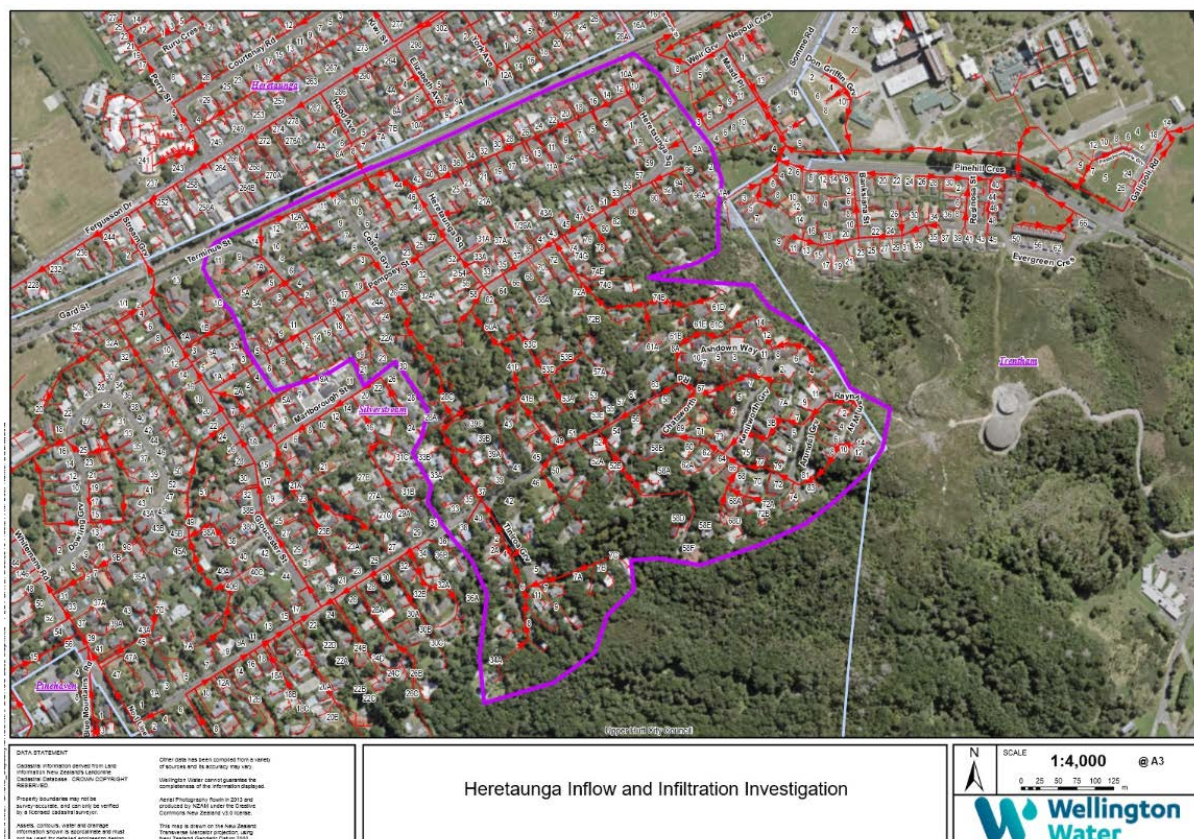
Council / Activity	2019/2020	2020/2021
HCC Stormwater	<ul style="list-style-type: none"> • Heketara / Pukatea Street SW Improvement • Kelso Grove SW Upgrade • Udy Street SW Culvert Improvement • Whiorau Grove SW Improvement • Beach SW Outlets Improvement 	<ul style="list-style-type: none"> • Victoria / Hume Street SW Upgrade • Knights Road / Colin Grove SW Renewals • Dowse Drive SW Improvement • Beach SW outlets Improvement • William Street SW pump station Improvement
HCC Local Wastewater	<ul style="list-style-type: none"> • Wainuiomata Sewer Renewals • Naenae Sewer Renewals 	<ul style="list-style-type: none"> • Wainuiomata Sewer Renewals • Naenae Sewer Renewals

Upper Hutt City Council

Inflow Surveys

Inflow Surveys of private properties were not undertaken in the 2019-2020 financial year. There was an inflow survey planned for the Heretaunga Catchment which was delayed and will now be completed in the 2020-2021 financial year. A map showing the planned inflow survey area is shown below in Figure 4. A consultant specialising in Inflow and Infiltration Management was also engaged to support regional strategic work in 2019-2020 and is continuing some work in 2020-2021.

Figure 4 - Map of Heretaunga Inflow Survey Planned for 2020-2021



Flow Monitoring and Rain Gauge Monitoring

Long Term Flow Monitoring activities have been continued for another year as Wellington Water have recently renewed the monitoring contract for UHCC area monitors. There are no changes to the long term monitoring sites from 2019-2020 financial year and 2020-2021. The sites that are currently monitored in the Hutt City Council area shown in Table 2.

Table 3 - Flow Monitoring Sites in UHCC

No.	Site Name	Type
1	EAST0095	Flow
2	PHMS0005	Flow
3	GIBB0042	Flow

There are currently 10 rain gauges installed and operating in the UHCC area. This data assists with aligning flow monitoring data to understand impact on inflow and infiltration. The rain gauges sites are listed below;

- Mangaroa River at Tasman Vaccine limited
- Pinehaven Stream at Pinehaven Reservoir
- Hutt River at Riverstone Terrace
- Hutt River at Savage Park
- Akatarawa River at Cemetery
- Mangaroa River at Maymorn Pump Station
- Hutt River at Te Marua
- Pakuratahi River at Centre Ridge
- Hutt River at Kaitoke Headworks
- Whakatikei River at Blue Gum Spur

Wastewater Modelling

A wastewater model has been developed for the UHCC Reticulation and system performance assessment of the model is currently being undertaken. As noted above the model for HCC and UHCC Trunk Network is currently being reviewed and calibrated with completion due in 2020-2021. The Seaview WWTP Model has also been developed and is being reviewed by consultants.

CCTV Inspections

CCTV of wastewater networks are an ongoing program with 3.6km of CCTV inspections carried out in 2019-2020 and 4.3km of CCTV of wastewater networks planned for 2020-2021. Figure 5 shows a map of the wastewater mains surveyed in 2019-2020 financial year. Figure 6 shows a map of the wastewater mains planned for 2020-2021 financial year. The CCTV footage is used to identify faults and determine the condition of assets.

Figure 5 - Map of CCTV of Wastewater Mains completed in HCC in 2019-2020



Figure 6 - Map of CCTV of Wastewater Mains planned for HCC in 2020-2021



Stormwater and Wastewater Capital Projects

The following table provides a summary of capital projects for wastewater (reticulation and trunk network) and stormwater assets that were undertaken in the 2019-2020 financial year or planned for 2020-2021.

Table 4 - UHCC Capital Projects for Stormwater and Wastewater

Council / Activity	2019/2020	2020/2021
UHCC Stormwater	<ul style="list-style-type: none"> Stream Grove Stormwater Renewal Stormwater Manhole Cover Improvements 	<ul style="list-style-type: none"> Pinehaven Road Stormwater Upgrades Pinehaven Stream Upgrade Stormwater Manhole Cover Improvements
UHCC Local Wastewater	<ul style="list-style-type: none"> Merton Street Wastewater Upgrade Akatawara Wastewater Renewal Field Street and Dunn Street Wastewater Renewal Maymorn Valley Wastewater Pump Station Renewal 	<ul style="list-style-type: none"> Gibbons Street Wastewater Upgrade Wastewater Renewals in Wallaceville Wastewater Manhole Cover Improvements

UHCC and HCC Joint Venture (JV) Trunk Network

In 2018-2019, CCTV, laser, and profiling inspection for the trunk wastewater mains was undertaken. The results of the inspection were assessed in 2019-2020 to be prioritised and included in the capital works program for future years. The following table provides a summary of capital projects associated with the trunk network that were undertaken in 2019-2020, and future works planned in 2020-2021.

Table 5 - Projects for JV Trunk Network

Council / Activity	2019/2020	2020/2021
UHCC and HCC Wastewater JV	<ul style="list-style-type: none"> Barber Grove to WWTP Duplication Gemstone Drive Sewer Renewals Gibbon Street trunk main Upgrade Petone Collecting sewer Upgrade 	<ul style="list-style-type: none"> Barber Grove to WWTP Duplication Petone Collecting sewer Upgrade

Appendix ii:
WGN050359 [24539] Schedule 11
Yearly Sampling Requirement
Results

Hutt Valley Water Services Ltd
 8 Waterman Street
 Petone
 Lower Hutt 5012
 Attention: Bruce Collier

Analytical Report

Report Number: 20/9565
 Issue: 2
 24 July 2020

Sample	Site	Map Ref.	Date Sampled	Date Received	Order No.
20/9565-01	Final Effluent		26/02/2020 12:30	26/02/2020 13:20	0
Notes:					
Test	Result	Units	Comments	Test Date	Signatory
0003 Oil and Grease	< 4	g/m ³		27/02/2020	Marylou Cabral KTP
0725 Cyanide	0.053	g/m ³	Complies with WGN050359[24539] Consent Limit of 0.2	03/03/2020	Divina Lagazon KTP
6003 Arsenic - Acid Soluble	0.001	g/m ³	Complies with WGN050359[24539] Consent Limit of 0.115	28/02/2020	Shanel Kumar KTP
6008 Cadmium - Acid Soluble	< 0.0002	g/m ³	Complies with WGN050359[24539] Consent Limit of 0.035	28/02/2020	Shanel Kumar KTP
6011 Chromium - Acid Soluble	0.001	g/m ³	Complies with WGN050359[24539] Consent Limit of 0.22	28/02/2020	Shanel Kumar KTP
6013 Copper - Acid Soluble	0.0053	g/m ³	Complies with WGN050359[24539] Consent Limit of 0.065	28/02/2020	Shanel Kumar KTP
6018 Lead - Acid Soluble	< 0.0005	g/m ³	Complies with WGN050359[24539] Consent Limit of 0.22	28/02/2020	Shanel Kumar KTP
6022 Mercury - Acid Soluble	< 0.0005	g/m ³	Complies with WGN050359[24539] Consent Limit of 0.005	27/02/2020	Shanel Kumar KTP
6024 Nickel - Acid Soluble	0.0038	g/m ³	Complies with WGN050359[24539] Consent Limit of 0.35	28/02/2020	Shanel Kumar KTP
6038 Zinc - Acid Soluble	0.026	g/m ³	Complies with WGN050359[24539] Consent Limit of 0.75	28/02/2020	Shanel Kumar KTP
MO-5002 Total Halogenated Phenolics	< 0.05	g/m ³	Complies with WGN050359[24539] Consent Limit of 0.5		Prashilla Singh Transcribed by

Sample	Site	Map Ref.	Date Sampled	Date Received	Order No.
20/9565-02	Final Effluent Grab	Grab	26/02/2020 12:40	26/02/2020 13:10	0
Notes:					
Test	Result	Units	Comments	Test Date	Signatory
0001 pH	7.4			26/02/2020	Marylou Cabral KTP
0055 Conductivity at 25°C	147	mS/m		26/02/2020	Marylou Cabral KTP
0605 Nitrate - Nitrogen	0.05	g/m ³		26/02/2020	Shanel Kumar KTP
0715 Dissolved Reactive Phosphorus	3.23	g/m ³		02/03/2020	Divina Lagazon KTP
0719 Ammonia Nitrogen	20.3	g/m ³		02/03/2020	Divina Lagazon KTP
2080 Total Phosphorus	3.64	g/m ³		29/02/2020	Divina Lagazon KTP
MO-Form Formaldehyde	< 0.20	mg/L			Prashilla Singh Transcribed by



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 43 Detroit Drive
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 16 Lorne Street
 South Dunedin 9012
 Phone: (03) 972-7963

Sample	Site	Map Ref.	Date Sampled	Date Received	Order No.
20/9565-02	Final Effluent Grab	Grab	26/02/2020 12:40	26/02/2020 13:10	0

Notes:

Test	Result	Units	Comments	Test Date	Signatory
P1859 Sample Filtration	Completed			26/02/2020	Ruth Ashton .
SVOC Semi Volatile Organic Compounds					
SVOC-001 2,3-Diuron	<0.001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-002 a-BHC	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-003 a-chlordane	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-004 Aldrin	<0.001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-005 b-BHC	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-006 cis-Permethrin	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-007 Dieldrin	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-008 Endosulfan II	<0.005	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-009 Endosulfan Sulfate	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-010 Endrin	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-011 Endrin Aldehyde	<0.001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-012 Endrin Ketone	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-013 Gamma-Chlordane	<0.001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-014 Heptachlor	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-015 Heptachlor Epoxide	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-016 Hexachlorobenzene	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-017 Lindane (g-BHC)	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-018 Methoxychlor	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-019 p,p'-DDD	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-020 p,p'DDE	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-021 p,p'-DDT	<0.001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-022 Procymidone	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-023 Propanil	<0.001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-024 Endosulfan I	<0.001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-025 Alachlor	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-026 Aldicarb	<0.1	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-027 Atrazine	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-028 Bromacil	<0.005	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-029 Carbofuran	<0.001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-030 Cyanazine	<0.005	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-031 d-BHC	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-032 Metalaxyl-M	<0.001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-033 Metolachlor	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-034 Metribuzin	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-035 Molinate	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-037 Oxadiazon	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-038 Pendimethalin	<0.002	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-039 Propazine	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-040 Pyriproxyfen	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-041 Simazine	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-042 Terbutylazine	0.0004	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-043 Trifluralin	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-044 Hexazinone	<0.001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-045 Chlorpyrifos	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-046 Diazinon	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-047 Dimethoate	<0.001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-048 Pirimiphos methyl	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-049 Acenaphthene	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP



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Page 2 of 5
Report Number: 20/9565-2 ELS

24 July 2020 09:40:36

Sample	Site	Map Ref.	Date Sampled	Date Received	Order No.
20/9565-02	Final Effluent Grab	Grab	26/02/2020 12:40	26/02/2020 13:10	0
Notes:					
Test	Result	Units	Comments	Test Date	Signatory
SVOC-050 Acenaphthylene	< 0.0010	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-051 Anthracene	< 0.0010	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-052 benz(a)anthracene	< 0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-053 Benzo(a)pyrene	< 0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-054 Total Benzo(b) and Benzo(k) fluoranthrene	< 0.0010	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-055 Benzo(g,h,i)perylene	<0.001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-057 Chrysene	< 0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-058 Dibenz(a,h)anthracene	< 0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-059 Fluoranthene	< 0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-060 Fluorene	< 0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-061 Indeno(1,2,3-cd)pyrene	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-062 Naphthalene	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-063 Phenanthrene	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-064 Pyrene	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-066 2,2',3,4,4',5'-Hexachlorobiphenyl	<0.001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-067 2,2',4,5,5'-Pentachlorobiphenyl	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-068 2,4,4'-Trichlorobiphenyl	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-069 2,4-Dichlorobiphenyl	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-070 2,2',3,4,4',5',6'-Heptachlorobiphenyl	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP
SVOC-072 Bis(2-ethylhexyl)adipate	<0.0001	mg/L		27/02/2020	Ganesh Ilancko KTP

VOC Volatile Organic Compounds

VOC-001 1,2,4-Trimethylbenzene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-002 1,3,5-Trimethylbenzene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-003 Benzene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-005 Isopropylbenzene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-007 Naphthalene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-008 n-Butylbenzene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-009 n-Propylbenzene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-010 o-Xylene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-011 p-Isopropyltoluene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-013 sec-Butylbenzene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-014 Styrene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-015 tert-Butylbenzene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-016 Toluene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-017 Total p,m Xylene, Ethylbenzene	<0.0015	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-018 1,1,1,2-Tetrachloroethane	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-019 1,1,1-Trichloroethane	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-020 1,1,2,2-Tetrachloroethane	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-021 1,1,2-Trichloroethane	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-022 1,1-Dichloroethane	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-023 1,1-Dichloroethene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-024 1,1-Dichloropropene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-025 1,2,3-Trichloropropane	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-026 1,2-Dibromo-3-chloropropane	<0.001	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-027 1,2-Dibromoethane	<0.0002	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-028 1,2-Dichloroethane	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-029 1,2-Dichloropropane	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-030 1,3-Dichloropropane	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-031 2,2-Dichloropropane	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-032 Allyl chloride	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP



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Sample	Site	Map Ref.	Date Sampled	Date Received	Order No.
20/9565-02	Final Effluent Grab	Grab	26/02/2020 12:40	26/02/2020 13:10	0
Notes:					
Test	Result	Units	Comments	Test Date	Signatory
VOC-033 Bromochloromethane	<0.0012	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-034 Bromomethane	<0.001	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-035 Carbon tetrachloride	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-036 Chloroethane	<0.001	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-037 Chloromethane	<0.006	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-038 cis-1,2-Dichloroethene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-039 cis-1,3-Dichloropropene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-040 Dibromomethane	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-041 Dichlorodifluoromethane	<0.001	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-042 Dichloromethane	<0.005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-043 Hexachlorobutadiene	<0.0002	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-044 Tetrachloroethene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-045 trans-1,2-Dichloroethene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-046 trans-1,3-Dichloropropene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-047 Trichloroethene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-048 Trichlorofluoromethane	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-049 Vinyl Chloride	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-050 1,2,3-Trichlorobenzene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-051 1,2,4-Trichlorobenzene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-052 1,2-Dichlorobenzene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-053 1,3-Dichlorobenzene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-054 1,4-Dichlorobenzene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-055 2-Chlorotoluene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-056 4-Chlorotoluene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-057 Bromobenzene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-058 Chlorobenzene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-059 1,3,5-Trichlorobenzene	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-060 4-Methyl-2-Pentanone	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-061 Carbon disulphide	<0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-062 Bromodichloromethane	< 0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-063 Bromoform	< 0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-064 Chloroform	< 0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP
VOC-065 Dibromochloromethane	< 0.0005	mg/L		27/02/2020	Ganesh Ilancko KTP

Comments:

Sampled by ELS using approved containers and techniques.

All samples analysed as we receive them. Delivery was within the correct time and temperature conditions.

Report regenerated as requested by customer.

This report cancels and replaces report 20/9565-1. Please dispose of all previous versions.

Subcontracting laboratory details (name/address):

Eurofins Melbourne, via Eurofins Auckland, 35 O'Rorke Road, Penrose, Auckland

Test Methodology:

Test	Methodology	Detection Limit
pH	Dedicated pH meter following APHA Online Edition Method 4500 H.	0.1
Oil and Grease	APHA Online Edition Method 5520B (modified). The Partition-Gravimetric method includes dissolved/emulsified oils and greases.	4 g/m ³
Conductivity at 25°C	APHA Online Edition Method 2510 B.	0.1 mS/m
Nitrate - Nitrogen	Ion Chromatography following APHA 4110B.	0.01 g/m ³



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Test	Methodology	Detection Limit
Dissolved Reactive Phosphorus	Discrete Analyser. In House method based on APHA Online Edition 2005 Method 4500-P F	0.002 g/m ³
Ammonia Nitrogen	Discrete Analyser. In House method based on ISBN 0117516139.	0.01 g/m ³
Cyanide	Discrete Analyser. In House method based on APHA Online Edition Method 4500-CN- C & E.	0.005 g/m ³
Total Phosphorus	Flow Injection Autoanalyser following APHA Online Edition Method 4500-P G. Persulphate digestion follows APHA Online Edition 4500-P B.	0.005 g/m ³
Arsenic - Acid Soluble	ICP-MS following APHA Online Edition method 3125 (modified).	0.001 g/m ³
Cadmium - Acid Soluble	ICP-MS following APHA Online Edition method 3125 (modified).	0.0002 g/m ³
Chromium - Acid Soluble	ICP-MS following APHA Online Edition method 3125 (modified).	0.001 g/m ³
Copper - Acid Soluble	ICP-MS following APHA Online Edition method 3125 (modified).	0.0005 g/m ³
Lead - Acid Soluble	ICP-MS following APHA Online Edition method 3125 (modified).	0.0005 g/m ³
Mercury - Acid Soluble	ICP-MS following APHA Online Edition method 3125 (modified).	0.0005 g/m ³
Nickel - Acid Soluble	ICP-MS following APHA Online Edition method 3125 (modified).	0.0005 g/m ³
Zinc - Acid Soluble	ICP-MS following APHA Online Edition method 3125 (modified).	0.002 g/m ³
Total Halogenated Phenolics	Analyses at Eurofins Melbourne following Method USEPA 8270 Phenols.	0.01 g/m ³
Formaldehyde	Analysed at Eurofins Melbourne following Method MW HMSO.	0.2 mg/L
Sample Filtration	Sample filtered through 0.45 micron filter following APHA Online Edition Method 3030B.	n/a
Semi Volatile Organic Compounds	Semi-Volatile Organic Compound analysed by in-house method using GC-MSMS. Detection limit range is from 0.0001 mg/L to 0.1 mg/L.	
Volatile Organic Compounds	Volatile Organic Compound analysed by in-house method using GC-MS. Detection limit range is from 0.0001 mg/L to 0.006 mg/L.	

Unless otherwise stated, all tests are performed in Wellington.

The laboratory is not responsible for the information provided by the customer which can affect the validity of the results.

"<" means that no analyte was found in the sample at the level of detection shown. Detection limits are based on a clean matrix and may vary according to individual sample.

g/m³ is the equivalent to mg/L and ppm.

Samples will be retained for a period of time, in suitable conditions appropriate to the analyses requested.

This laboratory is accredited by International Accreditation New Zealand and its reports are recognised in all countries affiliated to the International Laboratory Accreditation Co-operation Mutual Recognition Arrangement (ILAC-MRA). The tests reported have been performed in accordance with our terms of accreditation, with the exception of tests marked "not an accredited test", which are outside the scope of this laboratory's accreditation.

This report may not be reproduced except in full without the written approval of this laboratory.



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Appendix iii:
Hutt City Council Trade Waste
Management
July 2019 – June 2020

Appendix iv:
**Seaview Wastewater Treatment
Plant Assessment of Effects of
Overflow Discharges to Waiwhetu
Stream**

The image shows a concrete bridge with a metal railing spanning over a stream. The water is dark and turbulent. In the foreground, there is a rocky bank covered with a large amount of driftwood. A utility pole with power lines is visible on the left side of the bridge. The sky is overcast.

SEAVIEW ASSESSMENT OF ENVIRONMENTAL EFFECTS OF WET WEATHER OVERFLOW DISCHARGES TO WAIWHETU STREAM




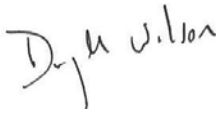
PREPARED FOR WELLINGTON WATER LIMITED

July 2020

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This disclaimer shall apply notwithstanding that the report may be made available to Greater Wellington Regional Council and other persons for an application for permission or approval to fulfil a legal requirement.

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REVIEWED BY	Jess Grinter		20/07/2020
APPROVED FOR ISSUE BY	Dugall Wilson		23/07/2020

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REVISION SCHEDULE

Rev No.	Date	Description	Signature or Typed Name (documentation on file)			
			Prepared by	Checked by	Reviewed by	Approved by
1	22 July 2020	Final	Michelle Chew	David Cameron	Jess Grinter	Dugall Wilson

Wellington Water Limited

Seaview assessment of environmental effects of wet weather overflow discharges to Waiwhetu Stream

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1. Introduction

Hutt City Council (HCC) holds a resource consent WGN120142 [33406] to temporarily discharge treated wastewater from the Seaview Wastewater Treatment Plant to the Waiwhetu Stream during and/or immediately after heavy rain events when flows exceed the capacity of the main outfall pipeline and the storm tank system is fully utilised.

The purpose of this report is to provide an assessment of monitoring results for wet weather overflows for the year from 1 July 2019 to 30 June 2020, as required by Condition 25 of the Consent. That is:

“A critical evaluation by an appropriately experienced scientist of the previous year’s monitoring results, in particular the environmental effects of each overflow event. This evaluation shall utilise the treated wastewater quality and stream water quality and flow monitoring data for each discharge event comparing the data against environmental guidelines.”

This report addresses Conditions 9, 10, 11, 12, 14, 15(b) and requirements 1, 3, 4, 5 and 6 of Condition 25 of the Consent. This report will be submitted as part of the wider annual report.

Twelve overflow events for which the consent conditions apply were recorded from 1 July 2019 to 30 June 2020. The details for these events are provided in Section 3 of this report. There was one dry weather maintenance discharge during the reporting period, on 12 March 2020 which lasted 6 minutes due to a loss of mains power. The overflow occurred during the changeover time taken between the loss of mains power and for back-up generators to come online. The assessment of effects for this sole dry weather maintenance discharge is excluded from this report.

Stantec was commissioned to produce this report on behalf of Wellington Water Limited (WWL), which implements the consent on behalf of HCC in its role as a Council-Controlled Organisation.

2. Environmental Monitoring Requirements

2.1 Consent requirements

Annual reporting conditions of consent WGN120142 [33406] which are relevant to this report, include the following:

- Requirement 1 of Condition 25 requires the consent holder to include a summary of overflow events (including dates, volume discharged, duration and cause)
- Requirement 3 of Condition 25 requires the consent holder to include flow monitoring results for Waiwhetu Stream
- Requirement 4 of Condition 25 requires the consent holder to include treated wastewater and water quality monitoring results
- Requirement 5 of Condition 25 requires a critical evaluation by an appropriately qualified and experienced scientist of the previous years monitoring results, in particular the environmental effects of each overflow discharge event utilising the treated wastewater and stream water quality and flow monitoring data for each overflow event comparing the data against relevant environmental guidelines
- Requirement 6 of Condition 25 requires the consent holder to include photographs from the visual inspections undertaken under condition 15(b) of the Consent

Monitoring conditions of consent WGN120142 [33406] which are relevant to this report, include the following:

- Condition 9 of the consent requires the consent holder to monitor the flow rate, duration and volume of all treated wastewater overflows discharged from the treatment plant to the Waiwhetu Stream.
- Condition 10 requires the consent holder to install and operate a flow sensor in Waiwhetu Stream close to the discharge point by 1 August 2013.
- Condition 11 requires the consent holder to take a grab sample of treated wastewater as it leaves the treatment plant on each day that a discharge occurs for more than one hour.
- Condition 12 requires the consent holder to take grab samples of Waiwhetu Stream water on each day a discharge occurs and one day after the discharge has ceased. The sampling locations are specified below in Table 2-1 and Figure 2-1.
- Condition 14 specifies the wastewater and receiving water quality test requirements to include:
 - Faecal coliforms
 - Carbonaceous biochemical oxygen demand (CBOD₅)
 - *Escherichia coli* (*E. coli*)
 - Enterococci
 - Dissolved Reactive Phosphorus (DRP)
 - Ammoniacal-N
 - Nitrate-N
 - Nitrite-N
 - For stream samples: in situ measurements of water temperature, pH, salinity and dissolved oxygen.
- Condition 15(b) of the consent requires the consent holder to take photographs of the point of discharge and immediate receiving waters around the point of discharge to show the presence of any effects listed in Condition 15(a) of the Consent and any obvious biological growths or die-offs.

Table 2-1: Waiwhetu Stream monitoring locations taken on true left bank of the Waiwhetu Stream

Location	Easting	Northing
A: Immediately upstream of the Port Road Bridge	1759345	5433136
B: Adjacent to the Waiwhetu Pa site (and urupā) and downstream of the public walkway	1759539	5433352

Location	Easting	Northing
C: Immediately downstream of the Bell Road Bridge	1760431	5433523

Site A (Port Road Bridge) is regarded as being downstream of the discharge while Site B (Waiwhetu Pa and urupā) and Site C (Bell Road Bridge) are upstream of the discharge from the outfall (which is indicated with an arrow on Figure 2-1 below).

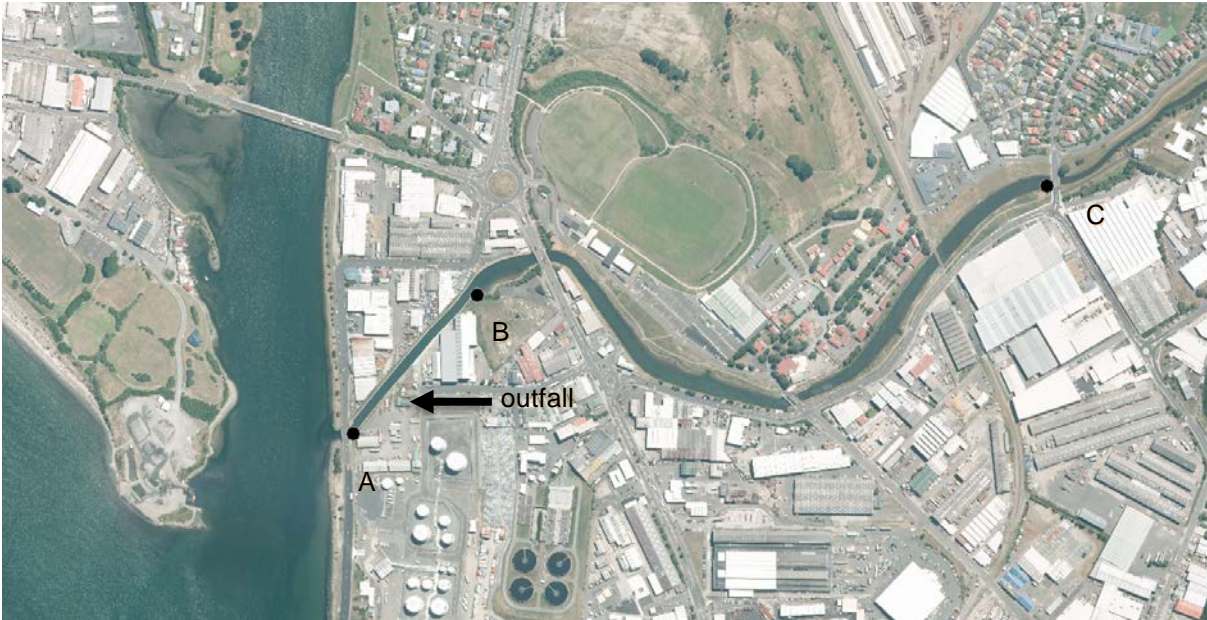


Figure 2-1: Waiwhetu Stream monitoring locations on true left bank of Waiwhetu Stream

Water samples were collected by Hutt Valley Water Services on behalf of Wellington Water and analysed by Eurofins, which is an International Accreditation New Zealand (IAZ) certified laboratory.

2.2 Water quality guidelines

The guideline values used in this report are, in most instances, the Australian and New Zealand Water Quality Guidelines 2018 (ANZG (2018)) default guideline values (DGV) for warm wet-low elevation aquatic ecosystems¹ (Table 2-2). The guideline values for warm wet-low elevation aquatic ecosystems are intended to be compared against the median values from independent samples at a site. These guideline values are not legal standards and breaches do not necessarily mean an adverse effect would arise. Rather, they can be considered 'nominal thresholds' indicating that there is a 'potential risk' at a site, enabling management interventions to protect aquatic ecosystems and prevent or minimise adverse environmental effects. Where there are two percentiles for the DGV, the lower percentile is used as the guideline to inform the assessment contained in Section 4 of this report.

Table 2-2: Water quality guideline values

Variable	Guideline value	Reference
pH	7.3 ²	ANZG (2018) ³ (20 th percentile)
	7.7	ANZG (2018) (80 th percentile)
Water temperature (°C)	≤19	Quinn and Hickey (1990) ⁴
Dissolved oxygen (%sat)	≤92	ANZG (2018) (20 th percentile)

¹ The Waiwhetu Stream is classified as a warm wet-low elevation aquatic ecosystem within the New Zealand River Environment Classification (NIWA 2010)

² Rounded to 1 decimal place from 7.26

³ Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines

⁴ Magnitude of effects of substrate particle size, recent flooding, and catchment development on benthic invertebrates in 88 New Zealand Rivers (1990). Quinn, John M. and Hickey, Christopher. New Zealand Journal of Marine and Freshwater Research, Hamilton, New Zealand.

Variable	Guideline value	Reference
	≤103	ANZG (2018) (80 th percentile)
Nitrate-nitrogen (mg/L)	annual median ≤0.065	ANZG (2018) (80 th percentile)
Ammoniacal nitrogen (mg/L)	≤0.01	ANZG (2018) (80 th percentile)
Dissolved reactive phosphorus (mg/L)	annual median ≤0.014	ANZG (2018) (80 th percentile for filterable reactive phosphorus ⁵)
<i>E. coli.</i> (cfu/100 ml)	95 th percentile ≤540	PNRP Primary contact recreation (rivers and estuaries)
<i>Enterococci</i> (cfu/100ml)	95 th percentile ≤ 500	PNRP Primary contact recreation (coastal waters)

3. Results

3.1 Wet weather Overflow Frequency, Volumes and Duration

During the 12 months from 1 July 2019 to 30 June 2020, twelve overflow events for which the consent condition apply were recorded as summarised in Table 3-1 below. On average, the discharges occurred at a rate of 269 L/s for 19 hours duration. The largest discharge, on 17 June 2020, had a duration of over 70 hours and a volume of nearly 110,000 m³. All events are correlated with heavy rainfall and high flows in the Waiwhetu Stream. Events of less than one hour duration have been excluded from this report.

Table 3-1 Wet weather overflows from Seaview main pumping station (July 2019 to June 2020)

Start Date	Start Time	Duration (hh/mm)	Volume (m ³)	Mean Flow (L/s)	Peak Flow (L/s)	Comment / cause
14 Jul 2019	10:51	05hr 08m	1,123	61	275	Heavy rain
16 Jul 2019	06:39	07hr 12m	1,765	68	539	Heavy rain
12 Aug 2019	19:10	04hr 10m	6,360	424	709	Heavy rain
05 Oct 2019	16:49	02hr 03m	710	96	2,996	Heavy rain
11 Nov 2019	04:17	16hr 46m	22,799	378	1,163	Heavy rain
08 Dec 2019	05:45	20hr 25m	33,078	450	1,686	Heavy rain
18 Dec 2019	09:40	02hr 56m	951	90	456	Heavy rain
28 Mar 2020	07:04	33hr 41m	28,917	239	1,304	Heavy rain
05 May 2020	15:19	24hr 00m	23,105	267	1,359	Heavy rain
25 May 2020	04:46	09hr 06m	3,050	93	822	Heavy rain
04 Jun 2020	20:49	15hr 26m	23,615	428	1,055	Heavy rain
17 Jun 2020	16:11	70hr 23m	109,209	635	1,659	Heavy rain
Average		19hr 01m	21,224	269	1,169	

3.2 Stream flow monitoring

Overflow events (green arrows, shown on Figure 3-1) all correspond with high flow events in the Waiwhetu Stream. A flow record for Waiwhetu Stream at Whites Line East (GWRC data) during the 12 months from 1 July 2019 to 30 June 2020 is shown in Figure 3-1. This monitoring station is located approximately 3 km upstream of the Seaview main pumping station outfall but provides an estimate of stream flows on discharge days.

⁵ The DGV for filterable reactive phosphorus was used in the absence of a DGV for dissolved reactive phosphorus

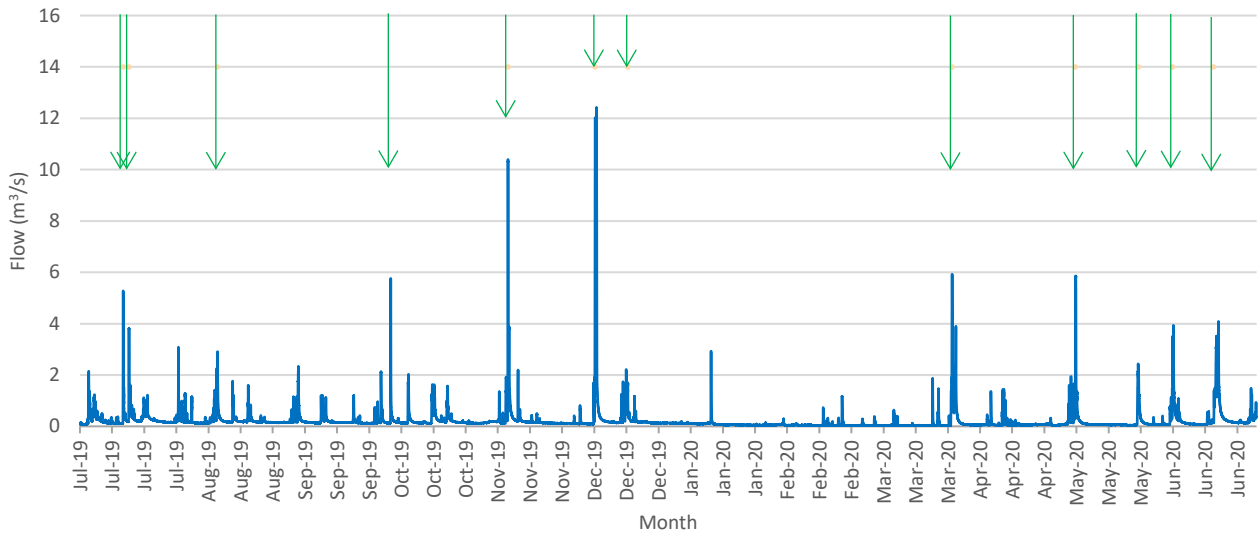


Figure 3-1: Flow in Waiwhetu Stream at Whites Line East during the year from 1 July 2019 to 30 June 2020

HCC operates a flow monitoring station in the lower Waiwhetu Stream near the Seaview outfall, within the tidal zone. Stream flows (m³/sec) during individual discharge events are shown at a higher resolution in Figure A-1 to Figure A-12 in Appendix A. Negative values indicate upstream flow.

The majority of events show a large portion of the overflow commencing during an outgoing tide, with high Waiwhetu Stream flows aiding with the push of water downstream.

The tail end of prolonged discharges, however, did carry through to incoming tide periods, in particular during the 14 July 2019, 16 July 2019, 12 August 2019, 08 December 2019, 28 March 2020, 05 May 2020, 04 June 2020 and 17 June 2020 discharge events. It is uncertain if the storm tank at the Seaview WWTP was fully utilised during the discharge events and it is recommended that the utilisation of the storm tank is verified.

3.3 Treated Wastewater Quality

Samples of treated wastewater were collected on each day that the overflow discharge occurred for one hour or more, as required by condition 11 of the consent, and were tested for the parameters specified in consent condition 14 with the exception of discharge events on 14 July 2019, 12 August 2019, 05 October 2019, 05 May 2020, 04 June 2020 and 17 July 2020. It is observed that the discharge events on 12 August 2019 and 04 June 2020 occurred at 19:10 and 20:49, respectively, and water quality sampling on the day of discharge may not have been practicable.

The results of wastewater overflow discharge monitoring during the year to June 2020 are summarised in Table 3-2 from the 25 samples analysed. The results show that a moderate-quality treated wastewater is achieved most of the time, with median E.coli and enterococci values of 350 and 620 cfu/100mL, respectively (compared with receiving water guidelines in Table 2-2). Maximum values relate to the long duration 18 June 2020 discharge event which lasted three days. The very poor discharge quality suggests a significant operational failure on that occasion.

Table 3-2 Summary of treated wastewater quality monitoring results from at the plant during wet weather overflow discharges to Waiwhetu Stream during the year from 1 July 2019 to 30 June 2020

Determinand	unit	N samples	minimum	median	95-percentile	maximum
Faecal coliforms	cfu/100ml	25	12	370	1,170,000	1,380,000
<i>E. coli</i>	cfu/100ml	25	4	350	1,055,000	1,100,000
Enterococci	cfu/100ml	25	4	620	442,500	480,000
CBOD ₅	mg/L	25	2	8	61.50	78.00
Total ammoniacal-N	mg/L	25	8.78	14.70	19.10	19.40
Nitrate-N	mg/L	25	0.01	0.08	1.09	1.10
Nitrite-N	mg/L	25	<0.01	0.05	0.21	0.24
DRP	mg/L	25	0.31	0.91	2.28	3.10

3.4 Waiwhetu Stream Water Quality

Waiwhetu Stream water quality was sampled on each day that a discharge occurred, and on one day after each discharge ceased with the exception of the discharge events on 14 July 2019, 12 August 2019, 05 October 2019, 05 May 2020, 04 June 2020 and 17 July 2020. It is noted that the discharge events on 12 August 2019 and 04 June 2020 occurred at 19:10 and 20:49, respectively, and water quality sampling on the day of discharge may not have been practicable. Combined water quality results during discharge events are summarised by site in box plots⁶ with a dashed red line representing the DGV (Figure 3-2 to Figure 3-13). Monitoring results for individual discharge events are presented in Table C-1 to Table C-12 in Appendix C.

Salinity level, which indicates the presence of upstream flows during incoming tides, was low within Waiwhetu Stream at the furthest upstream site (Site C (Bell Road Bridge)) during most of the overflow sampling. The other upstream site, Site B (Urupā), had four instances of noticeable increases in salinity on 17 July 2019, 14 August 2019, 19 December 2019 and 7 May 2020. Salinity also increased noticeably downstream at Site A (Port Road) for samples collected on 15 July 2019, 17 July 2019, 14 August 2019, 7 May 2020 and 6 June 2020. All sites sampled on 19 December 2019 had high levels of salinity. Samples obtained on 19 December 2019 were collected approximately 22 hours after the overflow had ceased. It is recommended that samples are collected on the outgoing tide, where possible, to reduce the influence of tides on water quality parameters and meet condition 12 of the consent which states “where practicable, the sampling should be undertaken at least three hours after any ebb tide starts.

General water quality characteristics such as pH, temperature and dissolved oxygen were similar both upstream (Site B and C) and downstream (Site A) of the outfall. Dissolved oxygen was above the guidelines at Site A and B for samples collected on 9 December 2019 and 19 December. Dissolved oxygen for samples collected on 6 May 2020 and 7 May 2020 were above the guidelines at all sites. It is noted that temperature data was not available for 15 July 2020, 17 July 2020 due to a broken and malfunctioning thermometer.

CBOD₅ was significantly higher in the treated wastewater discharge samples compared to all Waiwhetu Stream samples. There was no observable difference between the upstream sites (Site B and C) and the downstream site (Site A) during the monitoring period.

Ammoniacal-N concentrations were significantly higher in the treated wastewater discharge than in the Waiwhetu Stream. There was no observable difference between the upstream sites (Site B and C) and the downstream site (Site A) during the monitoring period. Ammoniacal-N concentrations typically exceeded the guidelines across all sites before and after most overflow events, indicating that the overflow discharges have had little influence on stream concentrations, and that the exceedances of the guidelines were not directly attributable to the wet weather events.

DRP concentrations were significantly higher in the discharge than in the Waiwhetu Stream. DRP concentrations generally exceeded the guidelines across all sites before and after most overflow events. There was no observable difference between the upstream sites (Site B and C) and the downstream site (Site A). This indicates that the overflow discharges have had little influence on stream concentrations, and that the exceedances of the guidelines were not directly attributable to the wet weather events.

Nitrate-N concentrations in the overflow discharges were variable with no discernible pattern compared to the samples collected from the Waiwhetu stream during the same period. Nitrate-N concentrations generally exceeded the guidelines across all sites before and after overflow events. The furthest upstream sample, Site C recorded higher concentrations than both Site B and Site A indicating a significant upstream source.

Results for Nitrite-N showed no observable pattern across the reporting period with highly variable results for samples taken from the overflow discharges and Site A. Low concentrations of nitrite-N were recorded at Site B and Site C.

Indicator bacteria (faecal coliforms, *E. coli* and enterococci) counts were higher in the treated wastewater discharge than in the receiving environment. While the Table 2-2 guideline values were almost always exceeded for *E. coli* and Enterococci during overflow events as well as immediately after overflow events, there was a general decrease after the events. The highest indicator bacteria counts were mostly recorded upstream at Site C with lower indicator bacteria counts recorded downstream at Site A. Therefore, significant upstream sources of bacterial contamination are indicated (possibly including wastewater network overflow or cross connections).

⁶ Where laboratory analysis determined no result higher than the detection limit of a given parameter, the detection limit was used and included in the analyses.

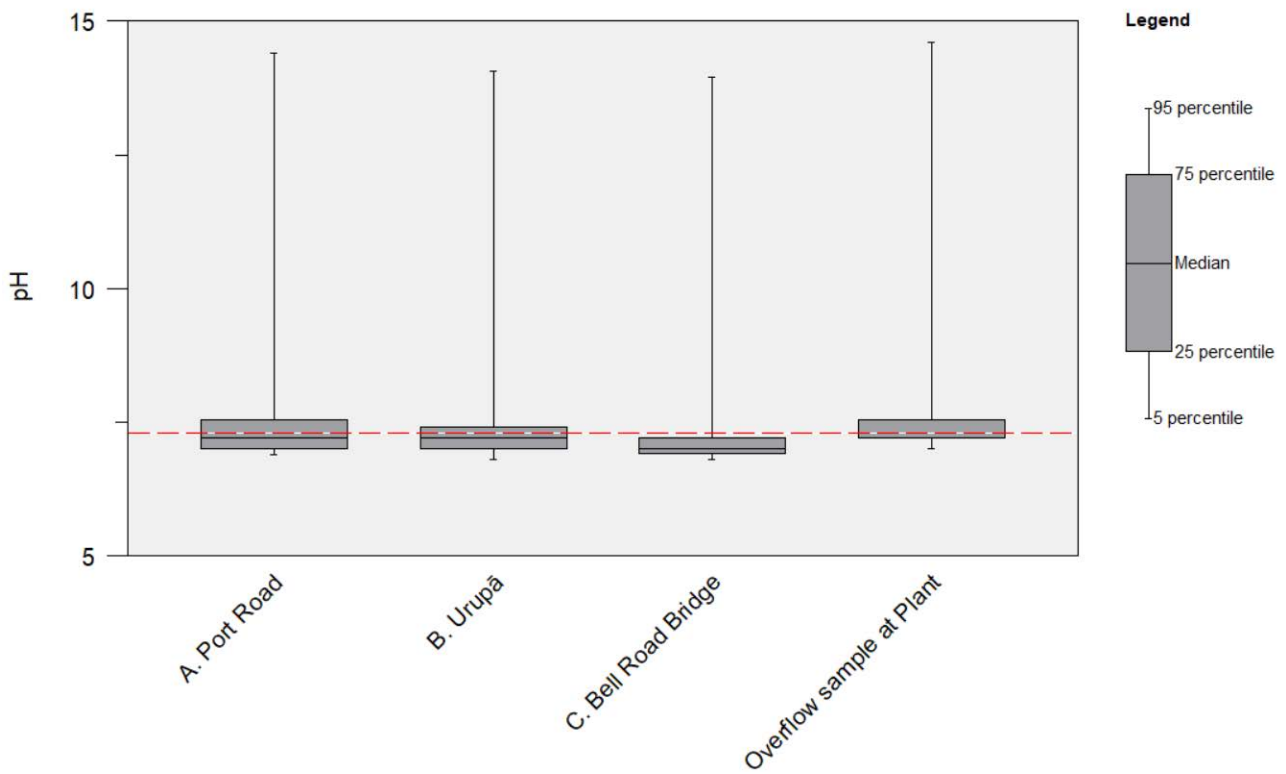


Figure 3-2 Box plot summary of water pH at Waiwhetu Stream site A, B and C and overflow sample at the wastewater treatment plant (N=25).

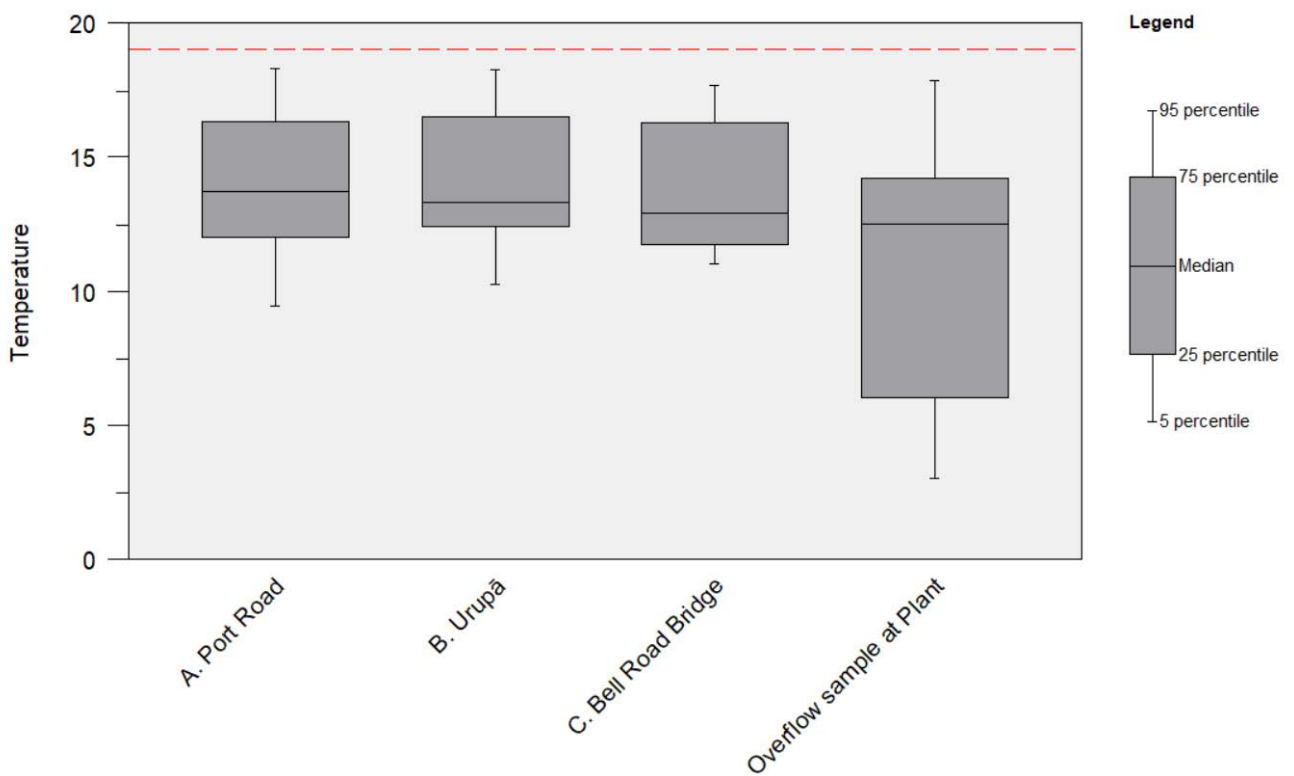


Figure 3-3 Box plot summary of water temperature at Waiwhetu Stream site A, B and C and overflow sample at the wastewater treatment plant (N=25).

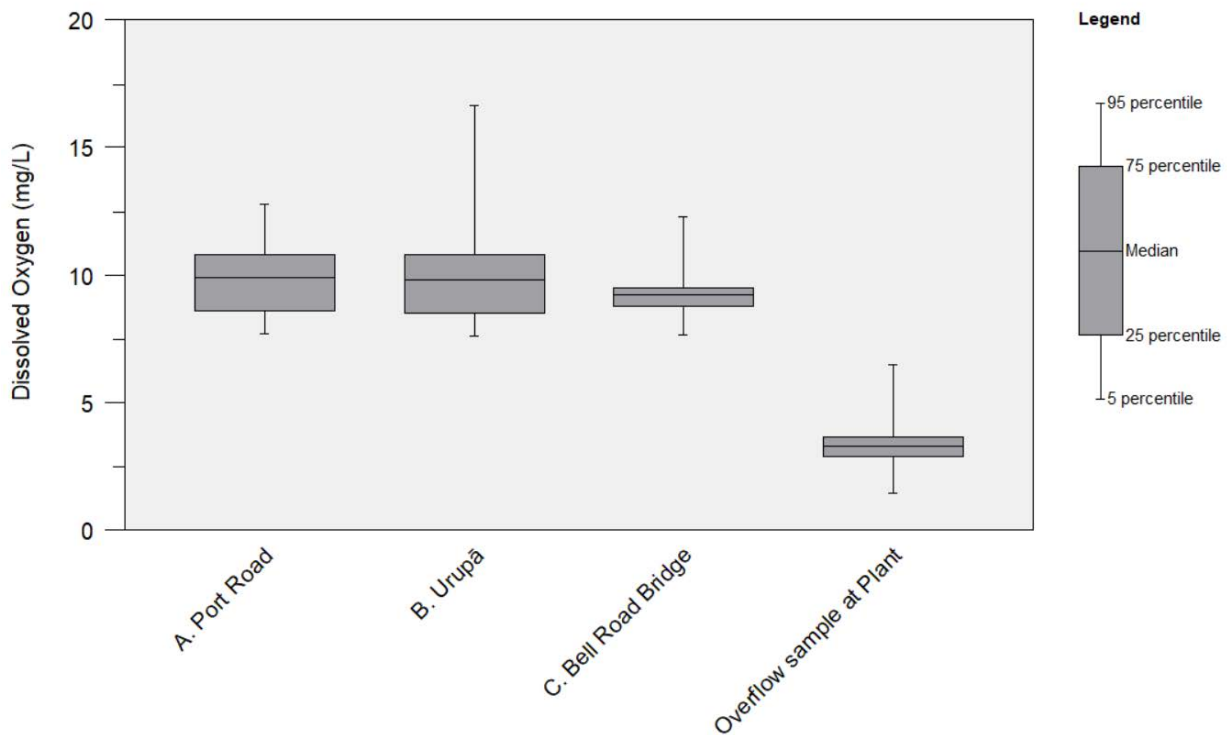


Figure 3-4 Box plot summary of dissolved oxygen⁷ at Waiwhetu Stream site A, B and C and overflow sample at the wastewater treatment plant (N=25).

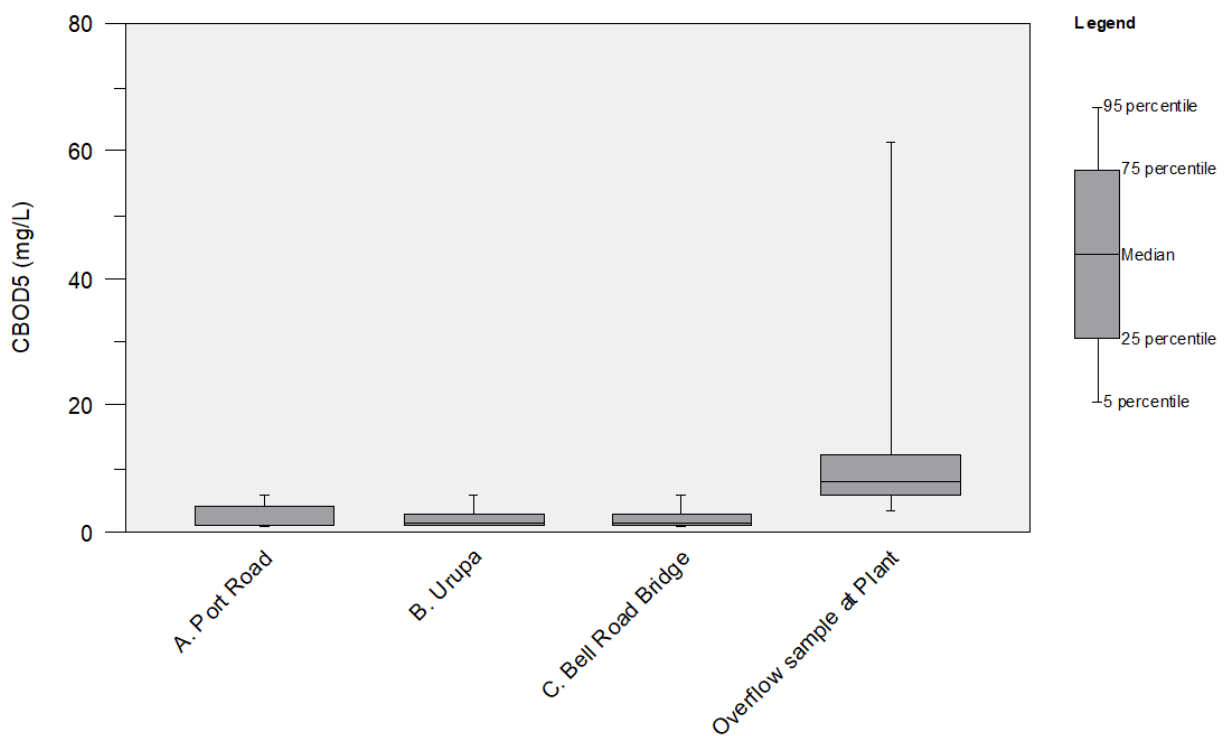


Figure 3-5 Box plot summary of CBOD₅ at Waiwhetu Stream site A, B and C and overflow sample at the wastewater treatment plant (N=25).

⁷ The DGV for dissolved oxygen was not plotted as it is dependent on temperature. Exceedances are noted in Appendix C.

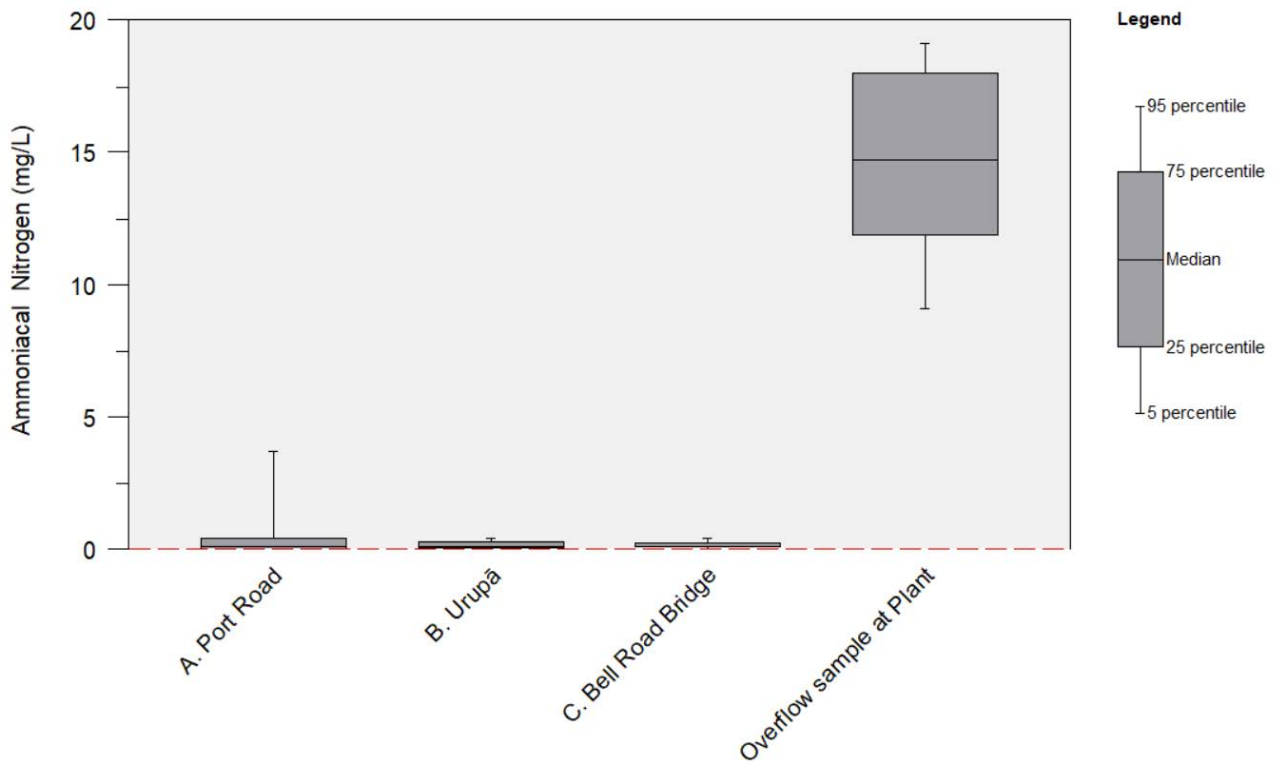


Figure 3-6 Box plot summary of ammoniacal-N at Waiwhetu Stream site A, B and C and overflow sample at the wastewater treatment plant (N=25).

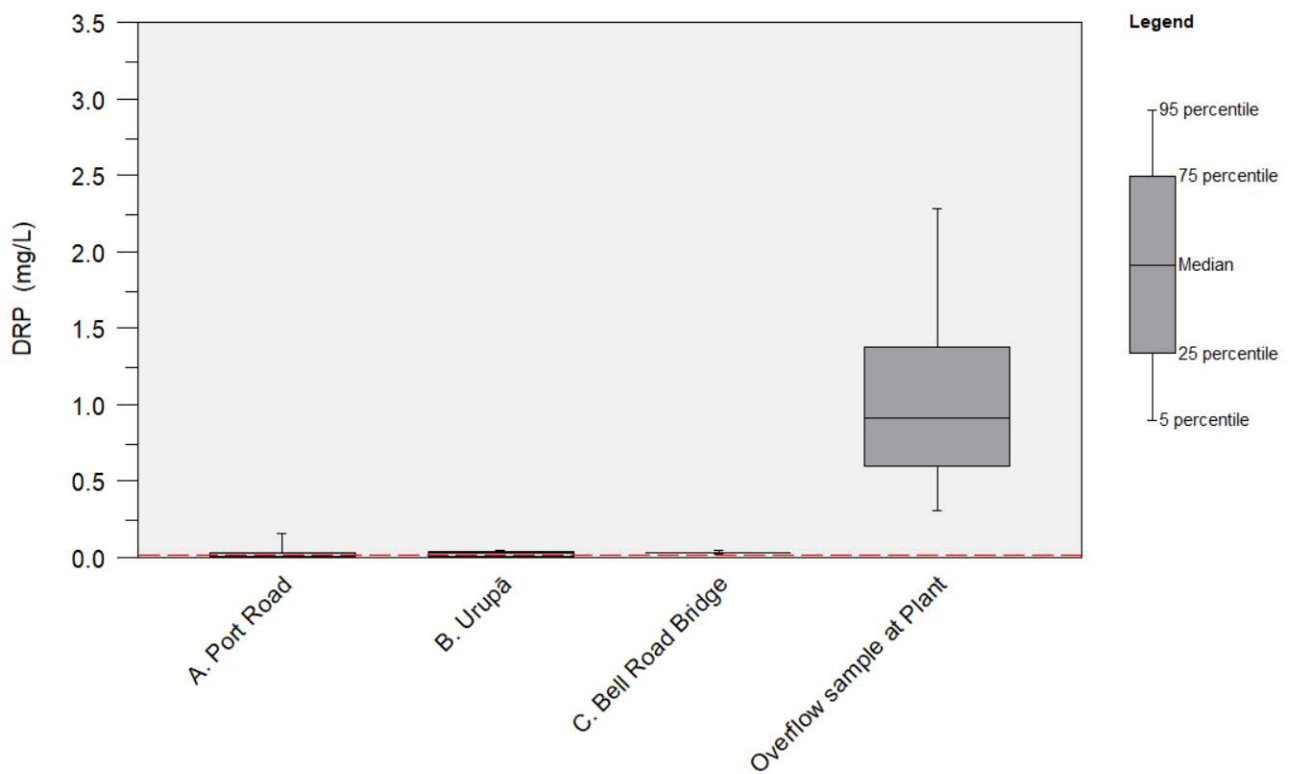


Figure 3-7 Box plot summary of DRP at Waiwhetu Stream site A, B and C and overflow sample at the wastewater treatment plant (N=25).

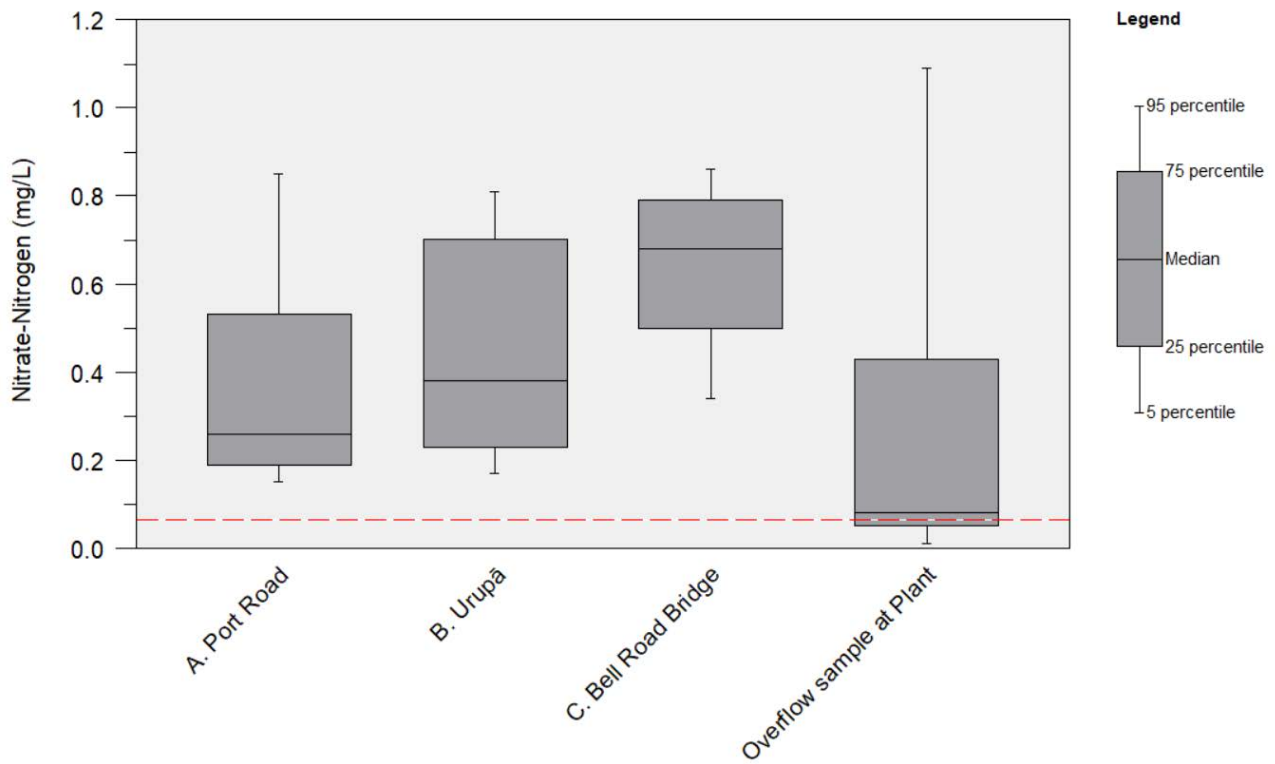


Figure 3-8 Box plot summary of nitrate-N at Waiwhetu Stream site A, B and C and overflow sample at the wastewater treatment plant (N=25).

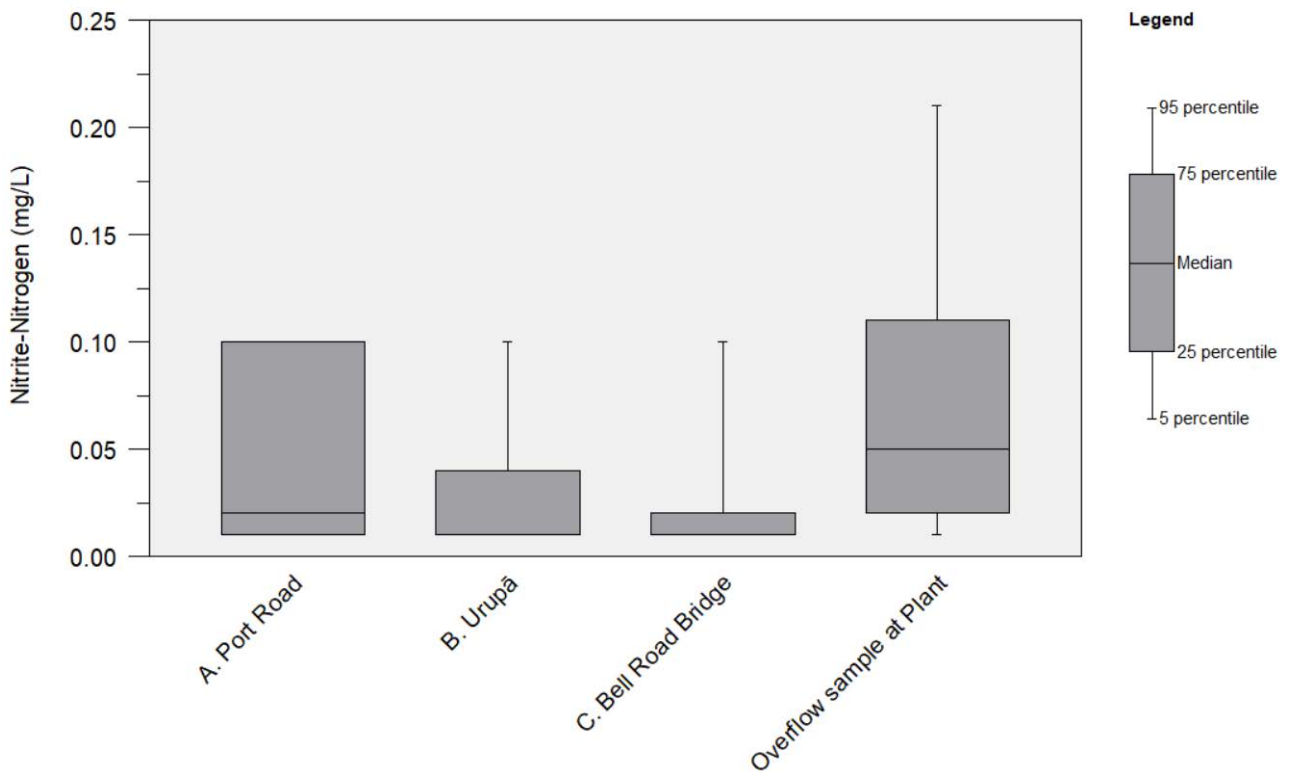


Figure 3-9 Box plot summary of nitrite-N at Waiwhetu Stream site A, B and C and overflow sample at the wastewater treatment plant (N=25).

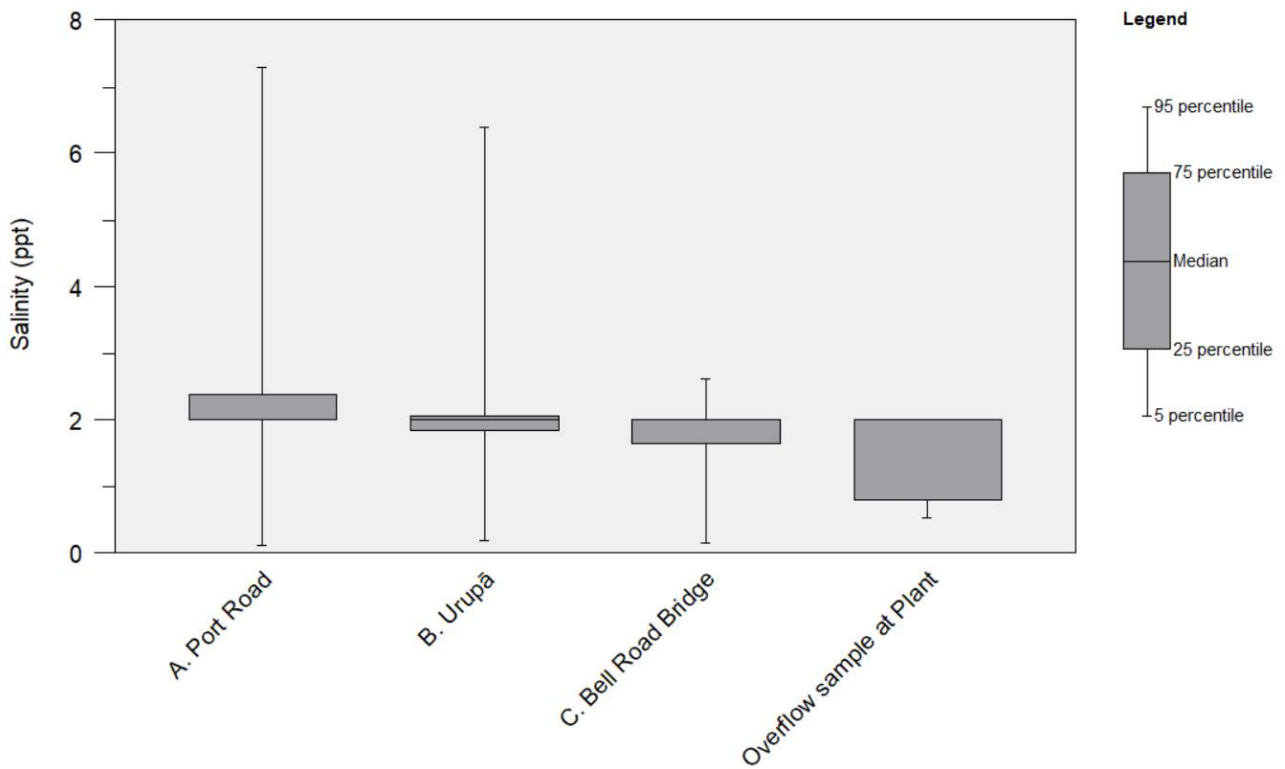


Figure 3-10 Box plot summary of salinity at Waiwhetu Stream site A, B and C and overflow sample at the wastewater treatment plant (N=25).

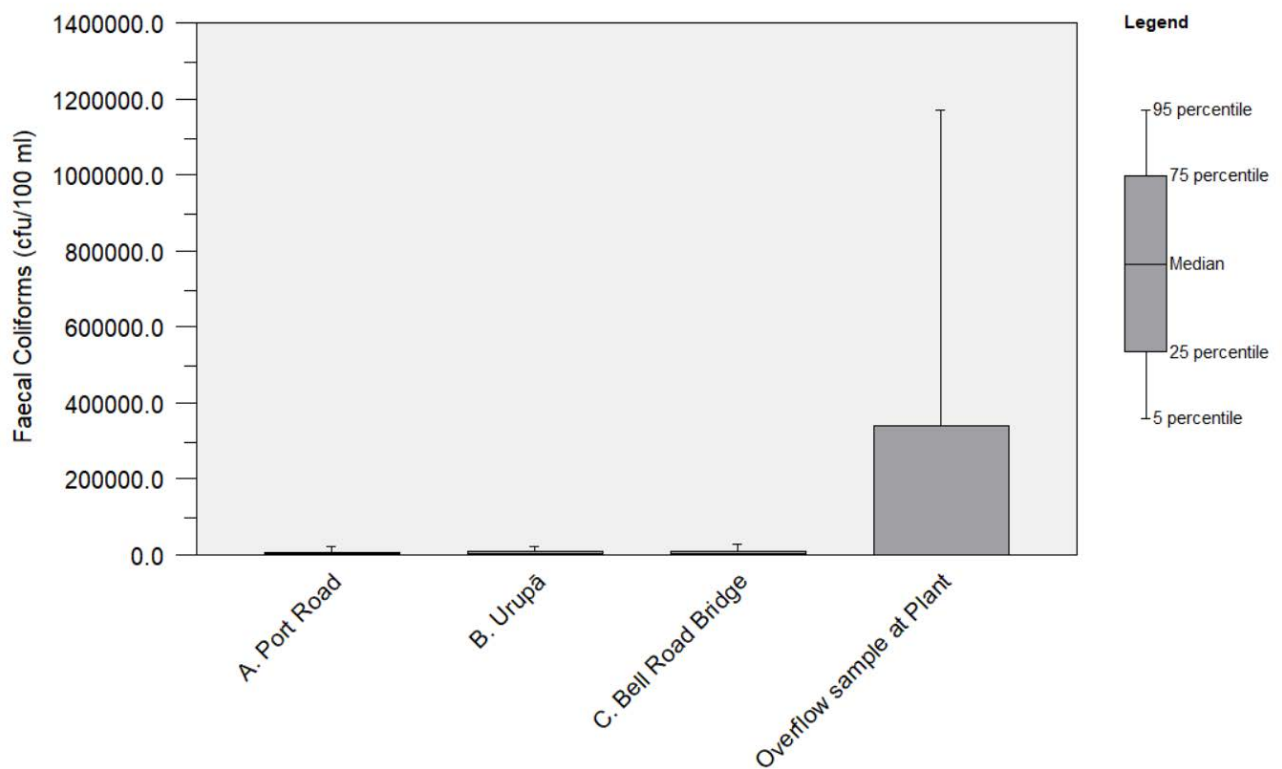


Figure 3-11 Box plot summary of faecal coliforms at Waiwhetu Stream site A, B and C and overflow sample at the wastewater treatment plant (N=25).

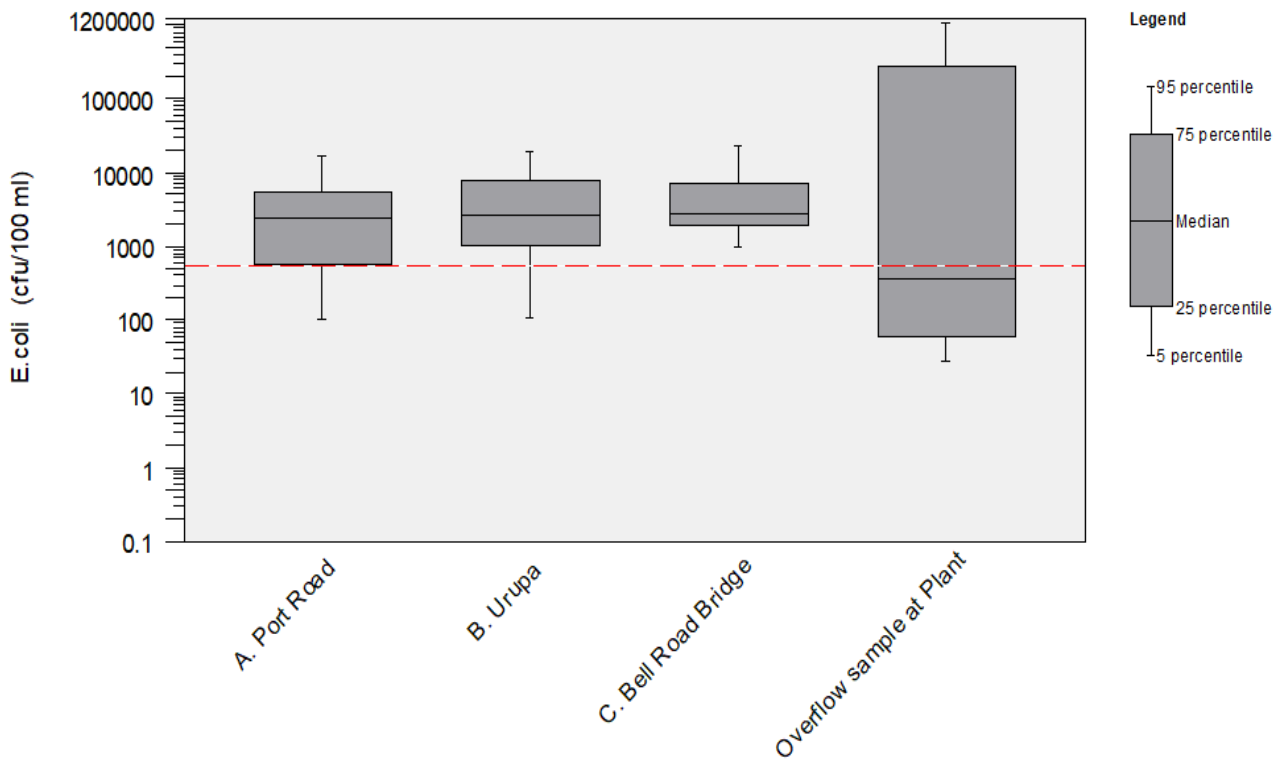


Figure 3-12 Box plot summaries of *E. coli* at Waiwhetu Stream site A, B and C and overflow sample at the wastewater treatment plant (N=25).

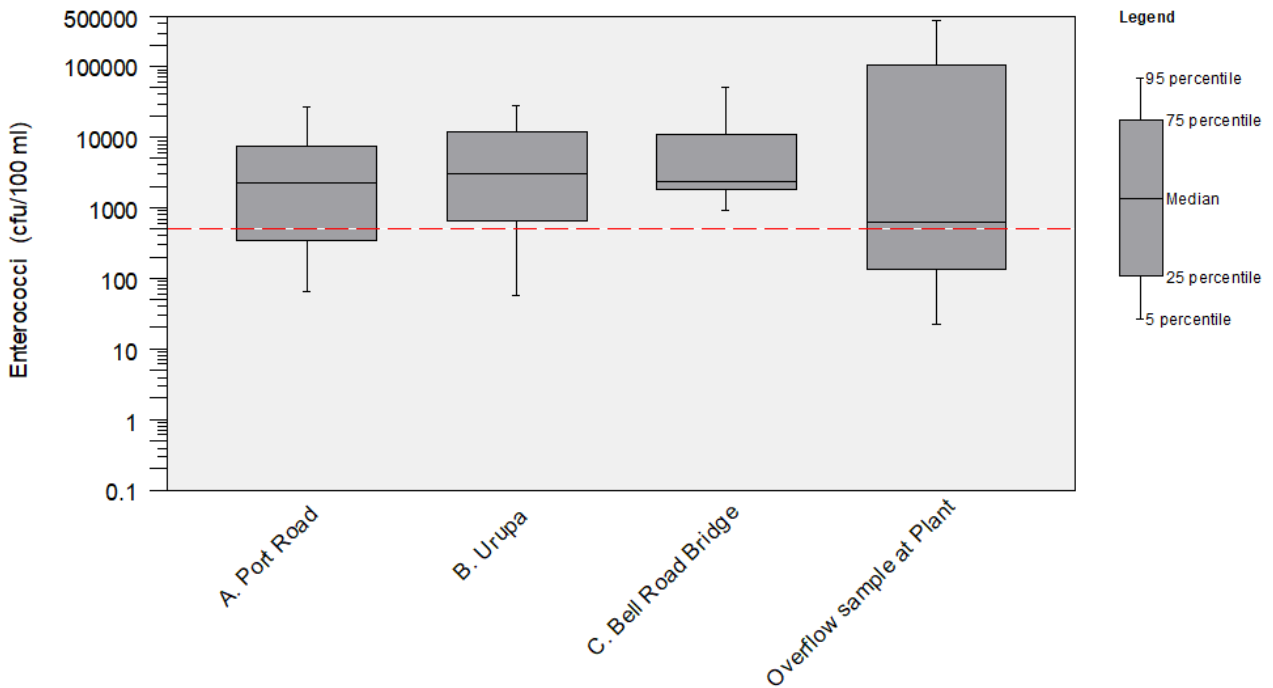


Figure 3-13 Box plot summaries of enterococci bacteria at Waiwhetu Stream site A, B and C and overflow sample at the wastewater treatment plant (N=25).

3.5 Waiwhetu Stream Visual Observations

Visual observations of Waiwhetu Stream at the point of discharge and immediate receiving waters were completed on each day that a discharge occurred, and on one day after each discharge ceased with the exception of the discharge events on 14 July 2019, 12 August 2019, 05 October 2019, 05 May 2020, 04 June 2020 and 17 July 2020. It is noted that the discharge events on 12 August 2019 and 04 June 2020 occurred at 19:10 and 20:49, respectively, and visual observations on the day the discharge occurred may not have been practicable.

Visual observations such as the production of any conspicuous oil or grease or grease films, scums or foams or floatable or suspended materials, or any conspicuous change in colour or clarity, any emission of objectionable odour, or any significant adverse effects on aquatic life and any obvious undesirable biological growths or visible die-offs are summarised in Table D-1 to Table D-12 in Appendix D. Photographs of the visual observations are presented in Figure E-1 to Figure E-92 in Appendix E. It is noted that photographs were not available for Site C. on 16 July 2019, 30 March 2020, 06 May 2020, 07 May 2020 and 18 December 2019 and for all sites on 19 December 2019.

Visual observations during the course of the consent period noted that discharge event effects on the water of the Waiwhetu Stream occurred a majority of the time, particularly during an overflow event, with the largest effects noted during the discharge event on 06 May 2020. While effects were recorded, they generally decreased the following day indicating that the effects were temporary.

3.6 Hutt River Stream Quality

The Hutt River is the ultimate receiving environment for the discharges from the Seaview WWTP and as such it is important to identify its water quality characteristics. Although not required by the Consent, the Hutt River water quality was sampled on each day that a discharge occurred, and on one day after each discharge ceased with the exception of discharge events on 14 July 2019, 12 August 2019, 05 October 2019, 05 May 2020, 04 June 2020 and 17 July 2020. Water quality monitoring was carried out from July 2019 to May 2020 at two locations on the Hutt River, respectively located 50 metres upstream and downstream of the confluence with Waiwhetu Stream. It is noted that monitoring ceased from June 2020 onwards as a result of a change of contractors managing the Seaview WWTP.

There was no observable difference between upstream and downstream Hutt River water quality samples. Combined water quality results during discharge events are summarised by site in box plots Figure 3-14 to Figure 3-21.

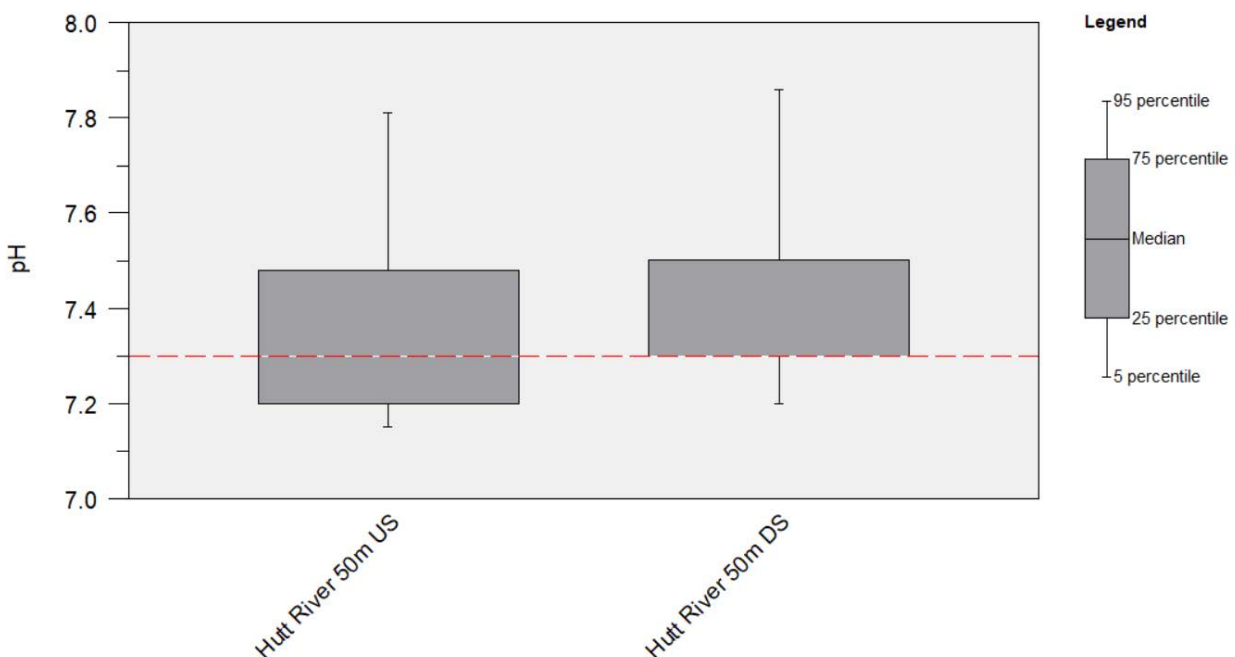


Figure 3-14 Box plot summary of pH at Hutt River sites

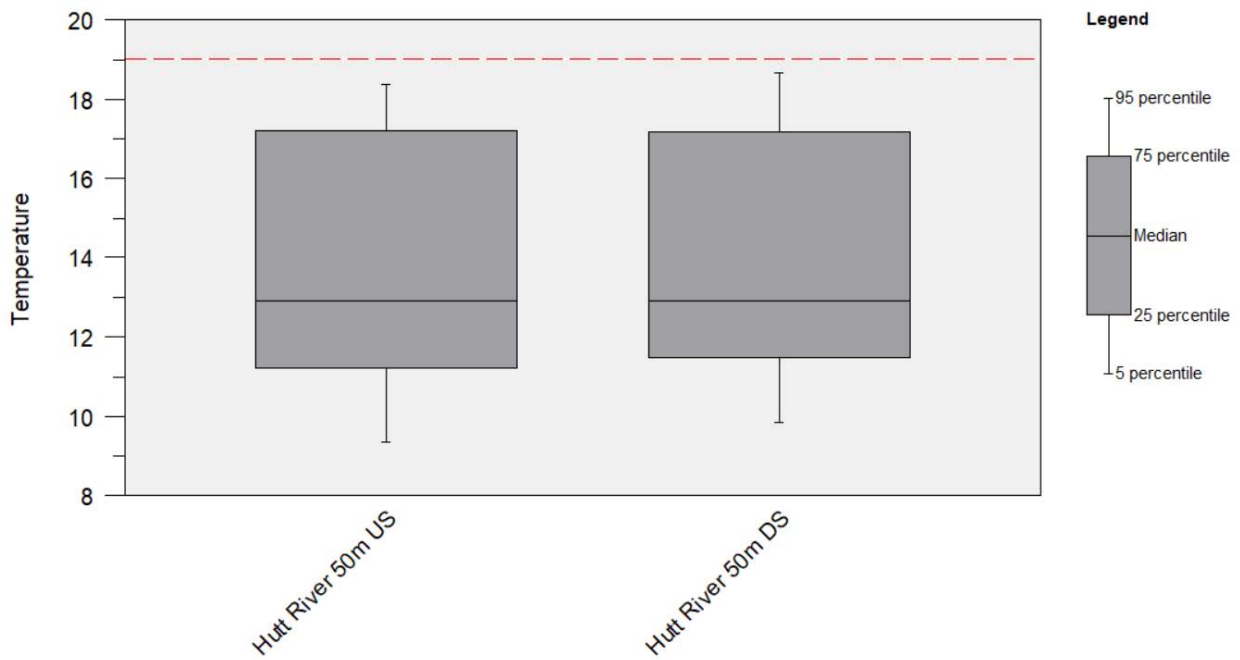


Figure 3-15 Box plot summary of temperature at Hutt River sites

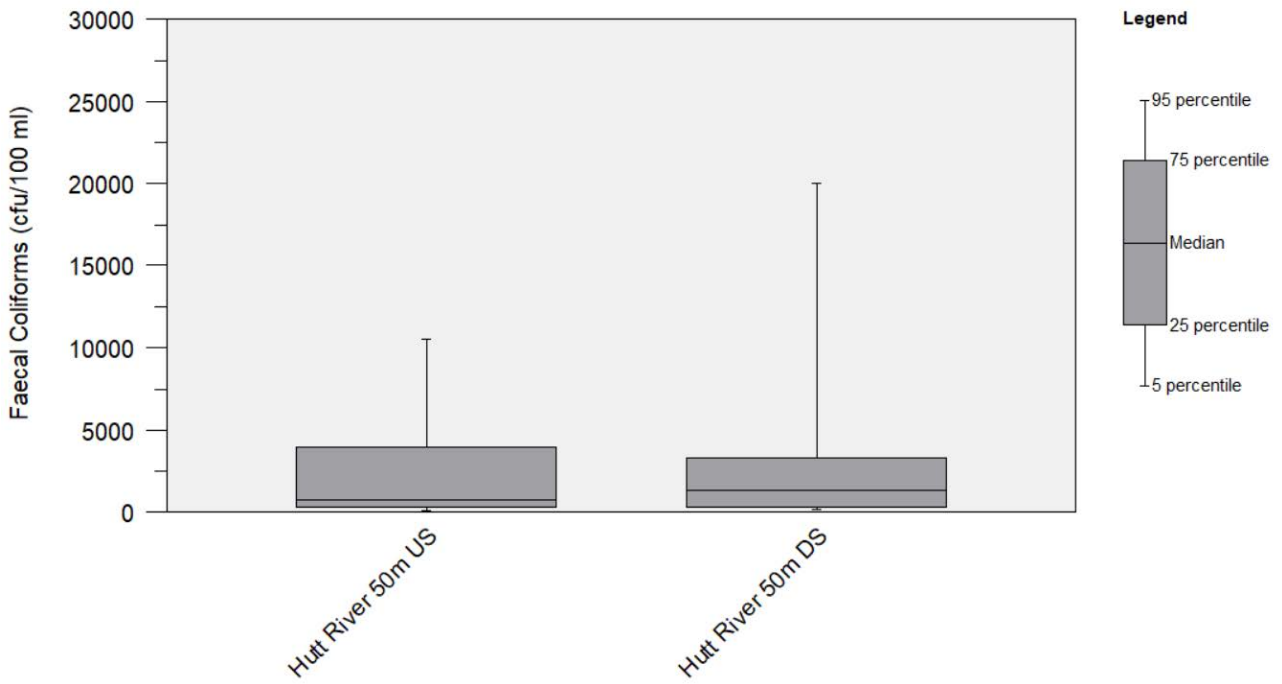


Figure 3-16 Box plot summary of faecal coliforms at Hutt River sites

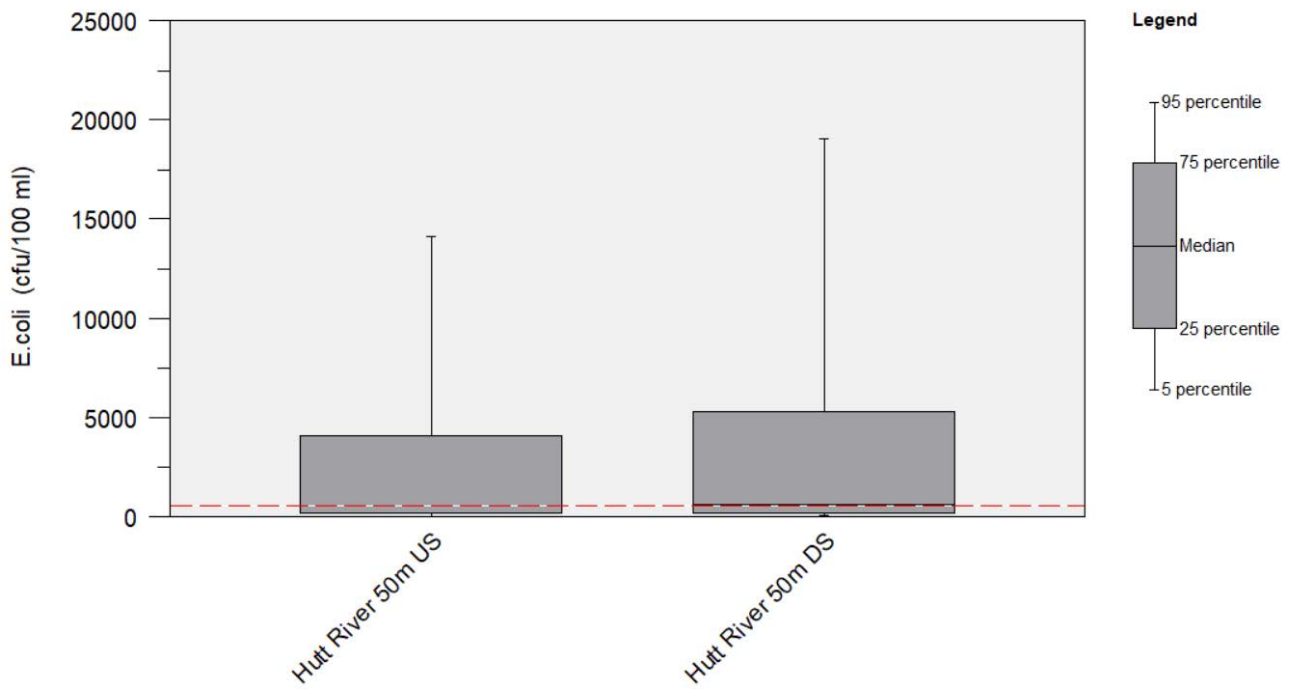


Figure 3-17 Box plot summary of *E. coli* at Hutt River sites

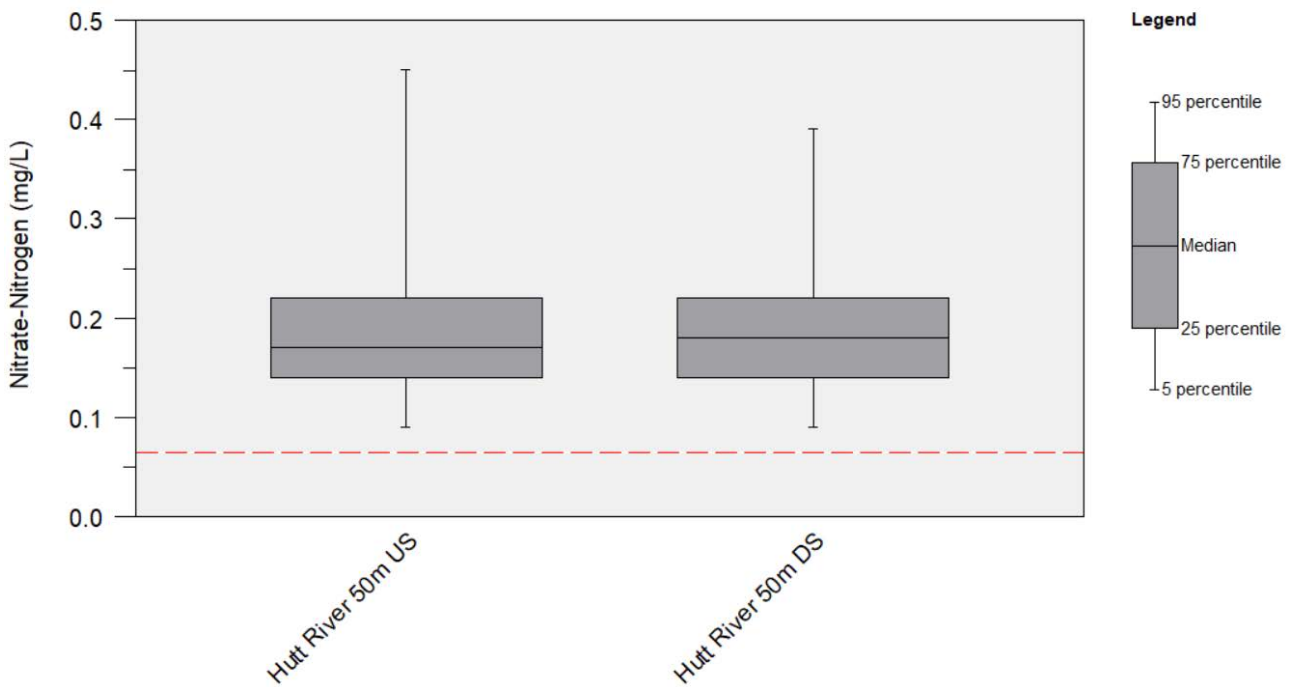


Figure 3-18 Box plot summary of nitrate-N at Hutt River sites

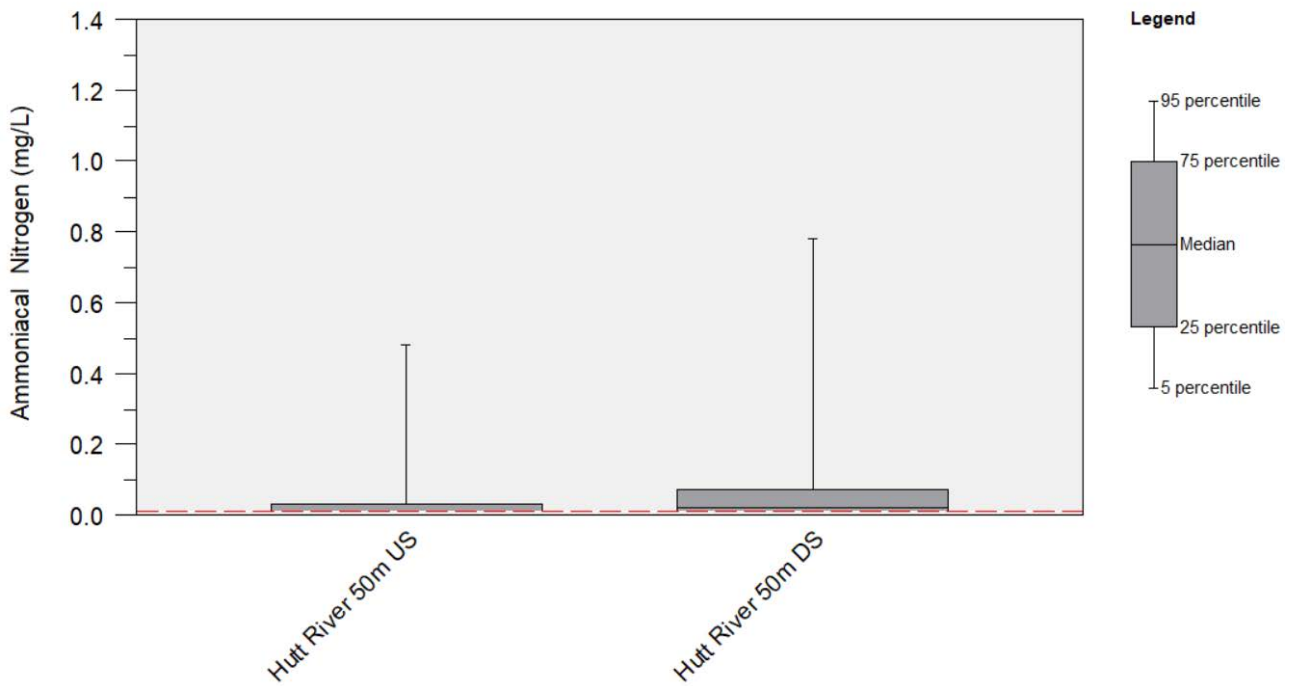


Figure 3-19 Box plot summary of ammoniacal-N at Hutt River sites

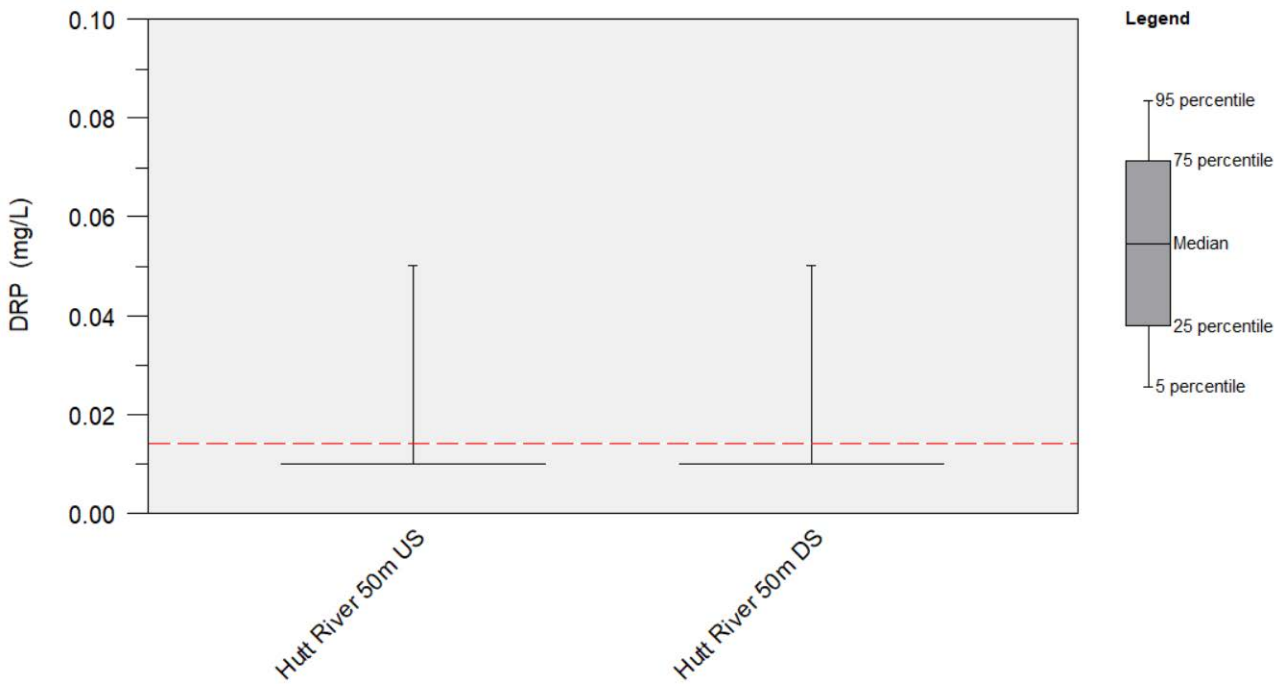


Figure 3-20 Box plot summary of DRP at Hutt River sites

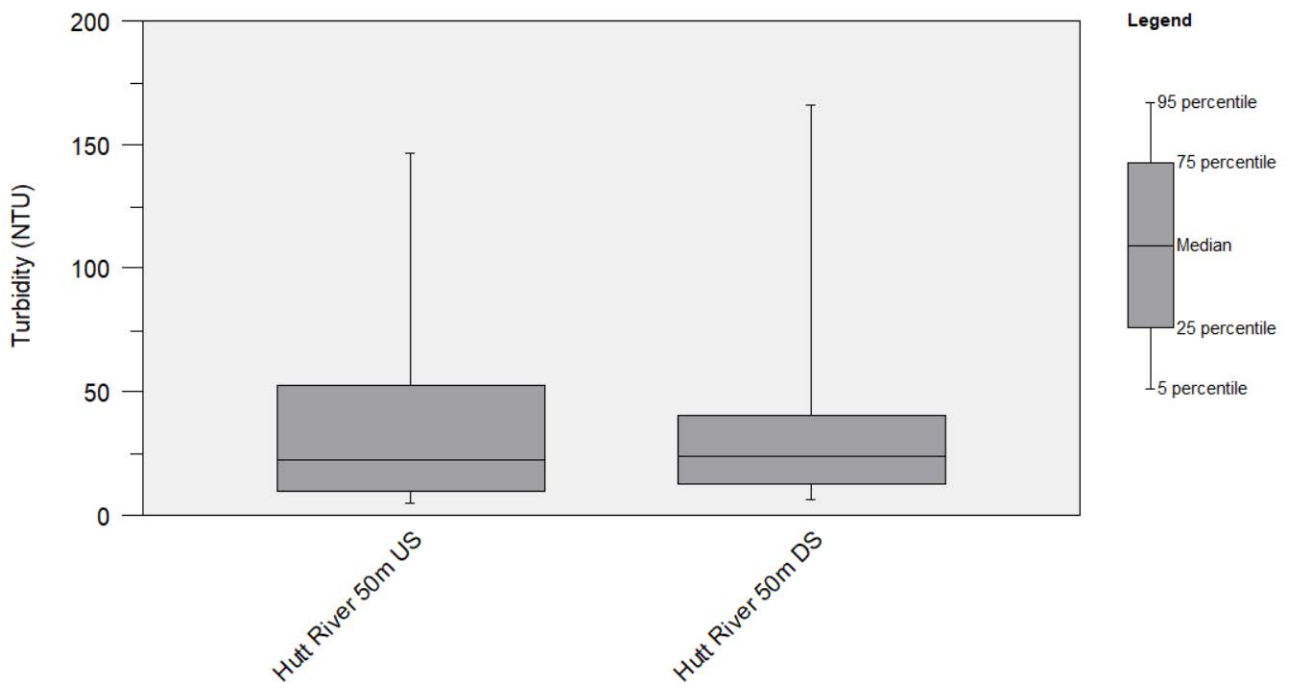


Figure 3-21 Box plot summary of turbidity at Hutt River sites

4. Assessment of Effects

The results presented in Section 3 indicated that wet weather wastewater overflow events from the Seaview WWTP to the Waiwhetu Stream were a rare occurrence during the current reporting year; there were twelve reportable overflow events, with the total duration being less than 1% of operating time (0.1%). However, the frequency of overflow events during the last two years, at 12 events per year, is markedly higher than the long-term average of 4 events per year prior to July 2018.

The majority of the overflow events coincided with high flows in the Waiwhetu Stream, which greatly reduced upstream movement on the flood tide.

General water quality characteristics such as pH, temperature, dissolved oxygen and CBOD₅ were similar at upstream and downstream locations on Waiwhetu Stream, indicating that these parameters were not exclusively impacted by overflows from the Seaview WWTP during the reporting period.

CBOD₅, ammoniacal-N and DRP were typically significantly higher in the overflow discharge than in the Waiwhetu Stream but there was no observable difference between sites upstream and downstream of the discharge (in the stream itself).

Faecal coliforms, *E.coli* and enterococci were significantly higher in the treated wastewater discharge than in the receiving water but there was no observable difference between sites upstream and downstream of the discharge indicating that the discharges did not directly result in an increase in bacterial counts within Waiwhetu Stream.

There was no observable difference between water quality samples taken from the Hutt River upstream and downstream of the Waiwhetu Stream confluence, which indicates that the wet weather discharges did not adversely affect water quality within the monitored reach of the Hutt River.

5. Conclusion

All of the wet weather overflow discharges from the Seaview WWTP during this monitoring year coincided with sustained rainfall and high flows in Waiwhetu Stream, which ensured that a relatively high level of dilution was available.

These high flow conditions also resulted in poor background water quality at the time of each discharge, particularly in respect of microbiological contaminants (based upon bacterial indicator results). At least one other upstream local wastewater pumping station is likely to have been overflowing during these events, which will also have contributed to degradation of upstream water quality.

It is uncertain whether observations such as pH, temperature, dissolved oxygen and salinity were measured in-situ and it is recommended that this is detailed in future sampling certificates for clarity.

Although some temporary water quality effects were detected downstream of the discharge, it is unlikely that this resulted in significant adverse effects on stream ecology or recreational values within the Waiwhetu Stream.

There was no observable difference between the upstream and downstream samples within the Hutt River and therefore no significant adverse effects are likely to have occurred within the Hutt River.

Appendices



Appendix A Discharge Graphs

On all figures within this Appendix, the overflow duration is represented by a green line.

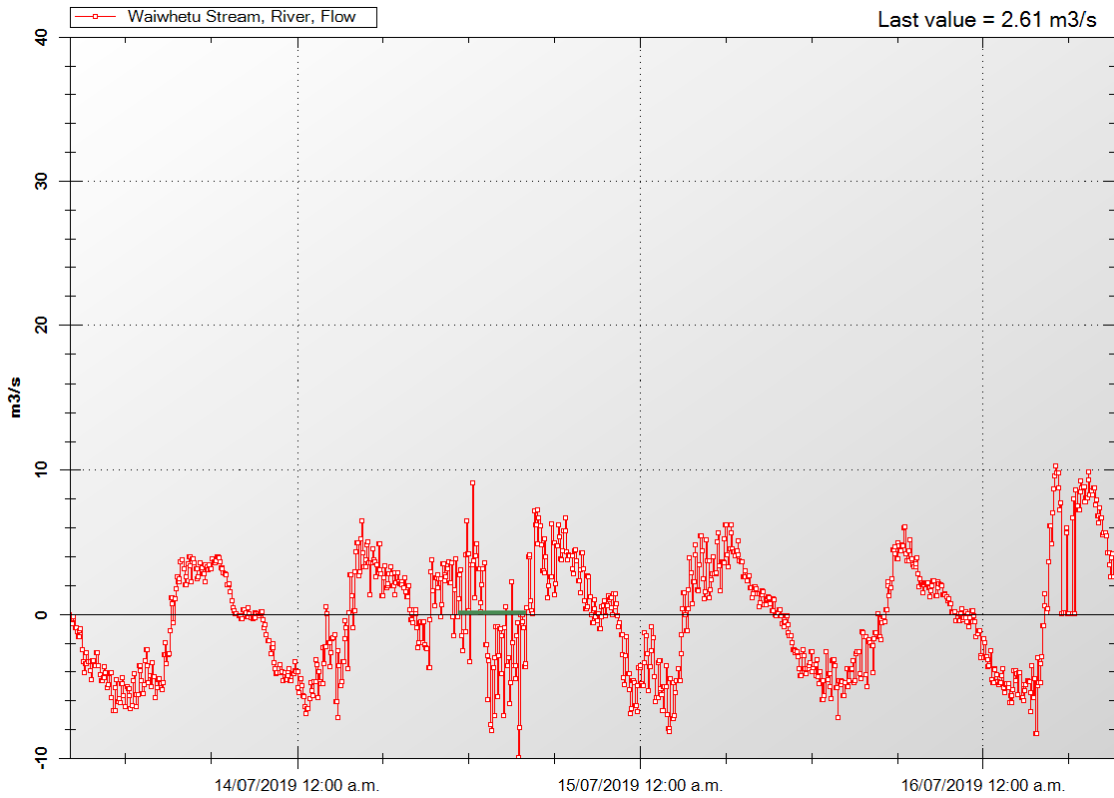


Figure A-1: Flow at lower Waiwhetu Stream near the Seaview outfall during 14 July 2020 overflow event

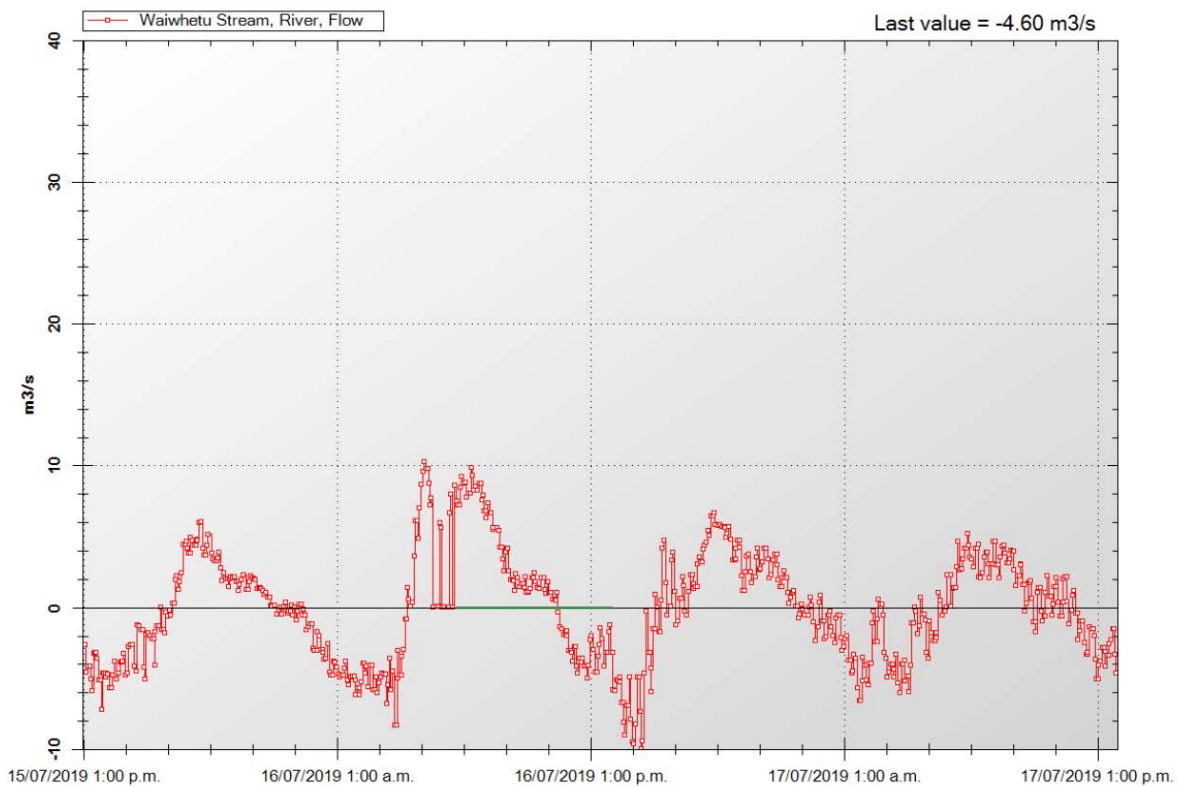


Figure A-2: Flow at lower Waiwhetu Stream near the Seaview outfall during 16 July 2019 overflow event

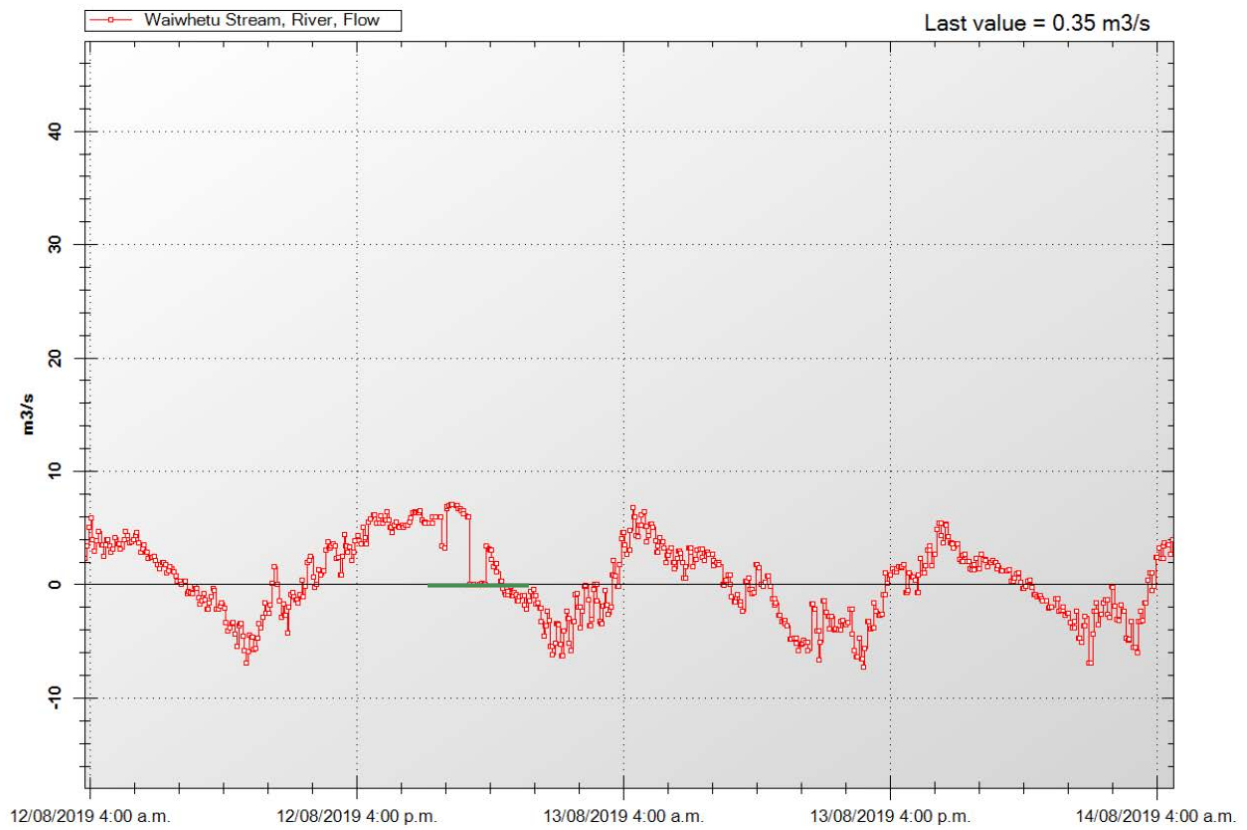


Figure A-3: Flow at lower Waiwhetu Stream near the Seaview outfall during 12 August 2019 overflow event

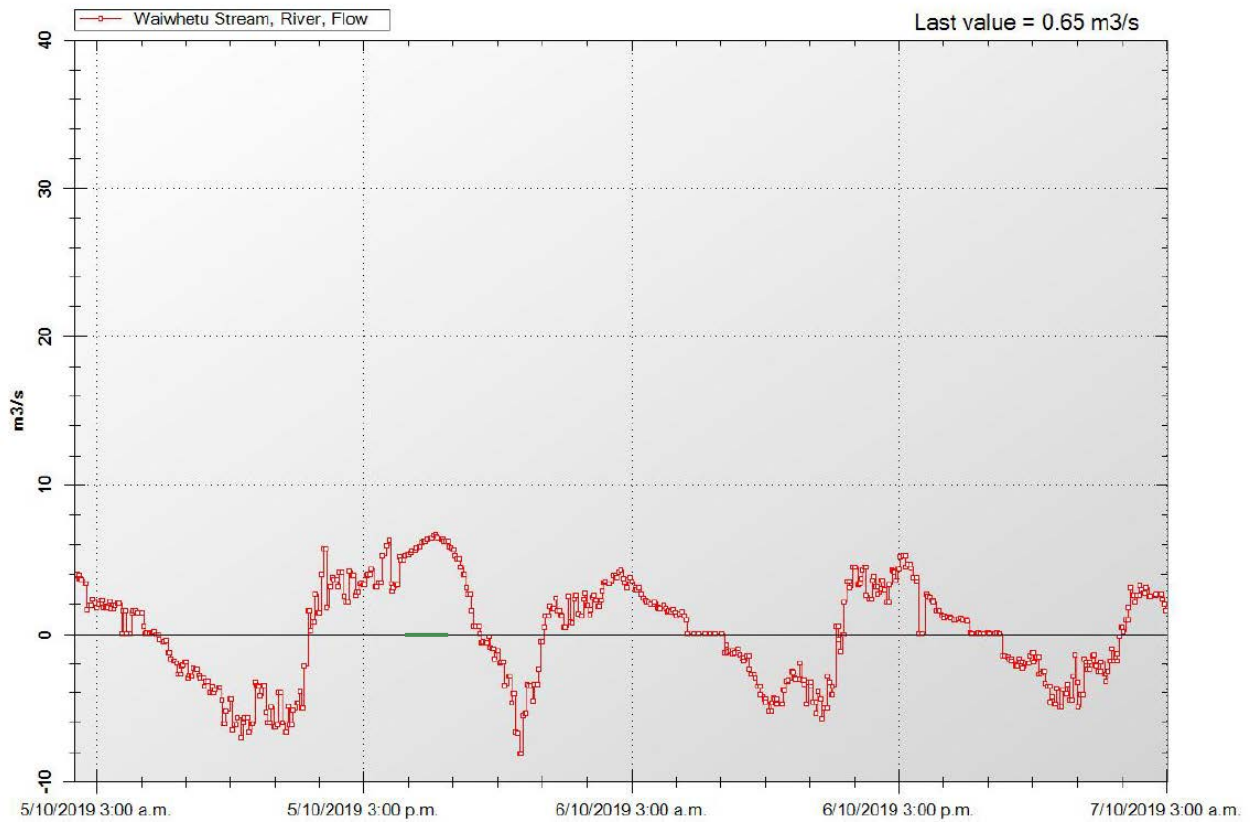


Figure A-4: Flow at lower Waiwhetu Stream near the Seaview outfall during 05 October 2019 overflow event

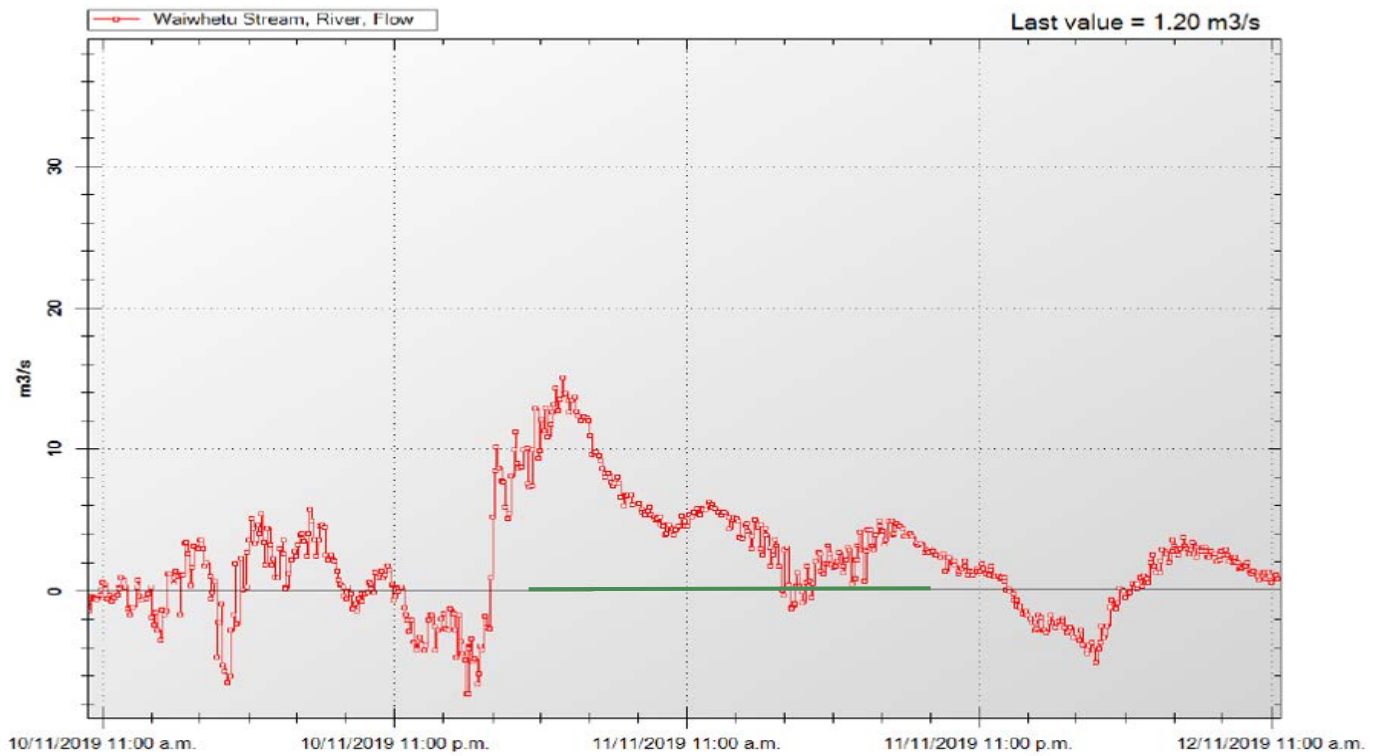


Figure A-5: Flow at lower Waiwhetu Stream near the Seaview outfall during 11 November 2019 overflow event

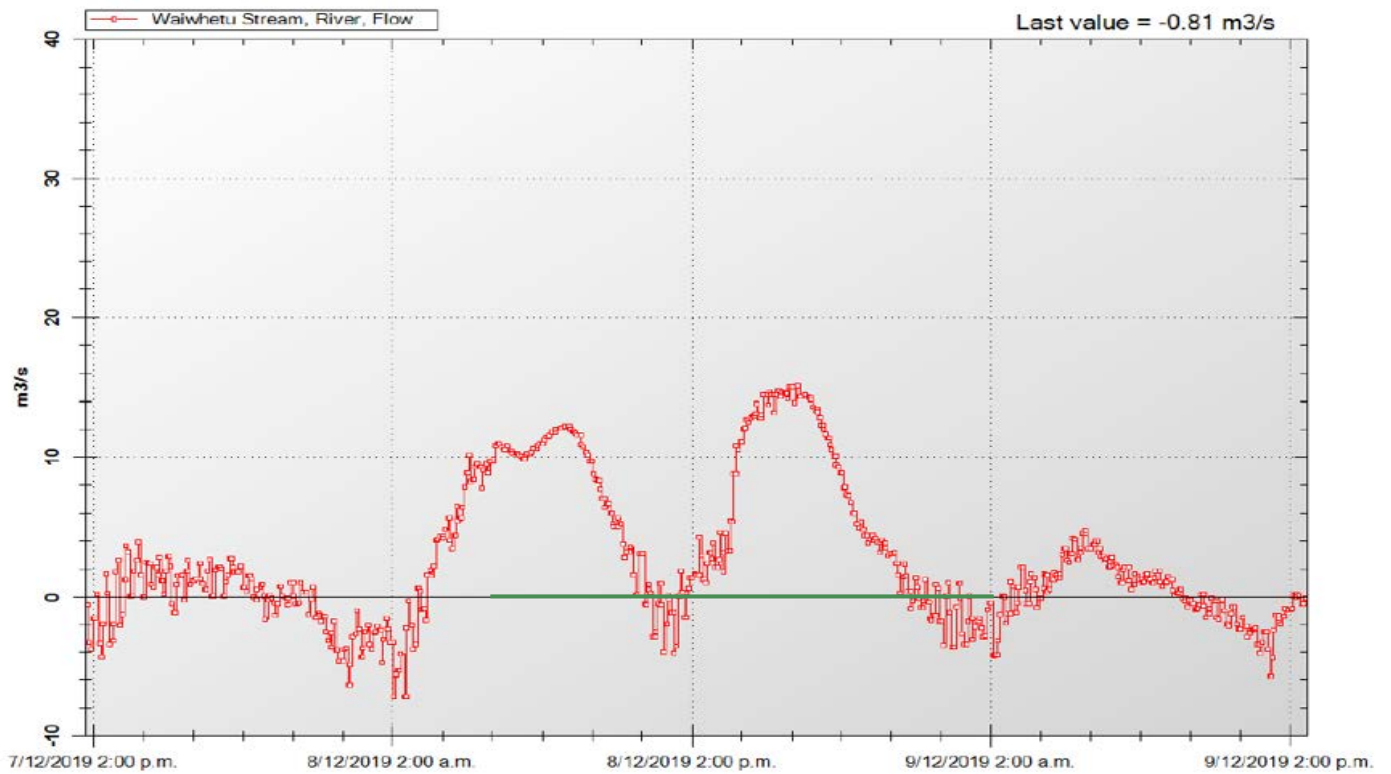


Figure A-6: Flow at lower Waiwhetu Stream near the Seaview outfall during 08 December 2019 overflow event

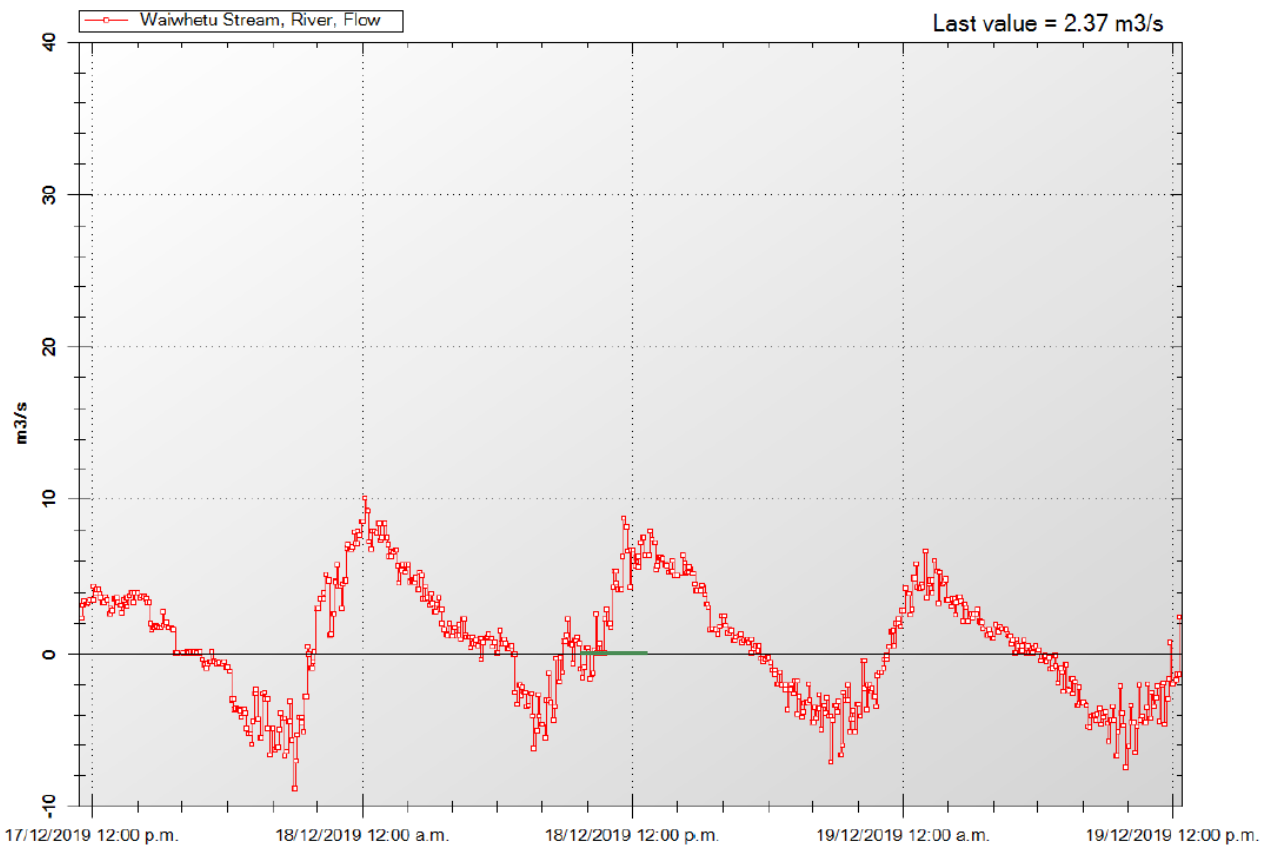


Figure A-7: Flow at lower Waiwhetu Stream near the Seaview outfall during 18 December 2019 overflow event

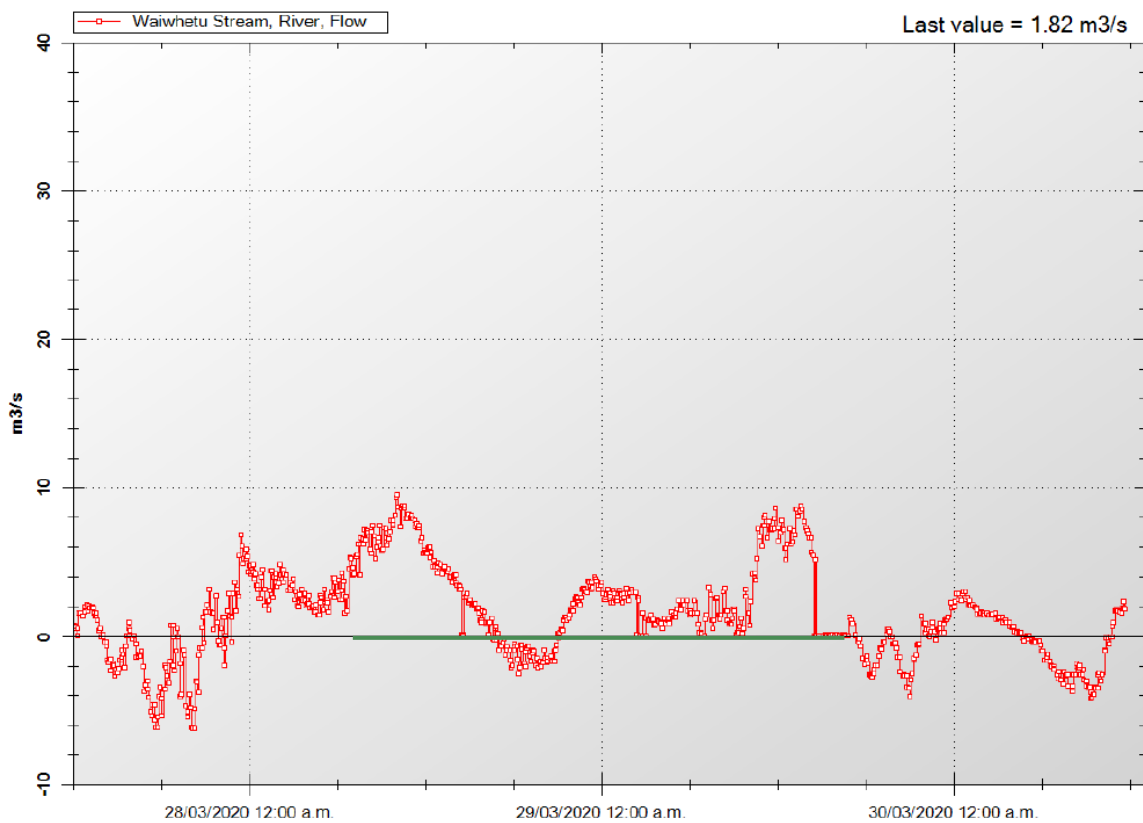


Figure A-8: Flow at lower Waiwhetu Stream near the Seaview outfall during 28 March 2019 overflow event

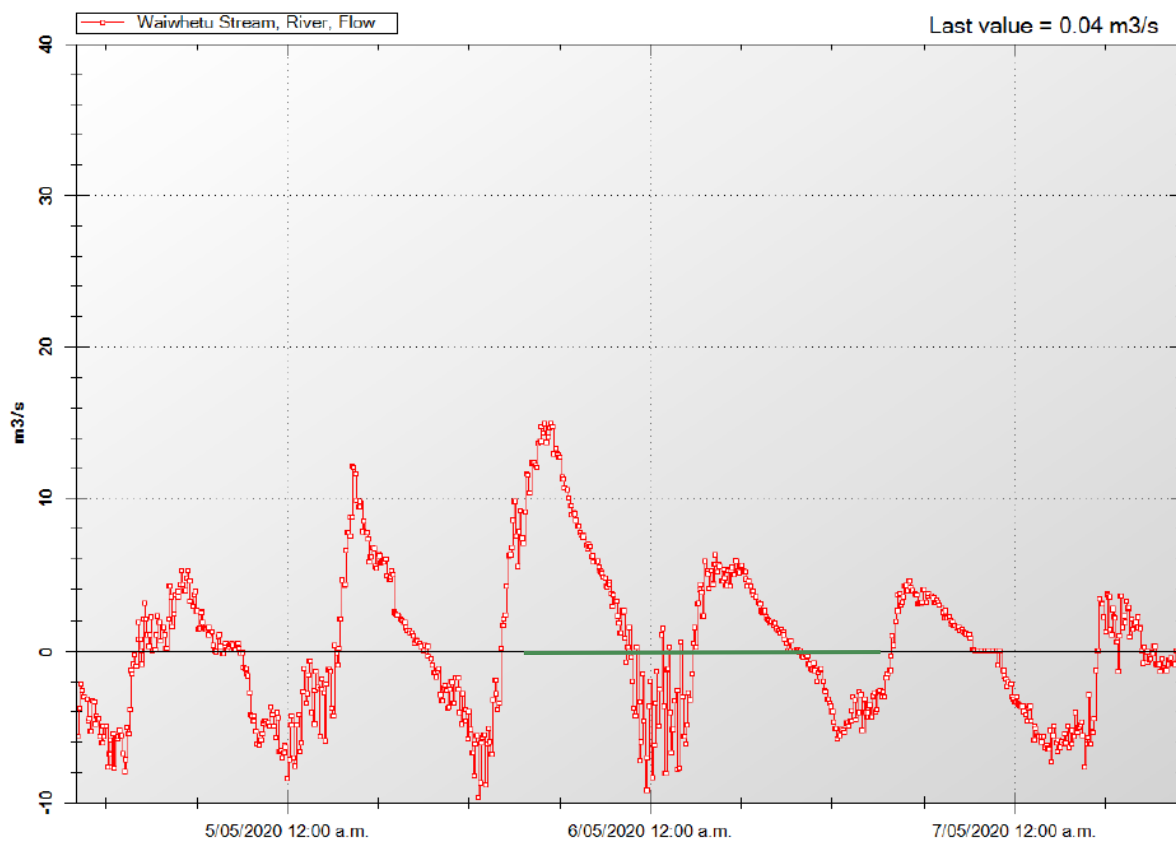


Figure A-9: Flow at lower Waiwhetu Stream near the Seaview outfall during 05 May 2020 overflow event

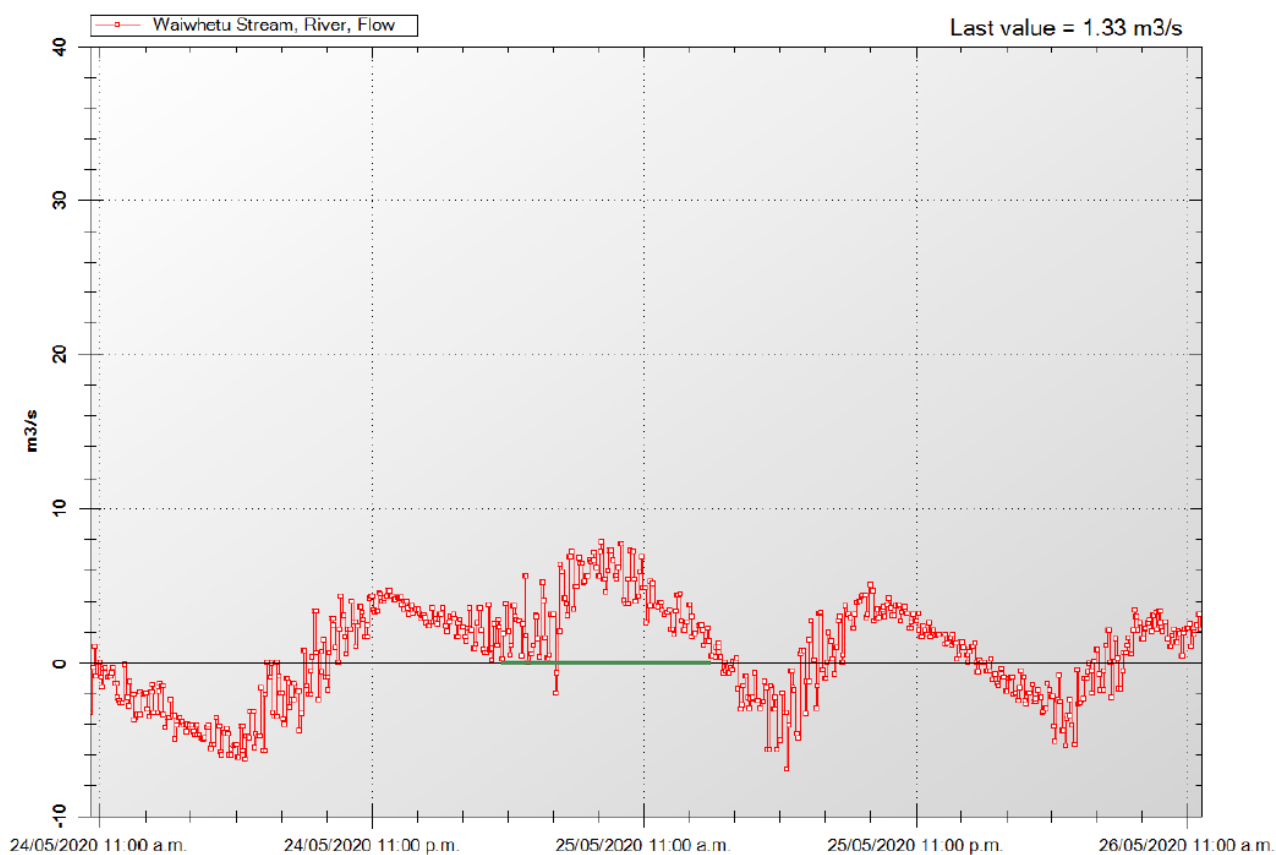


Figure A-10: Flow at lower Waiwhetu Stream near the Seaview outfall during 25 May 2020 overflow event.

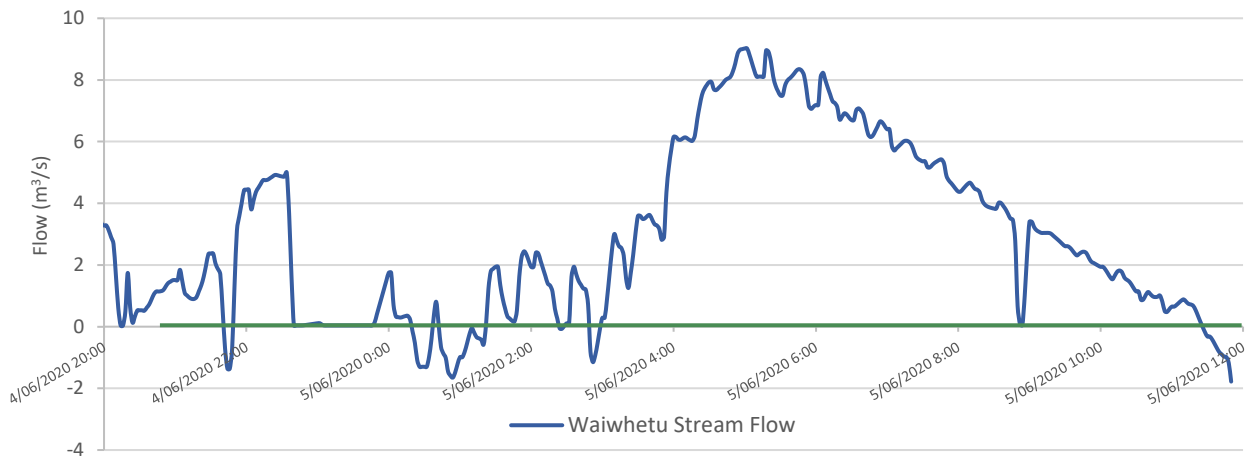


Figure A-11: Flow at lower Waiwhetu Stream near the Seaview outfall during 04 June 2020 overflow event

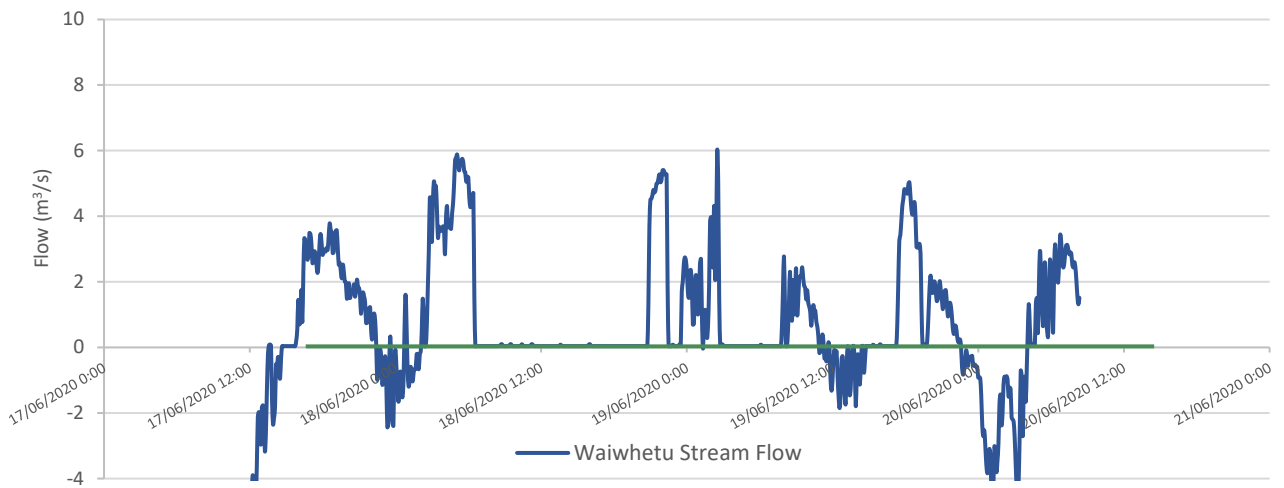


Figure A-12: Flow at lower Waiwhetu Stream near the Seaview outfall during 17 June 2020 overflow event

Appendix B Waiwhetu Stream and Treated Wastewater Grab Sample Dates and Times

Note: For all results, grey shaded cells indicate where results are not applicable.

Table B-1: Treated wastewater grab sample dates and times

Overflow Start Date	Overflow Start Time	Overflow End Date	Overflow End Time	Duration (hh/mm)	Day 1 Grab Sample Date	Day 1 Grab Sample Time	Day 1 Tide Times	Day 2 Grab Sample Date	Day 2 Grab Sample Time	Day 2 Tide Times	Day 3 Grab Sample Date	Day 3 Grab Sample Time	Day 3 Tide Times	Day 4 Grab Sample Date	Day 4 Grab Sample Time	Day 4 Tide Times
14 Jul 2019	10:51	14 July 2019	15:59	05hr 08m	15 Jul 2019	11:20	Low: 09:30/22:10 High: 03:22/14:48									
16 Jul 2019	06:39	16 July 2019	13:51	07hr 12m	16 July 2019	11:56	Low: 10:20/23:02 High: 04:14/16:37	17 July 2019	15:18	Low: 11:09/23:53 High: 05:04/17:25						
12 Aug 2019	19:10	12 Aug 2019	23:20	04hr 10m	13 Aug 2019	10:35	Low: 09:07/21:44 High: 03:00/15:25	14 Aug 2019	12:55	Low: 09:54/22:33 High: 03:49/16:11						
05 Oct 2019	16:49	05 Oct 2019	18:52	02hr 03m	6 Oct 2019	13:35	Low: 05:56/18:33 High: 00:07/12:10									
11 Nov 2019	04:17	11 Nov 2019	21:03	16hr 46m	11 Nov 2019	12:57	Low: 10:46/23:16 High: 04:39/17:03	12 Nov 2019	11:15	Low: 11:38 High: 05:27/17:38						
08 Dec 2019	05:45	09 Dec 2019	02:10	20hr 25m	8 Dec 2019	13:35	Low: 08:31/20:58 High: 02:25/14:48	9 Dec 2019	14:05	Low: 09:17/21:43 High: 03:11/15:34						
18 Dec 2019	09:40	18 Dec 2019	12:36	02hr 56m	18 Dec 2019	14:15	Low: 04:28/17:06 High: 10:40/23:08	19 Dec 2019	14:15	Low: 05:21/17:55 High: 11:33/23:59						
28 Mar 2020	07:04	29 Mar 2020	16:45	33hr 41m	28 Mar 2020	13:08	Low: 02:51/15:23 High: 09:01/21:17	29 Mar 2020	12:38	Low: 03:39/16:05 High: 09:47/22:00	30 Mar 2020	12:35	Low: 04:24/16:44 High: 10:30/22:43			
05 May 2020	15:19	06 May 2020	15:19	24hr 00m	6 May 2020	15:07	Low: 09:17/21:53 High: 03:08/15:38	7 May 2020	13:27	Low: 10:19/22:57 High: 04:08/16:38						

Overflow Start Date	Overflow Start Time	Overflow End Date	Overflow End Time	Duration (hh/mm)	Day 1 Grab Sample Date	Day 1 Grab Sample Time	Day 1 Tide Times	Day 2 Grab Sample Date	Day 2 Grab Sample Time	Day 2 Tide Times	Day 3 Grab Sample Date	Day 3 Grab Sample Time	Day 3 Tide Times	Day 4 Grab Sample Date	Day 4 Grab Sample Time	Day 4 Tide Times
25 May 2020	04:46	25 May 2020	13:52	09hr 06m	25 May 2020	14:55	Low: 12:51/13:06 High: 06:59/19:10									
04 Jun 2020	20:49	05 Jun 2020	12:15	15hr 26m	5 Jun 2020	13:35	Low: 10:01/22:42 High: 03:53/16:21	6 Jun 2020	11:06	Low: 11:00/23:43 High: 04:51/17:17						
17 Jun 2020	16:11	20 Jun 2020	14:34	70hr 23m	18 Jun 2020	10:30	Low: 08:33/20:55 High: 02:26/14:46	19 Jun 2020	11:00	Low: 09:18/21:43 High: 03:12/15:31	20 Jun 2020	10:30	Low: 10:05/22:33 High: 03:59/16:16	21 Jun 2020	11:00	Low: 10:53/23:25 High: 04:48/17:03

Table B-2: Waiwhetu Stream grab samples date and time

Overflow Start Date	Overflow Start Time	Overflow End Date	Overflow End Time	Duration (hh/mm)	Day 1 Grab Sample Date	Day 1 Grab Sample Time	Day 1 Tide Times	Day 2 Grab Sample Date	Day 2 Grab Sample Time	Day 2 Tide Times	Day 3 Grab Sample Date	Day 3 Grab Sample Time	Day 3 Tide Times	Day 4 Grab Sample Date	Day 4 Grab Sample Time	Day 4 Tide Times
14 Jul 2019	10:51	14 July 2019	15:59	05hr 08m	15 Jul 2019	10:58	Low: 09:30/22:10 High: 03:22/14:48									
16 Jul 2019	06:39	16 July 2019	13:51	07hr 12m	16 July 2019	11:41	Low: 10:20/23:02 High: 04:14/16:37	17 July 2019	15:00	Low: 11:09/23:53 High: 05:04/17:25						
12 Aug 2019	19:10	12 Aug 2019	23:20	04hr 10m	13 Aug 2019	10:35	Low: 09:07/21:44 High: 03:00/15:25	14 Aug 2019	12:32	Low: 09:54/22:33 High: 03:49/16:11						
05 Oct 2019	16:49	05 Oct 2019	18:52	02hr 03m	6 Oct 2019	12:30	Low: 05:56/18:33 High: 00:07/12:10									
11 Nov 2019	04:17	11 Nov 2019	21:03	16hr 46m	11 Nov 2019	12:28	Low: 10:46/23:16 High: 04:39/17:03	12 Nov 2019	9:47	Low: 11:38 High: 05:27/17:38						
08 Dec 2019	05:45	09 Dec 2019	02:10	20hr 25m	8 Dec 2019	13:10	Low: 08:31/20:58 High: 02:25/14:48	9 Dec 2019	13:40	Low: 09:17/21:43 High: 03:11/15:34						
18 Dec 2019	09:40	18 Dec 2019	12:36	02hr 56m	18 Dec 2019	14:10	Low: 04:28/17:06 High: 10:40/23:08	19 Dec 2019	14:10	Low: 05:21/17:55 High: 11:33/23:59						
28 Mar 2020	07:04	29 Mar 2020	16:45	33hr 41m	28 Mar 2020	12:35	Low: 02:51/15:23 High: 09:01/21:17	29 Mar 2020	12:16	Low: 03:39/16:05 High: 09:47/22:00	30 Mar 2020	12:09	Low: 04:24/16:44 High: 10:30/22:43			

Overflow Start Date	Overflow Start Time	Overflow End Date	Overflow End Time	Duration (hr/mm)	Day 1 Grab Sample Date	Day 1 Grab Sample Time	Day 1 Tide Times	Day 2 Grab Sample Date	Day 2 Grab Sample Time	Day 2 Tide Times	Day 3 Grab Sample Date	Day 3 Grab Sample Time	Day 3 Tide Times	Day 4 Grab Sample Date	Day 4 Grab Sample Time	Day 4 Tide Times
05 May 2020	15:19	06 May 2020	15:19	24hr 00m	6 May 2020	14:12	Low: 09:17/21:53 High: 03:08/15:38	7 May 2020	13:12	Low: 10:19/22:57 High: 04:08/16:38						
25 May 2020	04:46	25 May 2020	13:52	09hr 06m	25 May 2020	14:40	Low: 12:51/13:06 High: 06:59/19:10									
04 Jun 2020	20:49	05 Jun 2020	12:15	15hr 26m	5 Jun 2020	14:10	Low: 10:01/22:42 High: 03:53/16:21	6 Jun 2020	11:26	Low: 11:00/23:43 High: 04:51/17:17						
17 Jun 2020	16:11	20 Jun 2020	14:34	70hr 23m	18 Jun 2020	11:15	Low: 08:33/20:55 High: 02:26/14:46	19 Jun 2020	10:25	Low: 09:18/21:43 High: 03:12/15:31	20 Jun 2020	11:25	Low: 10:05/22:33 High: 03:59/16:16	21 Jun 2020	10:15	Low: 10:53/23:25 High: 04:48/17:03

Appendix C Waiwhetu Stream Quality

Note: For all results, green shaded cells indicate where guideline values (from Section 2.2. of the main report) were exceeded, orange shaded cells indicate where tidal influence was likely and grey shaded cells indicate where results are not applicable.

Table C-1: Waiwhetu Stream monitoring results during an overflow event on 14 July 2019.

determinand	units	Site C: Waiwhetu Stream @ Bell Road Bridge	Site B: Waiwhetu Stream @ Urupā	Site A: Waiwhetu Stream @ Port Road	Waiwhetu Stream Mouth	Guidelines (Table 2.2)*
		After Overflow	After Overflow	After Overflow	After Overflow	
		15 July	15 July	15 July	15 July	
pH	pH	7.1	7.3	7.5		7.3
Temperature	°C	***	***	***		≤ 19.0
Dissolved Oxygen**	mg/L	9	16.1	11		> 9.2 @ 15 °C***
CBOD ₅	mg/L	1	1	<1		-
Nitrite-N	mg/L	0.01	<0.1	0.1		-
Nitrate-N	mg/L	0.87	0.38	0.16		≤ 0.065
Ammoniacal-N	mg/L	0.1	0.06	0.01		≤ 0.01
Salinity	ppt	<2	<2	4.2		-
DRP	mg/L	0.023	0.0013	0.01		≤ 0.014
Faecal Coliforms	cfu/100ml	2,800	2,500	220		-
<i>E.coli</i>	cfu/100ml	2,800	2,500	224		≤ 540
Enterococci	cfu/100ml	920	4,200	150		≤ 500
Wind direction/Wind strength					Southeast/Moderate	-
Tidal height/Tide					Mid/Flood	-

* Receiving water quality guidelines are derived largely from those adopted by GWRC (Perrie, Morar, Milne, & Greenfield, 2012)

** Dissolved oxygen minimum concentration

*** Based on 92% of O₂ saturation concentration in water at 15 °C (92% of 10 mg/L)

Table C-2: Waiwhetu Stream monitoring results during an overflow event on 16 July 2019.

determinand	units	Site C: Waiwhetu Stream @ Bell Road Bridge		Site B: Waiwhetu Stream @ Urupā		Site A: Waiwhetu Stream @ Port Road		Waiwhetu Stream Mouth		Guidelines (Table 2.2)*
		During Overflow	After Overflow	During overflow	After Overflow	During overflow	After Overflow	During Overflow	After Overflow	
		16 July	17 July	16 July	17 July	16 July	17 July	16 July	17 July	
pH	pH	6.8	7.1	7.0	7.4	7.4	7.5			7.3
Temperature	°C	11.6	****	11.1	****	10.1	****			≤ 19.0
Dissolved Oxygen**	mg/L	9.8	9.4	9.9	10.8	10.9	10.8			> 9.2 @ 15 °C***
CBOD ₅	mg/L	2	<1	2	<1	<1	<1			-
Nitrite-N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			-
Nitrate-N	mg/L	0.5	0.6	0.21	0.78	0.17	0.22			≤ 0.065
Ammoniacal-N	mg/L	0.11	0.07	0.07	0.25	0.02	0.01			≤ 0.01
Salinity	ppt	<2	<2	<2	2.9	<2	5.1			-
DRP	mg/L	0.062	0.022	0.04	0.015	0.015	0.011			≤ 0.014
Faecal Coliforms	cfu/100ml	11,500	1,050	8,700	110	1,900	120			-
<i>E.coli</i>	cfu/100ml	11,300	1,040	8,400	112	1,600	116			≤ 540
Enterococci	cfu/100ml	20,000	830	20,000	72	4,500	77			≤ 500
Wind direction/Wind strength								Southeast/Moderate	Northeast/Calm	-
Tidal height/Tide								Mid/Flood	High/Flood	-

* Receiving water quality guidelines are derived largely from those adopted by GWRC (Perrie, Morar, Milne, & Greenfield, 2012)

** Dissolved oxygen minimum concentration

*** Based on 92% of O₂ saturation concentration in water at 15 °C (92% of 10 mg/L)

**** Temperature was not measured on-site due to broken thermometer

Table C-3: Waiwhetu Stream monitoring results during an overflow event on 13 August 2019.

determinand	units	Site C: Waiwhetu Stream @ Bell Road Bridge		Site B: Waiwhetu Stream @ Urupā		Site A: Waiwhetu Stream @ Port Road		Waiwhetu Stream Mouth		Guidelines (Table 2.2)*
		After Overflow		After Overflow		After Overflow		After Overflow		
		13 August	14 August	13 August	14 August	13 August	14 August	13 August	14 August	
pH	pH	7.0	7.0	6.9	7.4	7.0	7.6			7.3
Temperature	°C	10.5	11.5	10.0	11.0	9.1	10.7			≤ 19.0
Dissolved Oxygen**	mg/L	9.3	9.2	8.9	11.2	10.8	11.1			> 9.2 @ 15 °C***
CBOD ₅	mg/L	<1	1	1	<1	<1	<1			-
Nitrite-N	mg/L	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1			-
Nitrate-N	mg/L	0.78	0.68	0.67	0.23	0.22	0.2			≤ 0.065
Ammoniacal-N	mg/L	0.07	0.04	0.1	<0.01	0.03	<0.01			≤ 0.01
Salinity	ppt	<2	<2	<2	2.9	<2	6.8			-
DRP	mg/L	0.027	0.017	0.048	0.008	0.014	0.007			≤ 0.014
Faecal Coliforms	cfu/100ml	2,800	4,800	550	96	550	58			-
<i>E. coli</i>	cfu/100ml	2,800	4,800	550	88	545	58			≤ 540
Enterococci	cfu/100ml	2,800	3,400	780	16	2,300	20			≤ 500
Wind direction/Wind strength								North/Moderate	North/Moderate	-
Tidal height/Tide								Low/Flood	Mid/Flood	-

* Receiving water quality guidelines are derived largely from those adopted by GWRC (Perrie, Morar, Milne, & Greenfield, 2012)

** Dissolved oxygen minimum concentration

*** Based on 92% of O₂ saturation concentration in water at 15 °C (92% of 10 mg/L)

Table C-4: Waiwhetu Stream monitoring results during an overflow event on 06 October 2019.

determinand	units	Site C: Waiwhetu Stream @ Bell Road Bridge	Site B: Waiwhetu Stream @ Urupā	Site A: Waiwhetu Stream @ Port Road	Waiwhetu Stream Mouth	Guidelines (Table 2.2)*
		After Overflow	After Overflow	After Overflow	After Overflow	
		06 October 2019	06 October 2019	06 October 2019	06 October 2019	
pH	pH	7.0	7.2	7.2		7.3
Temperature	°C	11.3	10.4	9.6		≤ 19.0
Dissolved Oxygen**	mg/L	8.8	11.6	11.6		> 9.2 @ 15 °C***
CBOD ₅	mg/L	<6	<6	<6		-
Nitrite-N	mg/L	<0.01	<0.1	<0.1		-
Nitrate-N	mg/L	0.58	0.12	0.12		≤ 0.065
Ammoniacal-N	mg/L	0.11	0.02	<0.01		≤ 0.01
Salinity	ppt	<2	2.2	2.2		-
DRP	mg/L	0.032	0.009	0.009		≤ 0.014
Faecal Coliforms	cfu/100ml	2,500	1,130	1,100		-
<i>E. coli</i>	cfu/100ml	2,000	1,120	1,100		≤ 540
Enterococci	cfu/100ml	2,400	250	230		≤ 500
Wind direction/Wind strength					Southeast/Calm	-
Tidal height/Tide					High/Flood	-

* Receiving water quality guidelines are derived largely from those adopted by GWRC (Perrie, Morar, Milne, & Greenfield, 2012)

** Dissolved oxygen minimum concentration

*** Based on 92% of O₂ saturation concentration in water at 15 °C (92% of 10 mg/L)

Table C-5: Waiwhetu Stream monitoring results during an overflow event on 11 November 2019.

determinand	units	Site C: Waiwhetu Stream @ Bell Road Bridge		Site B: Waiwhetu Stream @ Urupā		Site A: Waiwhetu Stream @ Port Road		Waiwhetu Stream Mouth		Guidelines (Table 2.2)*
		During Overflow	After Overflow	During overflow	After Overflow	During overflow	After Overflow	During Overflow	After Overflow	
		11 November	12 November	11 November	12 November	11 November	12 November	11 November	12 November	
pH	pH	6.9	6.9	6.8	6.9	6.9	7.0			7.3
Temperature	°C	12.9	14.4	12.8	14.9	12.6	14.6			≤ 19.0
Dissolved Oxygen**	mg/L	9.7	9.2	9.6	8.7	9.3	8.6			> 9.2 @ 15 °C***
CBOD ₅	mg/L	<6	<6	<6	<6	<6	<6			-
Nitrite-N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			-
Nitrate-N	mg/L	0.43	0.75	0.34	0.75	0.37	0.73			≤ 0.065
Ammoniacal-N	mg/L	0.08	0.09	0.06	0.09	0.07	0.09			≤ 0.01
Salinity	ppt	<2	<2	<2	<2	<2	<2			-
DRP	mg/L	0.036	0.024	0.037	0.032	0.038	0.032			≤ 0.014
Faecal Coliforms	cfu/100ml	9,000	2,100	12,000	3,300	14,000	4,000			-
<i>E. coli</i>	cfu/100ml	9,000	1,600	11,700	2,700	14,000	3,300			≤ 540
Enterococci	cfu/100ml	120,000	2,300	21,000	4,300	15,000	4,800			≤ 500
Wind direction/Wind strength								North/Moderate	Southeast/Light	-
Tidal height/Tide								Low/Low	Mid/Ebb	-

* Receiving water quality guidelines are derived largely from those adopted by GWRC (Perrie, Morar, Milne, & Greenfield, 2012)

** Dissolved oxygen minimum concentration

*** Based on 92% of O₂ saturation concentration in water at 15 °C (92% of 10 mg/L)

Table C-6: Waiwhetu Stream monitoring results during an overflow event on 08 December 2019.

determinand	units	Site C: Waiwhetu Stream @ Bell Road Bridge		Site B: Waiwhetu Stream @ Urupā		Site A: Waiwhetu Stream @ Port Road		Waiwhetu Stream Mouth		Guidelines (Table 2.2)*
		During Overflow	After Overflow	During overflow	After Overflow	During overflow	After Overflow	During Overflow	After Overflow	
		08 December	09 December	08 December	09 December	08 December	09 December	08 December	09 December	
pH	pH	6.9	7.2	6.8	7.3	7.2	7.4			7.3
Temperature	°C	17.3	18.2	17.4	17.1	17.5	16.9			≤ 19.0
Dissolved Oxygen**	mg/L	8.0	8.9	7.5	9.9	7.7	9.9			> 9.2 @ 15 °C***
CBOD ₅	mg/L	<3	<1	4	<1	4	<1			-
Nitrite-N	mg/L	<0.01	<0.01	<0.01	<0.1	0.04	<0.1			-
Nitrate-N	mg/L	0.73	0.82	0.64	0.22	0.58	0.21			≤ 0.065
Ammoniacal-N	mg/L	0.1	0.11	0.25	0.04	5.36	0.03			≤ 0.01
Salinity	ppt	<2	<2	<2	<2	<2	<2			-
DRP	mg/L	0.042	0.034	0.051	0.01	0.329	0.009			≤ 0.014
Faecal Coliforms	cfu/100ml	28,000	790	27,000	2,600	29,000	2,000			-
<i>E. coli</i>	cfu/100ml	22,000	788	20,000	2,200	22,000	750			≤ 540
Enterococci	cfu/100ml	15,000	2,000	26,000	500	13,000	310			≤ 500
Wind direction/Wind strength								North/Light	Southeast/Calm	-
Tidal height/Tide								Mid/Flood	Mid/Flood	-

* Receiving water quality guidelines are derived largely from those adopted by GWRC (Perrie, Morar, Milne, & Greenfield, 2012)

** Dissolved oxygen minimum concentration

*** Based on 92% of O₂ saturation concentration in water at 15 °C (92% of 10 mg/L)

Table C-7: Waiwhetu Stream monitoring results during an overflow event on 18 December 2019.

determinand	units	Site C: Waiwhetu Stream @ Bell Road Bridge		Site B: Waiwhetu Stream @ Urupā		Site A: Waiwhetu Stream @ Port Road		Waiwhetu Stream Mouth		Guidelines (Table 2.2)*
		During Overflow	After Overflow	During overflow	After Overflow	During overflow	After Overflow	During Overflow	After Overflow	
		18 December	19 December	18 December	19 December	18 December	19 December	18 December	19 December	
pH	pH	7.2	7.4	7.2	7.5	7.2	7.6			7.3
Temperature	°C	12.3	17.4	12.0	17.8	12.2	17.6			≤ 19.0
Dissolved Oxygen**	mg/L	9.4	7.7	8.8	8.5	8.6	8.3			> 9.2 @ 15 °C***
CBOD ₅	mg/L	1	<1	1	<1	<1	1			-
Nitrite-N	mg/L	<0.01	<0.1	0.01	<0.1	<0.01	<0.1			-
Nitrate-N	mg/L	0.33	0.34	0.24	0.26	0.26	0.19			≤ 0.065
Ammoniacal-N	mg/L	0.05	0.12	0.06	0.11	0.07	0.12			≤ 0.01
Salinity	ppt	<2	4.4	<2	6.1	2	7.5			-
DRP	mg/L	0.029	0.039	0.033	0.037	0.031	0.034			≤ 0.014
Faecal Coliforms	cfu/100ml	11,400	200	9,300	2,500	8,200	800			-
<i>E.coli</i>	cfu/100ml	3,800	1,500	4,000	412	5,500	500			≤ 540
Enterococci	cfu/100ml	10,000	1,400	8,000	830	8,800	480			≤ 500
Wind direction/Wind strength								North/Moderate	North/Light	-
Tidal height/Tide								High/Flood	Mid/High	-

* Receiving water quality guidelines are derived largely from those adopted by GWRC (Perrie, Morar, Milne, & Greenfield, 2012)

** Dissolved oxygen minimum concentration

*** Based on 92% of O₂ saturation concentration in water at 15 °C (92% of 10 mg/L)

Table C-8 Waiwhetu Stream monitoring results during an overflow event on 28 March 2020.

determinand	units	Site C: Waiwhetu Stream @ Bell Road Bridge			Site B: Waiwhetu Stream @ Urupā			Site A: Waiwhetu Stream @ Port Road			Waiwhetu Stream Mouth			Guidelines (Table 2.2)*
		During Overflow	During Overflow	After Overflow	During overflow	After Overflow	After Overflow	During overflow	After Overflow	After Overflow	During Overflow	During Overflow	After Overflow	
		28 March	29 March	30 March	28 March	29 March	30 March	28 March	29 March	30 March	28 March	29 March	30 March	
pH	pH	6.8	7.1	7.0	6.9	7.1	7.1	6.9	7.2	7.1				7.3
Temperature	°C	12.9	12.6	17.2	12.9	12.3	19.1	12.5	12.2	18.8				≤ 19.0
Dissolved Oxygen**	mg/L	9.8	9.3	7.4	9.9	9.4	7.6	9.9	9.4	7.7				> 9.2 @ 15 °C***
CBOD ₅	mg/L	<3	1	<1	<3	2	1	<3	1	1				-
Nitrite-N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				-
Nitrate-N	mg/L	0.5	0.46	0.85	0.38	0.28	0.78	0.33	0.29	0.6				≤ 0.065
Ammoniacal-N	mg/L	<0.01	<0.01	0.12	<0.01	<0.01	0.13	<0.01	0.01	0.01				≤ 0.01
Salinity	ppt	2	2	2	2.2	<2	<2	<2	<2	<2				-
DRP	mg/L	0.021	0.022	0.026	0.019	0.024	0.034	<0.005	<0.005	<0.009				≤ 0.014
Faecal Coliforms	cfu/100 ml	20,000	6,360	3,900	13,600	5,000	3,400	20,000	20,000	3,000				-
<i>E.coli</i>	cfu/100 ml	14,000	6,180	3,900	10,900	5,000	2,900	16,000	16,000	2,400				≤ 540
Enterococci	cfu/100 ml	25,000	9,100	2,400	27,000	11,000	2,600	26,000	26,000	1,400				≤ 500
Wind direction/Wind strength											North/Strong	North/Strong	No wind/Light	-
Tidal height/Tide											High/High	High/High	High/High	-

* Receiving water quality guidelines are derived largely from those adopted by GWRC (Perrie, Morar, Milne, & Greenfield, 2012)

** Dissolved oxygen minimum concentration

*** Based on 92% of O₂ saturation concentration in water at 15 °C (92% of 10 mg/L)

Table C-9 Waiwhetu Stream monitoring results during an overflow event on 06 May 2020.

determinand	units	Site C: Waiwhetu Stream @ Bell Road Bridge		Site B: Waiwhetu Stream @ Urupā		Site A: Waiwhetu Stream @ Port Road		Waiwhetu Stream Mouth		Guidelines (Table 2.2)*
		During Overflow	After Overflow	During overflow	After Overflow	During overflow	After Overflow	During Overflow	After Overflow	
		06 May	07 May	06 May	07 May	06 May	07 May	06 May	07 May	
pH	pH	7.0	7.2	7.2	7.6	7.3	7.6			7.3
Temperature	°C	17.4	16.9	17.0	17.5	18.0	17.6			≤ 19.0
Dissolved Oxygen**	mg/L	8.9	8.7	10.9	10.8	10.8	10.8			> 9.2 @ 15 °C***
CBOD ₅	mg/L	<1	<1	1	<1	<1	<1			-
Nitrite-N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			-
Nitrate-N	mg/L	0.71	0.79	0.19	0.21	0.19	0.2			≤ 0.065
Ammoniacal-N	mg/L	0.12	0.16	0.22	0.05	0.02	0.03			≤ 0.01
Salinity	ppt	<2	<2	<2	7.2	<2	7.2			-
DRP	mg/L	0.045	0.04	0.017	0.013	0.009	0.012			≤ 0.014
Faecal Coliforms	cfu/100ml	1,200	2,400	800	220	800	230			-
<i>E.coli</i>	cfu/100ml	1,100	2,000	796	216	700	224			≤ 540
Enterococci	cfu/100ml	2,100	2,000	470	96	360	96			≤ 500
Wind direction/Wind strength								No wind/calm	No wind/calm	-
Tidal height/Tide								Mid/Flood	Low/Low	-

* Receiving water quality guidelines are derived largely from those adopted by GWRC (Perrie, Morar, Milne, & Greenfield, 2012)

** Dissolved oxygen minimum concentration

*** Based on 92% of O₂ saturation concentration in water at 15 °C (92% of 10 mg/L)

Table C-10: Waiwhetu Stream monitoring results during an overflow event on 25 May 2020.

determinand	units	Site C: Waiwhetu Stream @ Bell Road Bridge		Site B: Waiwhetu Stream @ Urupā		Site A: Waiwhetu Stream @ Port Road		Waiwhetu Stream Mouth		Guidelines (Table 2.2)*
		During Overflow	After Overflow	During overflow	After Overflow	During overflow	After Overflow	During Overflow	After Overflow	
		25 May	26 May	25 May	26 May	25 May	26 May	25 May	26 May	
pH	pH	7.1	6.9	7.2	7.0	7.2	7.0			7.3
Temperature	°C	13.0	13.1	12.8	12.7	11.9	12.8			≤ 19.0
Dissolved Oxygen**	mg/L	10.0	9.3	10.6	8.5	9.6	8.8			> 9.2 @ 15 °C***
CBOD5	mg/L	<6	<3	<6	<3	<6	<3			-
Nitrite-N	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			-
Nitrate-N	mg/L	0.6	0.79	0.39	0.65	0.18	0.62			≤ 0.065
Ammoniacal-N	mg/L	0.04	0.09	0.05	0.11	0.09	0.11			≤ 0.01
Salinity	ppt	<2	<2	<2	<2	<2	<2			-
DRP	mg/L	0.035	0.031	0.039	0.037	0.018	0.036			≤ 0.014
Faecal Coliforms	cfu/100ml	20,000	2,000	9,000	2,700	5,400	3,900			-
E.coli	cfu/100ml	15,000	2,000	8,800	2,500	5,400	3,200			≤ 540
Enterococci	cfu/100ml	12,000	2,000	14,000	3,300	7,000	940			≤ 500
Wind direction/Wind strength								South/Strong	Northwest/Light	-
Tidal height/Tide								High/Flood	Low/Ebb	-

* Receiving water quality guidelines are derived largely from those adopted by GWRC (Perrie, Morar, Milne, & Greenfield, 2012)

** Dissolved oxygen minimum concentration

*** Based on 92% of O₂ saturation concentration in water at 15 °C (92% of 10 mg/L)

Table C-11 Waiwhetu Stream monitoring results during an overflow event on 05 June 2020.

determinand	units	Site C: Waiwhetu Stream @ Bell Road Bridge		Site B: Waiwhetu Stream @ Urupā		Site A: Waiwhetu Stream @ Port Road		Waiwhetu Stream Mouth		Guidelines (Table 2.2)*
		During Overflow	After Overflow	During overflow	After Overflow	During overflow	After Overflow	During Overflow	After Overflow	
		05 June	06 June	05 June	06 June	05 June	06 June	05 June	06 June	
pH	pH	6.8	6.9	7.1	7.0	7.2	7.0			7.3
Temperature	°C	12.1	12.2	13.3	13.5	13.9	13.7			≤ 19.0
Dissolved Oxygen**	mg/L	8.9	8.5	9.8	8.2	10.2	9.6			> 9.2 @ 15 °C***
CBOD5	mg/L	1.3	1.6	1.4	1.4	1.5	0.85			-
Nitrite-N	mg/L	0.01	0.013	0.0087	0.012	0.0073	0.0068			-
Nitrate-N	mg/L	****	****	****	****	****	****			≤ 0.065
Ammoniacal-N	mg/L	0.4	0.4	0.4	0.4	0.4	0.4			≤ 0.01
Salinity	ppt	0.5	0.3	0.2	1.3	0.1	2.9			-
DRP	mg/L	0.038	0.042	0.012	0.044	0.012	0.019			≤ 0.014
Faecal Coliforms	cfu/100ml	6,400	4,200	5,400	2,200	7,600	660			-
E.coli	cfu/100ml	5,200	2,700	4,700	1,200	5,400	570			≤ 540
Enterococci	cfu/100ml	7,400	1,100	3,000	980	2,300	530			≤ 500
Wind direction/Wind strength								South/Light	Northeast/Light	-
Tidal height/Tide								Mid/Flood	Mid/Flood	-

* Receiving water quality guidelines are derived largely from those adopted by GWRC (Perrie, Morar, Milne, & Greenfield, 2012)

** Dissolved oxygen minimum concentration

*** Based on 92% of O₂ saturation concentration in water at 15 °C (92% of 10 mg/L)

**** Nitrate-N concentration was not analysed

Table C-12 Waiwhetu Stream monitoring results during an overflow event on 18 June 2020.

determinand	units	Site C: Waiwhetu Stream @ Bell Road Bridge				Site B: Waiwhetu Stream @ Urupā				Site A: Waiwhetu Stream @ Port Road				Waiwhetu Stream Mouth				Guidelines (Table 2.2)*
		During Overflow	During Overflow	During Overflow	After Overflow	During Overflow	During Overflow	During Overflow	After Overflow	During Overflow	During Overflow	During Overflow	After Overflow	During Overflow	During Overflow	During Overflow	After Overflow	
		18 June	19 June	20 June	21 June	18 June	19 June	20 June	21 June	18 June	19 June	20 June	21 June	18 June	19 June	20 June	21 June	
pH	pH	6.9	14.4	13.8	13.8	7.1	14.0	13.8	14.2	6.8	14.4	14.2	14.4					7.3
Temperature	°C	11.8	13.5	11.4	11.7	13.6	13.3	13.6	13.8	13.9	11.4	14	13.9					≤ 19.0
Dissolved Oxygen**	mg/L	9.7	19.0	8.8	8.0	9.8	18.2	8.1	7.6	8.6	16.2	10.4	8.6					> 9.2 @ 15 °C***
CBOD ₅	mg/L	2.6	1.7	0.75	4	2.1	2.9	2.9	1.5	4.4	4.4	2.1	3.4					-
Nitrite-N	mg/L	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02					-
Nitrate-N	mg/L	0.46	0.85	0.76	0.66	0.35	0.8	0.82	0.71	0.35	1.07	0.27	0.66					≤ 0.065
Ammoniacal -N	mg/L	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	2.5	3.1	0.4	0.4					≤ 0.01
Salinity	ppt	0	0.2	0.4	0.4	0.1	0.8	1	1	0.1	0.6	0.4	1					-
DRP	mg/L	0.043	0.03	0.042	0.04	0.033	0.042	0.038	0.059	0.11	0.1	0.01	0.057					≤ 0.014
Faecal Coliforms	cfu/100ml	29,000	6,600	2,200	1,440	19,000	10,000	3,000	4,600	19,000	5,000	820	3,200					-
<i>E.coli</i>	cfu/100ml	25,000	5,200	2,400	1,260	18,000	7,400	1,460	4,200	14,000	3,800	780	2,600					≤ 540
Enterococci	cfu/100ml	26,000	8,000	1,280	1,440	33,000	8,600	2,600	720	30,000	6,200	500	3,000					≤ 500
Wind direction/Wind strength														South west/Light	South west/Light	South west/Moderate	South /Moderate	-
Tidal height/Tide														Mid/Fl eed	Mid/Fl eed	Low/Fl eed	Low/Fl eed	-

* Receiving water quality guidelines are derived largely from those adopted by GWRC (Perrie, Morar, Milne, & Greenfield, 2012)

** Dissolved oxygen minimum concentration

*** Based on 92% of O₂ saturation concentration in water at 15 °C (92% of 10 mg/L)

Appendix D Waiwhetu Stream Visual Observations

Note: Visual observations in June 2020 differ from previous visual observations as a result of a change in the contractor managing the Seaview WWTP. For all results, grey shaded cells indicate where observations were not recorded.

Table D-1 Waiwhetu Stream visual observations during an overflow event on 14 July 2019

Visual observation			Scums or Foams (%)	Floating/Suspended Matter (%)	Visible Oil & Grease (%)	Colour or Clarity Change	Objectionable Odour
Site C: Waiwhetu Stream @ Bell Road Bridge	After Overflow	15 July 2019	0	0	0	A lot	None
Site B: Waiwhetu Stream @ Urupā	After Overflow	15 July 2019	0	0	0	A lot	None
Site A: Waiwhetu Stream @ Port Road	After Overflow	15 July 2019	0	10	0	A lot	None

Table D-2 Waiwhetu Stream visual observation during an overflow event on 16 July 2019

Visual observation			Scums or Foams (%)	Floating/Suspended Matter (%)	Visible Oil & Grease (%)	Colour or Clarity Change	Objectionable Odour
Site C: Waiwhetu Stream @ Bell Road Bridge	During Overflow	16 July 2019	0	5	0	95	None
	After Overflow	17 July 2019	0	0	0	None	None
Site B: Waiwhetu Stream @ Urupā	During overflow	16 July 2019	0	5	0	95	None
	After Overflow	17 July 2019	0	0	0	None	None
Site A: Waiwhetu Stream @ Port Road	During overflow	16 July 2019	0	80	0	95	None
	After Overflow	17 July 2019	0	20	20	None	None

Table D-3 Waiwhetu Stream visual observations during an overflow event on 13 August 2019

Visual observation			Scums or Foams	Floating/Suspended Matter	Visible Oil & Grease	Colour or Clarity Change	Objectionable Odour
Site C: Waiwhetu Stream @ Bell Road Bridge	During Overflow	13 August 2019					
	After Overflow	14 August 2019					
Site B: Waiwhetu Stream @ Urupā	During overflow	13 August 2019	20%	20%	0%	Some	None
	After Overflow	14 August 2019	20%	20%	10%	Some	None
Site A: Waiwhetu Stream @ Port Road	During overflow	13 August 2019	10%	10%	20%	Some	None
	After Overflow	14 August 2019	10%	10%	10%	Some	None

Table D-4 Waiwhetu Stream visual observations during an overflow event on 06 October 2019

Visual observation			Scums or Foams	Floating/Suspended Matter	Visible Oil & Grease	Colour or Clarity Change	Objectionable Odour
Site C: Waiwhetu Stream @ Bell Road Bridge	After Overflow	06 October 2019	0%	5%	0%	A lot	None
Site B: Waiwhetu Stream @ Urupā	After Overflow	06 October 2019	5%	5%	0%	A lot	None
Site A: Waiwhetu Stream @ Port Road	After Overflow	06 October 2019	20%	10%	0%	A lot	None

Table D-5 Waiwhetu Stream visual observations during an overflow event on 11 November 2019

Visual observation			Scums or Foams	Floating/Suspended Matter	Visible Oil & Grease	Colour or Clarity Change	Objectionable Odour
Site C: Waiwhetu Stream @ Bell Road Bridge	During Overflow	11 November 2019	Some	A lot	Some	A lot	Light
	After Overflow	12 November 2019	0%	0%	0%	Some	None
Site B: Waiwhetu Stream @ Urupā	During overflow	11 November 2019	Some	A lot	Some	A lot	Light
	After Overflow	12 November 2019	10%	20%	20%	Some	None
Site A: Waiwhetu Stream @ Port Road	During overflow	11 November 2019	Some	A lot	Some	A lot	Light
	After Overflow	12 November 2019	5%	5%	10%	Some	None

Table D-6 Waiwhetu Stream visual observations during an overflow event on 08 December 2019

Visual observation			Scums or Foams	Floating/Suspended Matter	Visible Oil & Grease	Colour or Clarity Change	Objectionable Odour
Site C: Waiwhetu Stream @ Bell Road Bridge	During Overflow	08 December 2019	None	Some	None	A lot	None
	After Overflow	09 December 2019	None	Some	None	A lot	None
Site B: Waiwhetu Stream @ Urupā	During overflow	08 December 2019	None	Some	None	A lot	None
	After Overflow	09 December 2019	None	Some	None	A lot	None
Site A: Waiwhetu Stream @ Port Road	During overflow	08 December 2019	None	Some	Some	A lot	None
	After Overflow	09 December 2019	None	Some	Some	A lot	None

Table D-7 Waiwhetu Stream visual observations during an overflow event on 18 December 2019

Visual observation			Scums or Foams	Floating/Suspended Matter	Visible Oil & Grease	Colour or Clarity Change	Objectionable Odour
Site C: Waiwhetu Stream @ Bell Road Bridge	During Overflow	18 December 2019	None	None	None	Some	None
	After Overflow	19 December 2019	None	None	None	Some	None
Site B: Waiwhetu Stream @ Urupā	During overflow	18 December 2019	None	None	None	Some	None
	After Overflow	19 December 2019	None	None	None	Some	None
Site A: Waiwhetu Stream @ Port Road	During overflow	18 December 2019	None	None	None	Some	None
	After Overflow	19 December 2019	None	None	None	Some	None

Table D-8 Waiwhetu Stream visual observations during an overflow event on 28 March 2019

Visual observation			Scums or Foams	Floating/Suspended Matter	Visible Oil & Grease	Colour or Clarity Change	Objectionable Odour
Site C: Waiwhetu Stream @ Bell Road Bridge	During Overflow	28 March 2019	Some	A lot	Some	0%	Light
	During Overflow	29 March 2019	Some	A lot	A lot	0%	Light
	After Overflow	30 March 2019	20%	20%	20%	None	None
Site B: Waiwhetu Stream @ Urupā	During overflow	28 March 2019	Some	A lot	Some	0%	Light
	During Overflow	29 March 2019	Some	A lot	A lot	0%	Light
	After Overflow	30 March 2019	60%	60%	80%	None	None
Site A: Waiwhetu Stream @ Port Road	During overflow	28 March 2019	Some	A lot	Some	0%	Light

Visual observation			Scums or Foams	Floating/Suspended Matter	Visible Oil & Grease	Colour or Clarity Change	Objectionable Odour
	During Overflow	29 March 2019	Some	A lot	A lot	0%	Light
	After Overflow	30 March 2019	40%	40%	80%	None	Moderate

Table D-9 Waiwhetu Stream visual observations during an overflow event on 06 May 2020

Visual observation			Scums or Foams	Floating/Suspended Matter	Visible Oil & Grease	Colour or Clarity Change	Objectionable Odour
Site C: Waiwhetu Stream @ Bell Road Bridge	During Overflow	06 May 2020	40%	60%	20%	Some	Light
	After Overflow	07 May 2020	20%	40%	40%	None	None
Site B: Waiwhetu Stream @ Urupā	During overflow	06 May 2020	60%	80%	40%	Some	None
	After Overflow	07 May 2020	10%	20%	20%	None	None
Site A: Waiwhetu Stream @ Port Road	During overflow	06 May 2020	40%	80%	40%	Some	None
	After Overflow	07 May 2020	10%	10%	10%	None	None

Table D-10 Waiwhetu Stream visual observations during an overflow event on 25 May 2020

Visual observation			Scums or Foams	Floating/Suspended Matter	Visible Oil & Grease	Colour or Clarity Change	Objectionable Odour
Site C: Waiwhetu Stream @ Bell Road Bridge	During Overflow	25 May 2020	10%	10%	20%	None	None
	After Overflow	26 May 2020	0%	5%	0%	Some	None
Site B: Waiwhetu Stream @ Urupā	During overflow	25 May 2020	20%	40%	20%	None	None
	After Overflow	26 May 2020	0%	5%	5%	Some	None
Site A: Waiwhetu Stream @ Port Road	During overflow	25 May 2020	None	None	10%	None	None
	After Overflow	26 May 2020	5%	0%	0%	Some	None

Table D-11 Waiwhetu Stream visual observations during an overflow event on 05 June 2020

Visual observation			Discoloration	Floating/Suspended Matter
Site C: Waiwhetu Stream @ Bell Road Bridge	During Overflow	05 June 2020	Yes	Yes
	After Overflow	06 June 2020	Yes	Yes
Site B: Waiwhetu Stream @ Urupā	During overflow	05 June 2020	Yes	Yes
	After Overflow	06 June 2020	Yes	Yes
Site A: Waiwhetu Stream @ Port Road	During overflow	05 June 2020	Yes	Yes
	After Overflow	06 June 2020	Yes	Yes

Table D-12 Waiwhetu Stream visual observations during an overflow event on 18 June 2020

Visual observation			Discoloration	Floating/Suspended Matter
Site C: Waiwhetu Stream @ Bell Road Bridge	During Overflow	18 June 2020	Yes	Yes
	During Overflow	19 June 2020	Yes	Yes
	During Overflow	20 June 2020	Yes	Yes
	After Overflow	21 June 2020	None	None
Site B: Waiwhetu Stream @ Urupā	During overflow	18 June 2020	Yes	Yes
	During Overflow	19 June 2020	Yes	Yes
	During Overflow	20 June 2020	Yes	Yes
	After Overflow	21 June 2020	None	None
Site A: Waiwhetu Stream @ Port Road	During overflow	18 June 2020	Yes	Yes
	During Overflow	19 June 2020	Yes	Yes
	During Overflow	20 June 2020	Yes	Yes
	After Overflow	21 June 2020	None	None

Appendix E Waiwhetu Stream Photographs



Figure E-1: Main plant overflow outlet on 15 July 2019



Figure E-2: Site A. Port Road on 15 July 2019

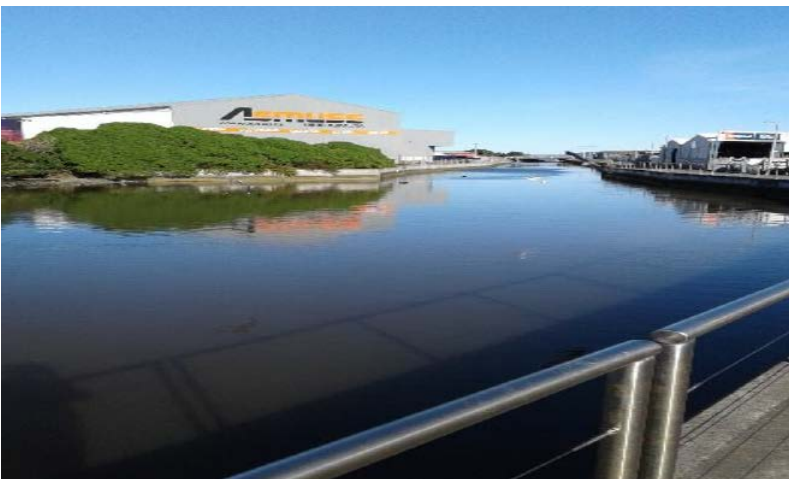


Figure E-3: Site B. Waiwhetu Pa and urupā on 15 July 2019



Figure E-4: Site C. Bell Road Bridge on 15 July 2019



Figure E-5: Main plant overflow outlet on 16 July 2019



Figure E-6: Site A. Port Road on 16 July 2019



Figure E-7: Site B. Waiwhetu Pa and urupā on 16 July 2019



Figure E-8: Main plant overflow outlet on 17 July 2019



Figure E-9: Site A. Port Road on 17 July 2019



Figure E-10: Site B. Waiwhetu Pa and urupā on 17 July 2019



Figure E-11: Site C. Bell Road Bridge on 17 July 2019



Figure E-12: Main plant overflow outlet on 13 August 2019



Figure E-13: Site A. Port Road on 13 August 2019

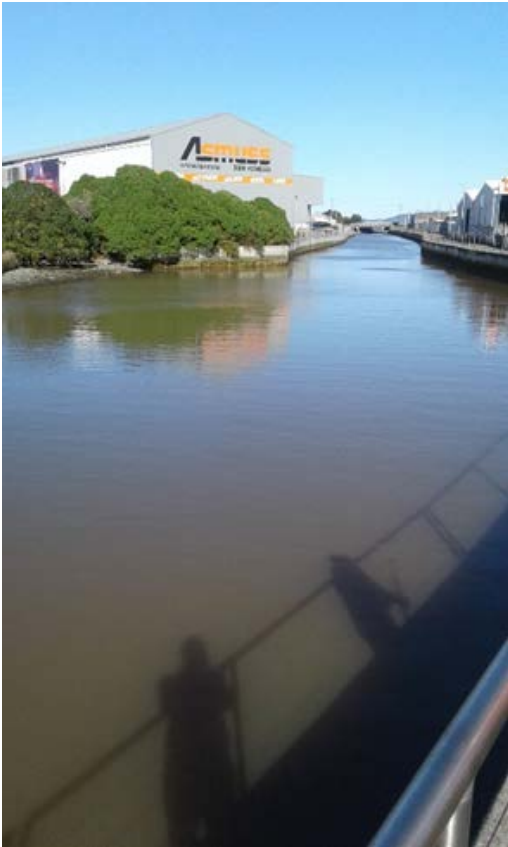


Figure E-14: Site B. Waiwhetu Pa and urupā on 13 August 2019



Figure E-15: Site C. Bell Road Bridge on 13 August 2019



Figure E-16: Main plant overflow outlet on 14 August 2019



Figure E-17: Site A, Port Road on 14 August 2019



Figure E-18: Site B. Waiwhefu Pa and urupā on 14 August 2019



Figure E-19: Site C. Bell Road Bridge on 14 August 2019



Figure E-20: Main plant overflow outlet on 06 October 2019



Figure E-21: Site A. Port Road on 06 October 2019



Figure E-22: Site B. Waiwhetu Pa and urupā on 06 October 2019



Figure E-23: Site C. Bell Road Bridge on 06 October 2019



Figure E-24: Main plant overflow outlet on 11 November 2019



Figure E-25: Site A. Port Road on 11 November 2019



Figure E-26: Site B. Waiwhetu Pa and urupā on 11 November 2019



Figure E-27: Site C. Bell Road Bridge on 11 November 2019



Figure E-28: Main plant overflow outlet on 12 November 2019



Figure E-29: Site A. Port Road on 12 November 2019



Figure E-30: Site B. Waiwhetu Pa and urupā on 12 November 2019



Figure E-31: Site C. Bell Road Bridge on 12 November 2019



Figure E-32: Main plant overflow outlet on 08 December 2019



Figure E-33: Site A. Port Road on 08 December 2019



Figure E-34: Site B. Waiwhetu Pa and urupā on 08 December 2019



Figure E-35: Site C. Bell Road Bridge on 08 December 2019



Figure E-36: Main plant overflow outlet on 09 December 2019



Figure E-37: Site A. Port Road on 09 December 2019



Figure E-38: Site B. Waiwhetu Pa and urupā on 09 December 2019



Figure E-39: Site C. Bell Road Bridge on 09 December 2019



Figure E-40: Main plant overflow outlet on 18 December 2019



Figure E-41: Site A. Port Road on 18 December 2019



Figure E-42: Site B. Waiwhetu Pa and urupā on 18 December 2019



Figure E-43: Main plant overflow outlet on 28 March 2020



Figure E-44: Site A. Port Road on 28 March 2020



Figure E-45: Site B. Waiwhetu Pa and urupā on 28 March 2020



Figure E-46: Site C. Bell Road Bridge on 28 March 2020



Figure E-47: Main plant overflow outlet on 29 March 2020



Figure E-48: Site A. Port Road on 29 March 2020



Figure E-49: Site B. Waiwhetu Pa and urupā on 29 March 2020



Figure E-50: Site C. Bell Road Bridge on 29 March 2020



Figure E-51: Main plant overflow outlet on 30 March 2020



Figure E-52: Site A. Port Road on 30 March 2020



Figure E-53: Site B. Waiwhetu Pa and urupā on 30 March 2020



Figure E-54: Main plant overflow outlet on 06 May 2020



Figure E-55: Site A. Port Road on 06 May 2020

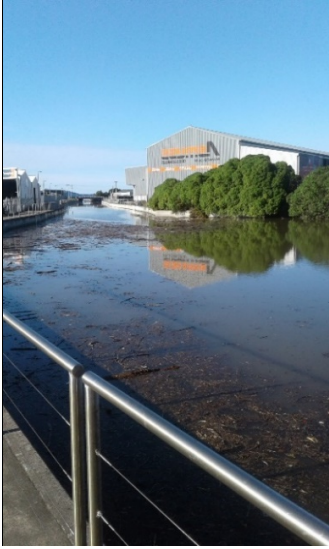


Figure E-56: Site B. Waiwhetu Pa and urupā on 06 May 2020



Figure E-57: Main pliant overflow outlet on 07 May 2020

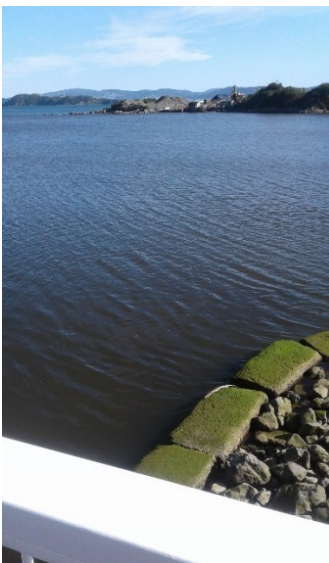


Figure E-58: Site A. Port Road on 07 May 2020



Figure E-59: Site B. Waiwhetu Pa and urupā on 07 May 2020



Figure E-60: Main plant overflow outlet on 05 June 2020



Figure E-61: Site A. Port Road on 05 June 2020



Figure E-62: Site B. Waiwhetu Pa and urupā on 05 June 2020



Figure E-62: Site C. Bell Road Bridge on 05 June 2020



Figure E-63: Main plant outfall outlet on 06 June 2020



Figure E-64: Site A. Port Road on 06 June 2020



Figure E-65: Site B. Waiwhetu Pa and urupā on 06 June 2020



Figure E-66: Site C. Bell Road Bridge on 06 June 2020



Figure E-67: Main plant outfall outlet on 18 June 2020



Figure E-68: Site A. Port Road on 18 June 2020



Figure E-68: Site B. Waiwhetu Pa and urupā on 18 June 2020



Figure E-70: Site C. Bell Road Bridge on 18 June 2020



Figure E-69: Main plant outfall outlet on 19 June 2020



Figure E-70: Site A. Port Road on 19 June 2020



Figure E-71: Site B. Waiwhetu Pa and urupā on 19 June 2020



Figure E-72: Site C. Bell Road Bridge on 19 June 2020



Figure E-73: Main plant outfall outlet on 20 June 2020



Figure E-74: Site A. Port Road on 20 June 2020



Figure E-75: Site B. Waiwhetu Pa and urupā on 20 June 2020



Figure E-76: Site C. Bell Road Bridge on 20 June 2020



Figure E-77: Main plant outfall outlet on 21 June 2020



Figure E-80: Site A. Port Road on 21 June 2020



Figure E-78: Site B. Waiwhetu Pa and urupā on 21 June 2020



Figure E-79: Site C. Bell Road Bridge on 21 June 2020

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Appendix v: Overflow Sampling Results

Overflow Incident Summary

WGN120142 [33406] Clauses 11, 12, 13,
14, and 15

Hutt Valley Water Services
Quarterly Overflow Report
HVVW-01

SamplePoint	SampleDate	LabNumber	Ammonia Nitrogen g/m ³	BOD5 - Carbonaceous g/m ³	BOD5 - Total g/m ³	Colour or Clarity Change	Copper - Dissolved g/m ³	Dissolved Oxygen O ₂ /m ³	Dissolved Reactive Phosphorus g/m ³	E. coli cfu/100mL	Enterococci cfu/100mL
Wellington Road Overflow	15/07/2019	19/36973-01	14.6							1,400,000	
Wellington Road @ River	15/07/2019	19/36973-02	0.16		<3					3,100	
Point Arthur Overflow - 100M West of Pencarrow Outfall	15/07/2019	19/36974-01			<1						36
Point Arthur Overflow - 100M East of Pencarrow Outfall	15/07/2019	19/36974-02			<1						4
Waiwhetu Stream Mouth	15/07/2019	19/36975-01									
Overflow Sample @ Port Rd (15cm)	15/07/2019	19/36975-02	0.01	<1		A lot	0.0006	11	0.01	224	150
Overflow Sample @ Cemetery (15cm)	15/07/2019	19/36975-03	0.06	1		A lot	0.0013	9.9	0.022	2,500	4,200
Overflow Sample @ Bell Road Bridge (15cm)	15/07/2019	19/36975-04	0.1	1		A lot	0.002	9	0.023	2,800	920
Overflow Sample @ Plant	15/07/2019	19/36975-05	15.5	4			0.0024	3.6	0.91	60	140
Sample @ Hutt River 50m U/Stream (15cm)	15/07/2019	19/36975-06	<0.01			A lot		11.3	0.009		120
Sample @ Hutt River 50m D/Stream (15cm)	15/07/2019	19/36975-07	<0.01			A lot		11.1	0.009		140
Waiwhetu Stream Mouth	16/07/2019	19/37162-01									
Overflow Sample @ Port Rd (15cm)	16/07/2019	19/37162-02	0.02	1		95%	0.0008	10.9	0.015	1,600	4,500
Overflow Sample @ Cemetery (15cm)	16/07/2019	19/37162-03	0.07	2		95%	0.0029	9.9	0.04	8,400	20,000
Overflow Sample @ Bell Road Bridge (15cm)	16/07/2019	19/37162-04	0.11	2		95%	0.0032	9.8	0.062	11,300	20,000
Overflow Sample @ Plant	16/07/2019	19/37162-05	13	10			0.0031	3.2	0.632	236	620
Sample @ Hutt River 50m U/Stream (15cm)	16/07/2019	19/37162-06	0.01			95%		11.1	0.013		3,600
Sample @ Hutt River 50m D/Stream (15cm)	16/07/2019	19/37162-07	0.02			95%		11	0.017		4,600
Point Arthur Overflow - 100M West of Pencarrow Outfall	16/07/2019	19/37163-01			<1						4
Point Arthur Overflow - 100M East of Pencarrow Outfall	16/07/2019	19/37163-02			2						40
Overflow Sample @ Plant	16/07/2019	19/37163-04			10					152	770
Wellington Road Overflow	16/07/2019	19/37301-01	5.4							54,000	
Wellington Road @ River	16/07/2019	19/37301-02	0.16		2					5,000	
Waiwhetu Stream Mouth	17/07/2019	19/37438-01									
Overflow Sample @ Port Rd (15cm)	17/07/2019	19/37438-02	0.01	<1		None	0.0006	10.8	0.011	116	77
Overflow Sample @ Cemetery (15cm)	17/07/2019	19/37438-03	0.25	<1		None	<0.0005	10.8	0.015	112	72
Overflow Sample @ Bell Road Bridge (15cm)	17/07/2019	19/37438-04	0.07	<1		None	0.0024	9.4	0.022	1,040	830
Overflow Sample @ Plant	17/07/2019	19/37438-05	15.3	13			0.0035	3.8	0.985	58	150
Sample @ Hutt River 50m U/Stream (15cm)	17/07/2019	19/37438-06	<0.01			None		10.7	0.01		130
Sample @ Hutt River 50m D/Stream (15cm)	17/07/2019	19/37438-07	<0.01			None		10.8	0.01		100
Point Arthur Pump Station wet well	13/08/2019	19/42358-01			180						740,000
Waiwhetu Stream Mouth	13/08/2019	19/42359-01									
Overflow Sample @ Port Rd (15cm)	13/08/2019	19/42359-02	0.03	<1		Some	<0.0005	10.8	0.014	545	2,300
Overflow Sample @ Cemetery (15cm)	13/08/2019	19/42359-03	0.1	1		Some	0.0022	8.9	0.048	550	780
Overflow Sample @ Bell Road Bridge (15cm)	13/08/2019	19/42359-04	0.07	<1			0.0014	9.3	0.027	2,800	2,800
Overflow Sample @ Plant	13/08/2019	19/42359-05	8.78	<6			0.0035	3.3	0.362	54	140
Sample @ Hutt River 50m U/Stream (15cm)	13/08/2019	19/42359-06	0.01			Some		11	0.009		170
Sample @ Hutt River 50m D/Stream (15cm)	13/08/2019	19/42359-07	0.01			Some		11.2	0.01		240
Wellington Road Overflow	13/08/2019	19/42360-01	6.4							1,200,000	
Wellington Road @ River	13/08/2019	19/42360-02	0.06		<1					2,800	
Waiwhetu Stream Mouth	14/08/2019	19/42573-01									
Overflow Sample @ Port Rd (15cm)	14/08/2019	19/42573-02	<0.01	<1		Some	0.003	11.1	0.007	58	20
Overflow Sample @ Cemetery (15cm)	14/08/2019	19/42573-03	<0.01	<1		Some	0.0014	11.2	0.008	88	16
Overflow Sample @ Bell Road Bridge (15cm)	14/08/2019	19/42573-04	0.04	1			0.0011	9.2	0.017	4,800	3,400
Overflow Sample @ Plant	14/08/2019	19/42573-05	17.4	7			0.0037	2.8	1.07	592	950
Sample @ Hutt River 50m U/Stream (15cm)	14/08/2019	19/42573-06	<0.01			None		11.1	0.008		32
Sample @ Hutt River 50m D/Stream (15cm)	14/08/2019	19/42573-07	<0.01			None		11	0.009		36
Wellington Road Overflow	7/09/2019	19/46942-01	11.6							8,900,000	
Wellington Road @ River	7/09/2019	19/46942-02	0.06		<6					1,300	

Hutt Valley Water Services
Quarterly Overflow Report

SamplePoint	SampleDate	LabNumber	Faecal Coliforms cfu/100ml	Floating/Suspended Matter	Nitrate - Nitrogen g/m ³	Nitrite - Nitrogen g/m ³	Objectionable Odour	pH	Photograph	Salinity ppt	Scums or Foams
Wellington Road Overflow	15/07/2019	19/36973-01									
Wellington Road @ River	15/07/2019	19/36973-02							Taken		
Point Arthur Overflow - 100M West of Pencarrow Outfall	15/07/2019	19/36974-01	31								
Point Arthur Overflow - 100M East of Pencarrow Outfall	15/07/2019	19/36974-02	4								
Waiwhetu Stream Mouth	15/07/2019	19/36975-01							Taken		
Overflow Sample @ Port Rd (15cm)	15/07/2019	19/36975-02	220	10%	0.16	<0.10	None	7.5	Taken	4.2	0%
Overflow Sample @ Cemetery (15cm)	15/07/2019	19/36975-03	2,500	0%	0.38	<0.10	None	7.3	Taken	<2	0%
Overflow Sample @ Bell Road Bridge (15cm)	15/07/2019	19/36975-04	2,800	0%	0.87	0.01	None	7.1	Taken	<2	0%
Overflow Sample @ Plant	15/07/2019	19/36975-05	68		0.08	0.04		7.4		<2	
Sample @ Hutt River 50m U/Stream (15cm)	15/07/2019	19/36975-06	310	0%	0.15		None	7.5	Taken	<2	0%
Sample @ Hutt River 50m D/Stream (15cm)	15/07/2019	19/36975-07	300	0%	0.18		None	7.4	Taken	<2	0%
Waiwhetu Stream Mouth	16/07/2019	19/37162-01							Taken		
Overflow Sample @ Port Rd (15cm)	16/07/2019	19/37162-02	1,900	80%	0.17	<0.01	None	7.4	Taken	<2	0%
Overflow Sample @ Cemetery (15cm)	16/07/2019	19/37162-03	8,700	5%	0.21	<0.01	None	7	Taken	<2	0%
Overflow Sample @ Bell Road Bridge (15cm)	16/07/2019	19/37162-04	11,500	5%	0.5	<0.01	None	6.8	Taken	<2	0%
Overflow Sample @ Plant	16/07/2019	19/37162-05	240		0.14	0.05		7.1		<2	
Sample @ Hutt River 50m U/Stream (15cm)	16/07/2019	19/37162-06	920	60%	0.16		None	7.2	Taken	<2	0%
Sample @ Hutt River 50m D/Stream (15cm)	16/07/2019	19/37162-07	1,800	60%	0.17		None	7.2	Taken	<2	0%
Point Arthur Overflow - 100M West of Pencarrow Outfall	16/07/2019	19/37163-01	4								
Point Arthur Overflow - 100M East of Pencarrow Outfall	16/07/2019	19/37163-02	8								
Overflow Sample @ Plant	16/07/2019	19/37163-04	180								
Wellington Road Overflow	16/07/2019	19/37301-01									
Wellington Road @ River	16/07/2019	19/37301-02							Taken		
Waiwhetu Stream Mouth	17/07/2019	19/37438-01							Taken		
Overflow Sample @ Port Rd (15cm)	17/07/2019	19/37438-02	120	20%	0.22	<0.10	None	7.5	Taken	5.1	0%
Overflow Sample @ Cemetery (15cm)	17/07/2019	19/37438-03	110	0%	0.78	<0.10	None	7.4	Taken	2.9	0%
Overflow Sample @ Bell Road Bridge (15cm)	17/07/2019	19/37438-04	1,050	0%	0.6	<0.01	None	7.1	Taken	<2	0%
Overflow Sample @ Plant	17/07/2019	19/37438-05	77		0.04	0.05		7.3		<2	
Sample @ Hutt River 50m U/Stream (15cm)	17/07/2019	19/37438-06	130	20%	0.22		None	7.3	Taken	2.1	0%
Sample @ Hutt River 50m D/Stream (15cm)	17/07/2019	19/37438-07	140	20%	0.23		None	7.3	Taken	2.2	0%
Point Arthur Pump Station wet well	13/08/2019	19/42358-01	3,000,000								
Waiwhetu Stream Mouth	13/08/2019	19/42359-01							Taken		
Overflow Sample @ Port Rd (15cm)	13/08/2019	19/42359-02	550	10%	0.22	<0.01	None	7	Taken	<2	10%
Overflow Sample @ Cemetery (15cm)	13/08/2019	19/42359-03	550	20%	0.67	<0.01	None	6.9	Taken	<2	20%
Overflow Sample @ Bell Road Bridge (15cm)	13/08/2019	19/42359-04	2,800		0.78	<0.01		7	Taken	<2	
Overflow Sample @ Plant	13/08/2019	19/42359-05	73		0.43	0.1		7		<2	
Sample @ Hutt River 50m U/Stream (15cm)	13/08/2019	19/42359-06	240	10%	0.17		None	7.1	Taken	<2	10%
Sample @ Hutt River 50m D/Stream (15cm)	13/08/2019	19/42359-07	200	10%	0.18		None	7.3	Taken	<2	10%
Wellington Road Overflow	13/08/2019	19/42360-01									
Wellington Road @ River	13/08/2019	19/42360-02							Taken		
Waiwhetu Stream Mouth	14/08/2019	19/42573-01							Taken		
Overflow Sample @ Port Rd (15cm)	14/08/2019	19/42573-02	58	10%	0.2	<0.10	None	7.6	Taken	6.8	10%
Overflow Sample @ Cemetery (15cm)	14/08/2019	19/42573-03	96	20%	0.23	<0.10	None	7.4	Taken	2.9	20%
Overflow Sample @ Bell Road Bridge (15cm)	14/08/2019	19/42573-04	4,800		0.68	<0.01		7	Taken	<2	
Overflow Sample @ Plant	14/08/2019	19/42573-05	590		<0.01	<0.01		7.3		<2	
Sample @ Hutt River 50m U/Stream (15cm)	14/08/2019	19/42573-06	84	20%	0.22		None	7.4	Taken	2.6	0%
Sample @ Hutt River 50m D/Stream (15cm)	14/08/2019	19/42573-07	92	20%	0.22		None	7.5	Taken	2.8	0%
Wellington Road Overflow	7/09/2019	19/46942-01									
Wellington Road @ River	7/09/2019	19/46942-02							Taken		

Hutt Valley Water Services
Quarterly Overflow Report
19/07/2019

SamplePoint	SampleDate	LabNumber	Suspended Solids - Total g/m ³	Temperature Deg C	Tidal Height	Tide	Turbidity NTU	Visible Oil & Grease	Wind Direction	Wind strength
Wellington Road Overflow	15/07/2019	19/36973-01	141							
Wellington Road @ River	15/07/2019	19/36973-02	8							
Point Arthur Overflow - 100M West of Pencarrow Outfall	15/07/2019	19/36974-01	101							
Point Arthur Overflow - 100M East of Pencarrow Outfall	15/07/2019	19/36974-02	107							
Waiwhetu Stream Mouth	15/07/2019	19/36975-01			Mid	Flood			SE	Moderate
Overflow Sample @ Port Rd (15cm)	15/07/2019	19/36975-02					8.25	0%		
Overflow Sample @ Cemetery (15cm)	15/07/2019	19/36975-03					16.1	0%		
Overflow Sample @ Bell Road Bridge (15cm)	15/07/2019	19/36975-04					11.8	0%		
Overflow Sample @ Plant	15/07/2019	19/36975-05					2.43			
Sample @ Hutt River 50m U/Stream (15cm)	15/07/2019	19/36975-06					9.27	0%		
Sample @ Hutt River 50m D/Stream (15cm)	15/07/2019	19/36975-07					12.4	0%		
Waiwhetu Stream Mouth	16/07/2019	19/37162-01			Mid	Flood			SE	Moderate
Overflow Sample @ Port Rd (15cm)	16/07/2019	19/37162-02		10.1			115	0%		
Overflow Sample @ Cemetery (15cm)	16/07/2019	19/37162-03		11.1			62.4	0%		
Overflow Sample @ Bell Road Bridge (15cm)	16/07/2019	19/37162-04		11.6			70.3	0%		
Overflow Sample @ Plant	16/07/2019	19/37162-05		11.7			6.72			
Sample @ Hutt River 50m U/Stream (15cm)	16/07/2019	19/37162-06		10.3			110	0%		
Sample @ Hutt River 50m D/Stream (15cm)	16/07/2019	19/37162-07		10.5			145	0%		
Point Arthur Overflow - 100M West of Pencarrow Outfall	16/07/2019	19/37163-01	105							
Point Arthur Overflow - 100M East of Pencarrow Outfall	16/07/2019	19/37163-02	126							
Overflow Sample @ Plant	16/07/2019	19/37163-04	10							
Wellington Road Overflow	16/07/2019	19/37301-01	72							
Wellington Road @ River	16/07/2019	19/37301-02	43							
Waiwhetu Stream Mouth	17/07/2019	19/37438-01			High	Flood			NE	Calm
Overflow Sample @ Port Rd (15cm)	17/07/2019	19/37438-02					13.9	20%		
Overflow Sample @ Cemetery (15cm)	17/07/2019	19/37438-03					15.1	0%		
Overflow Sample @ Bell Road Bridge (15cm)	17/07/2019	19/37438-04					10.5	0%		
Overflow Sample @ Plant	17/07/2019	19/37438-05					3.89			
Sample @ Hutt River 50m U/Stream (15cm)	17/07/2019	19/37438-06					15.5	0%		
Sample @ Hutt River 50m D/Stream (15cm)	17/07/2019	19/37438-07					14.5	0%		
Point Arthur Pump Station wet well	13/08/2019	19/42358-01	224							
Waiwhetu Stream Mouth	13/08/2019	19/42359-01			Low	Flood			N	Moderate
Overflow Sample @ Port Rd (15cm)	13/08/2019	19/42359-02		9.1			47.4	20%		
Overflow Sample @ Cemetery (15cm)	13/08/2019	19/42359-03		10			34.3	0%		
Overflow Sample @ Bell Road Bridge (15cm)	13/08/2019	19/42359-04		10.5			19.2			
Overflow Sample @ Plant	13/08/2019	19/42359-05					4.99			
Sample @ Hutt River 50m U/Stream (15cm)	13/08/2019	19/42359-06		9.3			53.5	0%		
Sample @ Hutt River 50m D/Stream (15cm)	13/08/2019	19/42359-07		9.6			42.4	0%		
Wellington Road Overflow	13/08/2019	19/42360-01	69							
Wellington Road @ River	13/08/2019	19/42360-02	12							
Waiwhetu Stream Mouth	14/08/2019	19/42573-01			Mid	Flood			N	Moderate
Overflow Sample @ Port Rd (15cm)	14/08/2019	19/42573-02		10.7			13.9	10%		
Overflow Sample @ Cemetery (15cm)	14/08/2019	19/42573-03		11			8.22	10%		
Overflow Sample @ Bell Road Bridge (15cm)	14/08/2019	19/42573-04		11.5			10.8			
Overflow Sample @ Plant	14/08/2019	19/42573-05					3.56			
Sample @ Hutt River 50m U/Stream (15cm)	14/08/2019	19/42573-06		10.3			10.2	0%		
Sample @ Hutt River 50m D/Stream (15cm)	14/08/2019	19/42573-07		10.5			11.3	0%		
Wellington Road Overflow	7/09/2019	19/46942-01	1750							
Wellington Road @ River	7/09/2019	19/46942-02	9							

SamplePoint	SampleDate	LabNumber	Faecal Coliforms cfu/100ml	Floating/Suspended Matter	Nitrate - Nitrogen g/m ³	Nitrite - Nitrogen g/m ³	Objectionable Odour	pH	Photograph	Salinity ppt	Scums or Foams
Overflow Sample @ Bell Road Bridge (15cm)	6/10/2019	19/53110-04	2,500	0.05	0.58	<0.01	None	7	See Attached	<2	0
Overflow Sample @ Cemetery (15cm)	6/10/2019	19/53110-03	1,130	0.05	0.12	<0.10	None	7.2	See Attached	2.2	0.05
Overflow Sample @ Plant	6/10/2019	19/53110-05	800		0.06	0.05		7.4		<2	
Overflow Sample @ Port Rd (15cm)	6/10/2019	19/53110-02	1,100	0.1	0.12	<0.10	None	7.2	See Attached	2.2	0.2
Sample @ Hutt River 50m D/Stream (15cm)	6/10/2019	19/53110-07	510	0.2	0.11		None	7.3	See Attached	2.2	0.4
Sample @ Hutt River 50m U/Stream (15cm)	6/10/2019	19/53110-06	640	10%	0.12		None	7.2	See Attached	<2	10%
Waiwhetu Stream Mouth	6/10/2019	19/53110-01							See Attached		
Overflow Sample @ Bell Road Bridge (15cm)	7/10/2019	19/53230-04	580	10%	0.51	<0.01	None	7.2	See Attached	<2	None
Overflow Sample @ Cemetery (15cm)	7/10/2019	19/53230-03	120	5%	0.12	<0.10	None	7.6	See Attached	7.2	None
Overflow Sample @ Plant	7/10/2019	19/53230-05	7,000		<0.01	<0.01		7.4		<2	
Overflow Sample @ Port Rd (15cm)	7/10/2019	19/53230-02	120	10%	0.11	<0.10	None	7.9	See Attached	13	0%
Sample @ Hutt River 50m D/Stream (15cm)	7/10/2019	19/53230-07	250	10%	0.12		None	7.8	See Attached	7.1	5%
Sample @ Hutt River 50m U/Stream (15cm)	7/10/2019	19/53230-06	160	10%	0.11		None	7.8	See Attached	5.7	5%
Waiwhetu Stream Mouth	7/10/2019	19/53230-01							See Attached		
Hutt Valley Water Services Plant Effluent	11/11/2019	19/60077-02	78,000								
Overflow Sample @ Bell Road Bridge (15cm)	11/11/2019	19/60075-04	9,000	A lot	0.43	<0.01	Light	6.9	See Attached	<2	Some
Overflow Sample @ Cemetery (15cm)	11/11/2019	19/60075-03	12,000	A lot	0.34	<0.01	Light	6.8	See Attached	<2	Some
Overflow Sample @ Plant	11/11/2019	19/60075-05	270,000		1	0.12		7.1		<2	
Overflow Sample @ Port Rd (15cm)	11/11/2019	19/60075-02	14,000	A lot	0.37	<0.01	Light	6.9	See Attached	<2	Some
Point Arthur Pump Station wet well	11/11/2019	19/60077-01	973,000								
Sample @ Hutt River 50m D/Stream (15cm)	11/11/2019	19/60075-07	5,200	A lot	0.14		Light	7.4	See Attached	<2	Some
Sample @ Hutt River 50m U/Stream (15cm)	11/11/2019	19/60075-06	13,000	A lot	0.39		Light	7.3	See Attached	<2	Some
Waiwhetu Stream Mouth	11/11/2019	19/60075-01							See Attached		
Wellington Road @ River	11/11/2019	19/60076-02							See Attached		
Wellington Road Overflow	11/11/2019	19/60076-01									
Overflow Sample @ Bell Road Bridge (15cm)	12/11/2019	19/60221-04	2,100	0%	0.75	<0.01	None	6.9	See Attached	<2	0%
Overflow Sample @ Cemetery (15cm)	12/11/2019	19/60221-03	3,300	20%	0.75	<0.01	None	6.9	See Attached	<2	10%
Overflow Sample @ Plant	12/11/2019	19/60221-05	10,600		0.37	0.11		7.2		<2	
Overflow Sample @ Port Rd (15cm)	12/11/2019	19/60221-02	4,000	5%	0.73	<0.01	None	7	See Attached	<2	5%
Sample @ Hutt River 50m D/Stream (15cm)	12/11/2019	19/60221-07	3,000	5%	0.13		Light	7.5	See Attached	<2	5%
Sample @ Hutt River 50m U/Stream (15cm)	12/11/2019	19/60221-06	3,400	0.2	0.49		Light	7.3	See Attached	3.7	0.1
Waiwhetu Stream Mouth	12/11/2019	19/60221-01							See Attached		
Wellington Road @ River	25/11/2019	19/62699-02									
Wellington Road @ River	25/11/2019	19/62699-03									
Wellington Road @ River	25/11/2019	19/62699-04									
Wellington Road Overflow	25/11/2019	19/62699-01									
Wellington Road @ River	2/12/2019	19/64108-02									
Wellington Road @ River	2/12/2019	19/64108-03									
Wellington Road @ River	2/12/2019	19/64108-04									
Wellington Road Overflow	2/12/2019	19/64108-01									
Barber Grove @ River	8/12/2019	19/65754-02							See Attached		
Barber Grove Overflow	8/12/2019	19/65754-01									
Overflow Sample @ Bell Road Bridge (15cm)	8/12/2019	19/65755-04	28,000	Some	0.73	<0.01	None	6.9	See Attached	<2	None
Overflow Sample @ Cemetery (15cm)	8/12/2019	19/65755-03	27,000	Some	0.64	<0.01	None	6.8	See Attached	<2	None
Overflow Sample @ Plant	8/12/2019	19/65755-05	370		1.1	0.11		7.2		<2	
Overflow Sample @ Port Rd (15cm)	8/12/2019	19/65755-02	29,000	Some	0.58	0.04	None	7.2	See Attached	<2	None
Sample @ Hutt River 50m D/Stream (15cm)	8/12/2019	19/65755-07	28,000	Some	0.35		None	7.2	See Attached	<2	None
Sample @ Hutt River 50m U/Stream (15cm)	8/12/2019	19/65755-06	5,000	Some	0.31		None	7.2	See Attached	<2	None
Waiwhetu Stream Mouth	8/12/2019	19/65755-01							See Attached		

SamplePoint	SampleDate	LabNumber	Suspended Solids - Total g/m³	Temperature Deg C	Tidal Height	Tide	Turbidity NTU	Visible Oil & Grease	Wind Direction	Wind strength
Overflow Sample @ Bell Road Bridge (15cm)	6/10/2019	19/53110-04		11.3			19.9	0		
Overflow Sample @ Cemetery (15cm)	6/10/2019	19/53110-03		10.4			13.7	0		
Overflow Sample @ Plant	6/10/2019	19/53110-05		14.2			2.42			
Overflow Sample @ Port Rd (15cm)	6/10/2019	19/53110-02		9.6			14.2	0		
Sample @ Hutt River 50m D/Stream (15cm)	6/10/2019	19/53110-07		10.3			14.1	0		
Sample @ Hutt River 50m U/Stream (15cm)	6/10/2019	19/53110-06		9.4			13.6	0%		
Waiwhetu Stream Mouth	6/10/2019	19/53110-01			High	Flood			SE	Calm
Overflow Sample @ Bell Road Bridge (15cm)	7/10/2019	19/53230-04		11.9			6.34	5%		
Overflow Sample @ Cemetery (15cm)	7/10/2019	19/53230-03		10.9			3.72	5%		
Overflow Sample @ Plant	7/10/2019	19/53230-05		16.4			3.03			
Overflow Sample @ Port Rd (15cm)	7/10/2019	19/53230-02		11.6			3.67	5%		
Sample @ Hutt River 50m D/Stream (15cm)	7/10/2019	19/53230-07		11.3			3.02	0%		
Sample @ Hutt River 50m U/Stream (15cm)	7/10/2019	19/53230-06		11.5			3.45	0%		
Waiwhetu Stream Mouth	7/10/2019	19/53230-01			Mid	Flood			N	Moderate
Hutt Valley Water Services Plant Effluent	11/11/2019	19/60077-02	159							
Overflow Sample @ Bell Road Bridge (15cm)	11/11/2019	19/60075-04		12.9			34.6	Some		
Overflow Sample @ Cemetery (15cm)	11/11/2019	19/60075-03		12.8			26.6	Some		
Overflow Sample @ Plant	11/11/2019	19/60075-05		12.9			88.5			
Overflow Sample @ Port Rd (15cm)	11/11/2019	19/60075-02		12.6			31.3	Some		
Point Arthur Pump Station wet well	11/11/2019	19/60077-01	166							
Sample @ Hutt River 50m D/Stream (15cm)	11/11/2019	19/60075-07		12.6			30.4	Some		
Sample @ Hutt River 50m U/Stream (15cm)	11/11/2019	19/60075-06		12.9			45.7	Some		
Waiwhetu Stream Mouth	11/11/2019	19/60075-01			Low	Low			N	Moderate
Wellington Road @ River	11/11/2019	19/60076-02	64							
Wellington Road Overflow	11/11/2019	19/60076-01	28							
Overflow Sample @ Bell Road Bridge (15cm)	12/11/2019	19/60221-04		14.4			13	0%		
Overflow Sample @ Cemetery (15cm)	12/11/2019	19/60221-03		14.9			16.6	20%		
Overflow Sample @ Plant	12/11/2019	19/60221-05		15.3			4.03			
Overflow Sample @ Port Rd (15cm)	12/11/2019	19/60221-02		14.6			16.9	10%		
Sample @ Hutt River 50m D/Stream (15cm)	12/11/2019	19/60221-07		14.7			33.6	0%		
Sample @ Hutt River 50m U/Stream (15cm)	12/11/2019	19/60221-06		14.6			49.4	0		
Waiwhetu Stream Mouth	12/11/2019	19/60221-01			Mid	Ebb			SE	Light
Wellington Road @ River	25/11/2019	19/62699-02	6							
Wellington Road @ River	25/11/2019	19/62699-03	<6							
Wellington Road @ River	25/11/2019	19/62699-04	<6							
Wellington Road Overflow	25/11/2019	19/62699-01								
Wellington Road @ River	2/12/2019	19/64108-02	71							
Wellington Road @ River	2/12/2019	19/64108-03	<6							
Wellington Road @ River	2/12/2019	19/64108-04	55							
Wellington Road Overflow	2/12/2019	19/64108-01	142							
Barber Grove @ River	8/12/2019	19/65754-02	405							
Barber Grove Overflow	8/12/2019	19/65754-01	1610							
Overflow Sample @ Bell Road Bridge (15cm)	8/12/2019	19/65755-04		17.3			62.3	None		
Overflow Sample @ Cemetery (15cm)	8/12/2019	19/65755-03		17.4			388	None		
Overflow Sample @ Plant	8/12/2019	19/65755-05		18			8.28			
Overflow Sample @ Port Rd (15cm)	8/12/2019	19/65755-02		17.5			164	Some		
Sample @ Hutt River 50m D/Stream (15cm)	8/12/2019	19/65755-07		17.4			183	None		
Sample @ Hutt River 50m U/Stream (15cm)	8/12/2019	19/65755-06		17.2			176	None		
Waiwhetu Stream Mouth	8/12/2019	19/65755-01			Mid	Flood			N	Light

Hutt Valley Water Services
Quarterly Overflow Report
HVVWSQ3

SamplePoint	SampleDate	LabNumber	Ammonia Nitrogen g/m ³	BOD5 - Carbonaceous g/m ³	BOD5 - Total g/m ³	Colour or Clarity Change	Copper - Dissolved g/m ³	Dissolved Oxygen g O ₂ /m ³	Dissolved Reactive Phosphorus g/m ³	E. coli cfu/100mL	Enterococci cfu/100mL
Wellington Road Overflow	12/03/2020	20/1408-01	21.2							2 700 000	
Wellington Road @ River	12/03/2020	20/1408-02	<0.01							550	
Wellington Road Overflow	12/03/2020	20/14108-01	20.4		<8					2 500 000	
Wellington Road @ River	12/03/2020	20/14108-02	<0.01		<8					800	
Waiwhetu Stream Mouth	12/03/2020	20/14111-01									
Overflow Sample @ Port Rd (15cm)	12/03/2020	20/14111-02	0.05	<1		None	<0.0005	10.9	0.019	148	40
Overflow Sample @ Cemetery (15cm)	12/03/2020	20/14111-03	0.04	<1		None	0.0005	10.7	0.019	172	60
Overflow Sample @ Ball Road Bridge (15cm)	12/03/2020	20/14111-04	0.04	<1		None	0.0009	14.4	0.016	131	580
Overflow Sample @ Plant	12/03/2020	20/14111-05	25.3	8		None	0.0022	3.6	3.030	412	100
Sample @ Hut River 50m U/Stream (15cm)	12/03/2020	20/14111-06	<0.01			None		10.5	0.016		40
Sample @ Hut River 50m D/Stream (15cm)	12/03/2020	20/14111-07	<0.01			None		11.8	0.011		48
Point Arthur Pump Station wat wall	12/03/2020	20/14117-01			63						7 800 000
Hutt Valley Water Services Plant Effluent	12/03/2020	20/14117-02			13						110
Waiwhetu Stream Mouth	13/03/2020	20/14208-01									
Overflow Sample @ Port Rd (15cm)	13/03/2020	20/14208-02	0.11	<8		None	0.0008	9	0.033	68	64
Overflow Sample @ Cemetery (15cm)	13/03/2020	20/14208-03	0.14	<8		None	0.0011	8.7	0.038	140	160
Overflow Sample @ Ball Road Bridge (15cm)	13/03/2020	20/14208-04	0.13	<6		None	0.0007	8.7	0.029	366	330
Overflow Sample @ Plant	13/03/2020	20/14208-05	23.8	<8		None	0.0025	3	2.240	585	120
Sample @ Hut River 50m U/Stream (15cm)	13/03/2020	20/14208-06	<0.01			None		15.5	0.010		12
Sample @ Hut River 50m D/Stream (15cm)	13/03/2020	20/14208-07	0.03			None		14.7	0.010		8
Waiwhetu Stream Mouth	28/03/2020	20/17619-01									
Overflow Sample @ Port Rd (15cm)	28/03/2020	20/17619-02	<0.01	<3		0%	<0.005	10	0.018	16 000	26 000
Overflow Sample @ Cemetery (15cm)	28/03/2020	20/17619-03	<0.01	<3		0%	<0.005	10	0.019	10 800	27 000
Overflow Sample @ Ball Road Bridge (15cm)	28/03/2020	20/17619-04	<0.01	<3		0%	<0.005	10	0.021	14 000	29 000
Overflow Sample @ Plant	28/03/2020	20/17619-05	10.2	20		0%	<0.005	4	0.358	1 400	640
Sample @ Hut River 50m U/Stream (15cm)	28/03/2020	20/17619-06	<0.01			0%		11	0.011		13 000
Sample @ Hut River 50m D/Stream (15cm)	28/03/2020	20/17619-07	0.25			0%		11	0.015		24 000
Wellington Road Overflow	28/03/2020	20/17620-01	3.9							360 000	
Wellington Road @ River	28/03/2020	20/17620-02	0.05		<3					28 000	
Waiwhetu Stream Mouth	29/03/2020	20/17649-01									
Overflow Sample @ Port Rd (15cm)	29/03/2020	20/17649-02	<0.01	1		0%	<0.005	8	0.021	3 500	9 200
Overflow Sample @ Cemetery (15cm)	29/03/2020	20/17649-03	<0.01	2		0%	<0.005	8	0.024	5 000	11 000
Overflow Sample @ Ball Road Bridge (15cm)	29/03/2020	20/17649-04	<0.01	1		0%	<0.005	9	0.022	6 180	9 100
Overflow Sample @ Plant	29/03/2020	20/17649-05	9.15	11		0%	<0.005	3	0.412	294	130
Sample @ Hut River 50m U/Stream (15cm)	29/03/2020	20/17649-06	0.01			0%		9	0.008		4 100
Sample @ Hut River 50m D/Stream (15cm)	29/03/2020	20/17649-07	0.13			0%		10	0.014		5 500
Wellington Road Overflow	29/03/2020	20/17650-01	2.7							600 000	
Wellington Road @ River	29/03/2020	20/17650-02	0.03		4					17 000	
Silverstream @ River	29/03/2020	20/17650-03	<0.01		1					1 500	
Waiwhetu Stream Mouth	30/03/2020	20/17748-01									
Overflow Sample @ Port Rd (15cm)	30/03/2020	20/17748-02	<0.01	<1		None	0.0013	8	0.006	2 400	1 400
Overflow Sample @ Cemetery (15cm)	30/03/2020	20/17748-03	0.13	<1		None	0.0016	8	0.034	2 900	2 600
Overflow Sample @ Ball Road Bridge (15cm)	30/03/2020	20/17748-04	0.12	<1		None	0.0016	7	0.026	3 900	2 400
Overflow Sample @ Plant	30/03/2020	20/17748-05	12.3	2		0%	0.0022	6	0.686	4	<4
Sample @ Hut River 50m U/Stream (15cm)	30/03/2020	20/17748-06	0.01			None		10	0.008		570
Sample @ Hut River 50m D/Stream (15cm)	30/03/2020	20/17748-07	0.11			None		9	0.025		1 500

Hut Valley Water Services
 Quarterly Overflow Report
 HWWSO3

SamplePoint	SampleDate	LabNumber	Faecal Coliforms cfu/100ml	Floating/Suspended Matter	Nitrate - Nitrogen g/m ³	Nitrite - Nitrogen g/m ³	Objectionable Odour	pH	Photograph	Salinity ppt	Scums or Foams	Suspended Solids - Total g/m ³	Temperature Deg C
Wellington Road Overflow	12/03/2020	2014081-01										178	
Wellington Road @ River	12/03/2020	2014081-02							See Attached			48	
Wellington Road Overflow	12/03/2020	2014108-01										118	
Wellington Road @ River	12/03/2020	2014108-02							See Attached			48	
Waiwhetu Stream Mouth	12/03/2020	2014111-01							See Attached				
Overflow Sample @ Port Rd (15cm)	12/03/2020	2014111-02	150	40%	<0.10	<0.10	Moderate	8.00	See Attached	10	20%		19
Overflow Sample @ Cemetery (15cm)	12/03/2020	2014111-03	180	0%	<0.10	<0.10	None	7.90	See Attached	11	0%		18.5
Overflow Sample @ Bell Road Bridge (15cm)	12/03/2020	2014111-04	530	10%	0.04	<0.10	Moderate	8.00	See Attached	7	0%		17.9
Overflow Sample @ Plant	12/03/2020	2014111-05	410		0.01	0.02		7.90		42			18.4
Sample @ Hut River 50m U/Stream (15cm)	12/03/2020	2014111-06	100	80%	0.1		None	8.00	See Attached	8	20%		19.2
Sample @ Hut River 50m D/Stream (15cm)	12/03/2020	2014111-07	100	80%	0.09		None	8.10	See Attached	8	40%		19.5
Point Arthur Pump Station wet well	12/03/2020	2014117-01	6 200 000									75	
Hut Valley Water Services Plant Effluent	12/03/2020	2014117-02	290									9	
Waiwhetu Stream Mouth	13/03/2020	2014208-01							See Attached				
Overflow Sample @ Port Rd (15cm)	13/03/2020	2014208-02	72	20%	<0.10	<1.00	None	7.80	See Attached	25	40%		19.4
Overflow Sample @ Cemetery (15cm)	13/03/2020	2014208-03	348	20%	<0.10	<1.00	None	7.70	See Attached	23	20%		18.8
Overflow Sample @ Bell Road Bridge (15cm)	13/03/2020	2014208-04	400	60%	<0.10	<0.10	Light	7.40	See Attached	13	20%		19.1
Overflow Sample @ Plant	13/03/2020	2014208-05	610		<0.01	<0.01		7.40		<2			
Sample @ Hut River 50m U/Stream (15cm)	13/03/2020	2014208-06	12	40%	<0.10		None	8.50	See Attached	16	20%		18
Sample @ Hut River 50m D/Stream (15cm)	13/03/2020	2014208-07	28	60%	<0.10		Light	8.40	See Attached	21	0%		18.7
Waiwhetu Stream Mouth	28/03/2020	2017619-01							See Attached				
Overflow Sample @ Port Rd (15cm)	28/03/2020	2017619-02	20 000	A lot	0.33	<0.01	Light	6.90	See Attached	<2	Some		12.5
Overflow Sample @ Cemetery (15cm)	28/03/2020	2017619-03	13 600	A lot	0.38	<0.01	Light	6.90	See Attached	<2	Some		12.9
Overflow Sample @ Bell Road Bridge (15cm)	28/03/2020	2017619-04	20 000	A lot	0.5	<0.01	Light	6.80	See Attached	<2	Some		12.9
Overflow Sample @ Plant	28/03/2020	2017619-05	1 700		0.06	0.02		7.60		<2			
Sample @ Hut River 50m U/Stream (15cm)	28/03/2020	2017619-06	6 800	A lot	0.14		Light	7.40	See Attached	<2	Some		12.7
Sample @ Hut River 50m D/Stream (15cm)	28/03/2020	2017619-07	10 200	A lot	0.22		Light	7.50	See Attached	<2	Some		12.8
Wellington Road Overflow	28/03/2020	2017620-01										38	
Wellington Road @ River	28/03/2020	2017620-02							See Attached			30	
Waiwhetu Stream Mouth	29/03/2020	2017649-01							See Attached				
Overflow Sample @ Port Rd (15cm)	29/03/2020	2017649-02	3 500	A lot	0.28	<0.01	Light	7.20	See Attached	<2	Some		12.2
Overflow Sample @ Cemetery (15cm)	29/03/2020	2017649-03	5 000	A lot	0.28	0.01	Light	7.10	See Attached	<2	Some		12.3
Overflow Sample @ Bell Road Bridge (15cm)	29/03/2020	2017649-04	6 380	A lot	0.46	0.01	Light	7.10	See Attached	<2	Some		12.6
Overflow Sample @ Plant	29/03/2020	2017649-05	250		0.09	0.14		7.20		<2			11.1
Sample @ Hut River 50m U/Stream (15cm)	29/03/2020	2017649-06	4 100	A lot	0.13		Light	7.30	See Attached	<2	Some		11.5
Sample @ Hut River 50m D/Stream (15cm)	29/03/2020	2017649-07	3 400	A lot	0.75		Light	7.30	See Attached	<2	Some		11.8
Wellington Road Overflow	29/03/2020	2017650-01										30	
Wellington Road @ River	29/03/2020	2017650-02							See Attached			44	
Silverstream @ River	29/03/2020	2017653-03							See Attached			33	
Waiwhetu Stream Mouth	30/03/2020	2017748-01							See Attached				
Overflow Sample @ Port Rd (15cm)	30/03/2020	2017748-02	3 600	40%	0.6	<0.01	Moderate	7.10	See Attached	<2	40%		18.8
Overflow Sample @ Cemetery (15cm)	30/03/2020	2017748-03	3 400	60%	0.78	<0.01	None	7.10	See Attached	<2	60%		19.1
Overflow Sample @ Bell Road Bridge (15cm)	30/03/2020	2017748-04	3 900	20%	0.85	<0.01	None	7.00	See Attached	<2	20%		17.2
Overflow Sample @ Plant	30/03/2020	2017748-05	12		0.44	0.24		7.40		<2			
Sample @ Hut River 50m U/Stream (15cm)	30/03/2020	2017748-06	750	20%	0.22		None	7.40	See Attached	4	40%		18
Sample @ Hut River 50m D/Stream (15cm)	30/03/2020	2017748-07	2 180	60%	0.42		None	7.30	See Attached	5	40%		18.2

Hut Valley Water Services
 Quarterly Overflow Report
 HWSQ3

SamplePoint	SampleDate	LabNumber	Tidal Height	Tide	Turbidity NTU	Visible Oil & Grease	Wind Direction	Wind strength	Zinc - Dissolved g/m ³
Wellington Road Overflow	12/03/2020	2014081-01							
Wellington Road @ River	12/03/2020	2014081-02							
Wellington Road Overflow	12/03/2020	2014108-01							
Wellington Road @ River	12/03/2020	2014108-02							
Waiwhetu Stream Mouth	12/03/2020	2014111-01	Low	Flood			Calm	Calm	
Overflow Sample @ Port Rd (15cm)	12/03/2020	2014111-02			3.17	20%			0.004
Overflow Sample @ Cemetery (15cm)	12/03/2020	2014111-03			3.19	10%			0.007
Overflow Sample @ Bell Road Bridge (15cm)	12/03/2020	2014111-04			3.88	20%			0.01
Overflow Sample @ Plant	12/03/2020	2014111-05			3.38				0.015
Sample @ Hut River 50m U/Stream (15cm)	12/03/2020	2014111-06			21.4	20%			
Sample @ Hut River 50m D/Stream (15cm)	12/03/2020	2014111-07			3.91	20%			
Point Arthur Pump Station wet well	12/03/2020	20141117-01							
Hut Valley Water Services Plant Effluent	12/03/2020	20141117-02							
Waiwhetu Stream Mouth	13/03/2020	2014208-01	Low	Mid			No Wind	Light	
Overflow Sample @ Port Rd (15cm)	13/03/2020	2014208-02			2.40	40%			0.012
Overflow Sample @ Cemetery (15cm)	13/03/2020	2014208-03			2.30	20%			0.011
Overflow Sample @ Bell Road Bridge (15cm)	13/03/2020	2014208-04			4.15	20%			0.014
Overflow Sample @ Plant	13/03/2020	2014208-05			2.46				0.015
Sample @ Hut River 50m U/Stream (15cm)	13/03/2020	2014208-06			1.71	20%			
Sample @ Hut River 50m D/Stream (15cm)	13/03/2020	2014208-07			1.42	10%			
Waiwhetu Stream Mouth	28/03/2020	2017619-01	High	High			N	Strong	
Overflow Sample @ Port Rd (15cm)	28/03/2020	2017619-02			30.4	Some			0.044
Overflow Sample @ Cemetery (15cm)	28/03/2020	2017619-03			32.7	Some			0.05
Overflow Sample @ Bell Road Bridge (15cm)	28/03/2020	2017619-04			34.3	Some			0.049
Overflow Sample @ Plant	28/03/2020	2017619-05			13.0				0.021
Sample @ Hut River 50m U/Stream (15cm)	28/03/2020	2017619-06			64.2	Some			
Sample @ Hut River 50m D/Stream (15cm)	28/03/2020	2017619-07			64.9	Some			
Wellington Road Overflow	28/03/2020	2017820-01							
Wellington Road @ River	28/03/2020	2017820-02							
Waiwhetu Stream Mouth	29/03/2020	2017649-01	High	High			N	Strong	
Overflow Sample @ Port Rd (15cm)	29/03/2020	2017649-02			16.2	A lot			0.073
Overflow Sample @ Cemetery (15cm)	29/03/2020	2017649-03			17.5	A lot			0.061
Overflow Sample @ Bell Road Bridge (15cm)	29/03/2020	2017649-04			21.2	A lot			0.064
Overflow Sample @ Plant	29/03/2020	2017649-05			10.5				0.023
Sample @ Hut River 50m U/Stream (15cm)	29/03/2020	2017649-06			57.9	A lot			
Sample @ Hut River 50m D/Stream (15cm)	29/03/2020	2017649-07			79.3	A lot			
Wellington Road Overflow	29/03/2020	2017650-01							
Wellington Road @ River	29/03/2020	2017650-02							
Silverstream @ River	29/03/2020	2017653-03							
Waiwhetu Stream Mouth	30/03/2020	2017748-01	High	High			No Wind	Light	
Overflow Sample @ Port Rd (15cm)	30/03/2020	2017748-02			11.1	80%			0.029
Overflow Sample @ Cemetery (15cm)	30/03/2020	2017748-03			11.9	80%			0.042
Overflow Sample @ Bell Road Bridge (15cm)	30/03/2020	2017748-04			12.6	20%			0.039
Overflow Sample @ Plant	30/03/2020	2017748-05			1.26				0.02
Sample @ Hut River 50m U/Stream (15cm)	30/03/2020	2017748-06			7.46	20%			
Sample @ Hut River 50m D/Stream (15cm)	30/03/2020	2017748-07			10.0	20%			

Hutt Valley Water Services
Quarterly Final Effluent Report

Sample Point	Sample Date	Sample No:	Enterococci cfu/100mL	Faecal Coliforms cfu/100mL
Final Effluent	2/04/2020	20/17745-11	31	56
Final Effluent	9/04/2020	20/18884-11	260	370
Final Effluent	16/04/2020	20/19619-11	4 900	380
Final Effluent	23/04/2020	20/20465-11	6 000	7 800
Final Effluent	30/04/2020	20/21197-11	48	100
Final Effluent	7/05/2020	20/22854-11	69	62
Final Effluent	21/05/2020	20/25364-11	8	8
Final Effluent	28/05/2020	20/26549-11	23	24

Extended Analysis Testing

Full lab reports attached for this section - HVWM

Month	Sample Date	ELS Batch
April 2020	8/04/2020	20/18369
May2020	22/05/2020	20/25679

Hutt Valley Water Se
Quarterly Overflow R
HVWSQ3

SamplePoint	Faecal Coliforms cfu/100ml	Floating/Suspended Matter	Nitrate - Nitrogen g/m ³	Nitrite - Nitrogen g/m ³	Objectionable Odour	pH	Photograph	Salinity ppt	Scums or Foams	Suspended Solids - Total g/m ³
Wellington Road @ F										10
Wellington Road Ove										302
Overflow Sample @ I	1 200	60%	0.71	<0.01	Light	7.00		<2	0.4	
Overflow Sample @ I	800	80%	0.19	<0.01	None	7.20	See Attached	<2	0.6	
Overflow Sample @ I	2 500		0.02	<0.01		7.20		<2		
Overflow Sample @ I	800	80%	0.19	<0.10	None	7.30	See Attached	<2	0.4	
Sample @ Hutt River	600	60%	0.19		None	7.20	See Attached	<2	0.2	
Sample @ Hutt River	840	60%	0.19		None	7.20	See Attached	<2	0	
Waiwhetu Stream Mc							See Attached			
Wellington Road @ F							See Attached			9
Wellington Road Ove										95
Overflow Sample @ I	2 400	40%	0.79	<0.10	None	7.20		<2	0.2	
Overflow Sample @ I	220	20%	0.21	<0.10	None	7.60	See Attached	7	0.1	
Overflow Sample @ I	62		0.08	0.02		7.30		<2		
Overflow Sample @ I	230	10%	0.2	<0.10	None	7.60	See Attached	7	0.1	
Sample @ Hutt River	250	40%	0.19		None	7.80	See Attached	5	0.2	
Sample @ Hutt River	250	20%	0.19		None	7.70	See Attached	5	0	
Waiwhetu Stream Mc							See Attached			
Overflow Sample @ I	20 000	10%	0.6	<0.10	None	7.10		<2	0.1	
Overflow Sample @ I	9 000	40%	0.39	<0.10	None	7.20	See Attached	<2	0.2	
Overflow Sample @ I	230		<0.10	<0.10		7.10		<2		
Overflow Sample @ I	5 400	None	0.18	<0.10	None	7.20	See Attached	<2	None	
Sample @ Hutt River	6 800	10%	0.14		None	7.30	See Attached	<2	0.2	
Sample @ Hutt River	7 500	40%	0.15		None	7.30	See Attached	<2	0	
Waiwhetu Stream Mc							See Attached			
Overflow Sample @ I	2 000	5%	0.79	<0.10	None	6.90		<2	0	
Overflow Sample @ I	2 700	5%	0.65	<0.10	None	7.00	See Attached	<2	0	
Overflow Sample @ I	60		0.1	<0.10		7.20		<2		
Overflow Sample @ I	3 900	0%	0.62	<0.10	None	7.00	See Attached	<2	0.05	
Sample @ Hutt River	1 300	10%	0.31		None	7.40	See Attached	3	0.05	
Sample @ Hutt River	410	5%	0.17		None	7.50	See Attached	<2	0	
Waiwhetu Stream Mc							See Attached			

Hutt Valley Water Se
Quarterly Overflow R
HVWSQ3

SamplePoint	Temperature Deg C	Tidal Height	Tide	Turbidity NTU	Visible Oil & Grease	Wind Direction	Wind strength
Wellington Road @ F							
Wellington Road Ove							
Overflow Sample @ I	17.4			1290%	0.2		
Overflow Sample @ I	17			2700%	0.4		
Overflow Sample @ I				421%			
Overflow Sample @ I	18			2450%	0.4		
Sample @ Hutt River	18.7			2450%	0.2		
Sample @ Hutt River	18.3			2410%	0.2		
Waiwhetu Stream Mc		Mid	Flood			No Wind	Calm
Wellington Road @ F							
Wellington Road Ove							
Overflow Sample @ I	16.9			1100%	0.4		
Overflow Sample @ I	17.5			520%	0.2		
Overflow Sample @ I				151%			
Overflow Sample @ I	17.6			482%	0.1		
Sample @ Hutt River	18.6			504%	0.2		
Sample @ Hutt River	18.4			502%	0.2		
Waiwhetu Stream Mc		Low	Low			No Wind	Calm
Overflow Sample @ I	13			2470%	0.2		
Overflow Sample @ I	12.8			2630%	0.2		
Overflow Sample @ I				813%			
Overflow Sample @ I	11.9			1930%	0.1		
Sample @ Hutt River	13.6			2480%	0.1		
Sample @ Hutt River	12.9			2620%	0.1		
Waiwhetu Stream Mc		High	Flood			S	Strong
Overflow Sample @ I	13.1			1050%	0		
Overflow Sample @ I	12.7			1170%	0.05		
Overflow Sample @ I				214%			
Overflow Sample @ I	12.8			1380%	0		
Sample @ Hutt River	12			1720%	0		
Sample @ Hutt River	12.3			504%	0		
Waiwhetu Stream Mc		Low	Ebb			NW	Light

Summer Beach Testing
eQual reports for this section - HVCW
Required: Nov to April inclusive

Month	Sample Date	ELS Batch
April 2020	22/04/2020	20/19746

Effluent Discharge to Waiwhetu Stream	Sampling date					
Analytes	5/06/2020	6/06/2020	18/06/2020	19/06/2020	20/06/2020	21/06/2020
Ammoniacal Nitrogen (as N)	18	18	19	19	19	19
CBOD5 (as O2)	50	56	10	7.3	8.6	9.5
Conductivity (at 25 °C)	130	130	81	158	158	158
Dissolved Oxygen	1.2	1.5	1.6	3.4	2	1.3
Dissolved Reactive Phosphorus (as P)	3.1	2	1.9	1.7	1.7	1.9
Enterococci	400000	430000	300000	480000	160000	400000
Escherichia coli	1100000	930000	490000	1040000	720000	340000
Faecal coliforms	1100000	750000	550000	1380000	1060000	920000
Nitrate (as N)	0.05	0.059	0.2	0	0.02	0
Nitrite (as N)	0.0039	0.0142	0	0	0	0
pH (at room temp c. 20 °C)	7.3	7.2	7	14.6	14.4	14.6
Salinity	0.6	0.6	0.4	0.8	0.8	0.8
Total Oxidised Nitrogen (as N)	0.054	0.122				
Turbidity			7.6	9.8	8.8	9.6

Bell Road Bridge	Sampling date					
Analytes	5/06/2020	6/06/2020	18/06/2020	19/06/2020	20/06/2020	21/06/2020
Ammoniacal Nitrogen (as N)	0	0	0	0	0	0
CBOD5 (as O2)	1.3	1.6	2.6	1.7	0.75	4
Conductivity (at 25 °C)	110	52	11	44	84	74
Copper (Dissolved)			0.0036	0.0032	0.0019	0.0015
Copper (Total)	0.0055	0.0036				
Dissolved Oxygen	8.9	8.5	9.7	19	8.8	8
Dissolved Reactive Phosphorus (as P)	0.038	0.042	0.043	0.03	0.042	0.04
Enterococci	7400	1100	26000	8000	1280	1440
Escherichia coli		2700	25000	5200	2400	1260
Escherichia coli (NAMUG)	5200					
Faecal coliforms	6400	4200	29000	6600	2200	1440
Nitrate (as N)			0.46	0.85	0.76	0.66
Nitrite (as N)	0.01	0.013	0	0	0	0
pH (at room temp c. 20 °C)	6.8	6.9	6.9	14.4	13.8	13.8
Salinity	0.5	0.3	0	0.2	0.4	0.4
Turbidity	25	11	70	54	14.8	22
Zinc (Dissolved)			0.049	0.044	0.11	0.3
Zinc (Total)	0.068	0.093				

Port Road Bridge	Sampling date					
Analytes	5/06/2020	6/06/2020	18/06/2020	19/06/2020	20/06/2020	21/06/2020
Ammoniacal Nitrogen (as N)	0	0	2.5	3.1	0	0
CBOD5 (as O2)	1.5	0.85	4.4	4.4	2.1	3.4
Conductivity (at 25 °C)	22	540	31	120	100	198
Copper (Dissolved)			0.0036	0.0026	0.00066	0.0014
Copper (Total)	0.0021	0				
Dissolved Oxygen	10.2	9.6	8.6	16.2	10.4	8.6
Dissolved Reactive Phosphorus (as P)	0.012	0.019	0.11	0.1	0.01	0.057
Enterococci	2300	530	30000	6200	500	3000
Escherichia coli		570	14000	3800	780	2600
Escherichia coli (NAMUG)	5400					
Faecal coliforms	7600	660	19000	5000	820	3200

Nitrate (as N)			0.35	1.07	0.27	0.66
Nitrite (as N)	0.0073	0.0068	0	0.05	0	0
pH (at room temp c. 20 °C)	7.2	7	6.8	14.4	14.2	14.4
Salinity	0.1	2.9	0.1	0.6	0.4	1
Turbidity	55	8.6	40	38	32	17.6
Zinc (Dissolved)			0.051	0.056	0.027	0.064
Zinc (Total)	0.015	0.041				

Waiwhetu Pa	Sampling date					
Analytes	5/06/2020	6/06/2020	18/06/2020	19/06/2020	20/06/2020	21/06/2020
Ammoniacal Nitrogen (as N)	0	0	0	0	0	0
CBOD5 (as O2)	1.4	1.4	2.1	2.9	2.9	1.5
Conductivity (at 25 °C)	41	250	28	152	220	192
Copper (Dissolved)			0.0041	0.0032	0.0022	0.0015
Copper (Total)	0.0024	0.0048				
Dissolved Oxygen	9.8	8.2	9.8	18.2	8.1	7.6
Dissolved Reactive Phosphorus (as P)	0.012	0.044	0.033	0.042	0.038	0.059
Enterococci	3000	980	33000	8600	2600	720
Escherichia coli		1200	18000	7400	1460	4200
Escherichia coli (NAMUG)	4700					
Faecal coliforms	5400	2200	19000	10000	3000	4600
Nitrate (as N)			0.35	0.8	0.82	0.71
Nitrite (as N)	0.0087	0.012	0	0	0	0
pH (at room temp c. 20 °C)	7.1	7	7.1	14	13.8	14.2
Salinity	0.2	1.3	0.1	0.8	1	1
Turbidity	60	12	40	64	26	16.6
Zinc (Dissolved)			0.062	0.04	0.092	0.058
Zinc (Total)	0.018	0.075				

Appendix vi:
Analytical Results from
Wainuiomata River Samples
Upstream and Downstream of the
Wainuiomata WWTP

Wellington Water Ltd - GSC
HCC_Freshwater
Hutt City Council
c/- Wellington Water
Private Bag 39-804
Wellington Mail Centre 5045
Attention: Nick Hewer Hewitt

Analytical Report

Report Number: 20/31626

Issue: 1
08 July 2020

Sample	Site	Map Ref.	Date Sampled	Date Received	Order No.
20/31626-01	Fresh Water		25/06/2020 13:25	25/06/2020 14:06	P1060560
Notes: 100m Upstream of Wainuiomata Wastewater Treatment Plant Requested by Joemar Cacnio					
Test	Result	Units	Test Date	Signatory	
0055 Conductivity at 25°C	12.8	mS/m	26/06/2020	Gordon McArthur KTP	
0083 Total Kjeldahl Nitrogen	< 0.8	g/m ³	27/06/2020	Gordon McArthur KTP	
0602 Chloride	23.1	g/m ³	07/07/2020	Shanel Kumar KTP	
0605 Nitrate - Nitrogen	0.21	g/m ³	07/07/2020	Shanel Kumar KTP	
0726 Hexavalent Chromium	< 0.005	g/m ³	29/06/2020	Divina Lagazon KTP	
0760 Ammonia Nitrogen	0.01	g/m ³	30/06/2020	Divina Lagazon KTP	
2088 Dissolved Reactive Phosphorus	0.014	g/m ³	30/06/2020	Divina Lagazon KTP	
6617 Iron - Total	0.2	g/m ³	26/06/2020	Shuyu Zhao KTP	
6621 Manganese - Total	0.008	g/m ³	26/06/2020	Shuyu Zhao KTP	
6703 Arsenic - Dissolved	< 0.001	g/m ³	26/06/2020	Shuyu Zhao KTP	
6708 Cadmium - Dissolved	< 0.0002	g/m ³	26/06/2020	Shuyu Zhao KTP	
6713 Copper - Dissolved	< 0.0005	g/m ³	26/06/2020	Shuyu Zhao KTP	
6718 Lead - Dissolved	< 0.0005	g/m ³	26/06/2020	Shuyu Zhao KTP	
6724 Nickel - Dissolved	< 0.0005	g/m ³	26/06/2020	Shuyu Zhao KTP	
6738 Zinc - Dissolved	0.003	g/m ³	26/06/2020	Shuyu Zhao KTP	
O1306 pH - onsite reading	7.19		25/06/2020	Gordon McArthur Transcribed by	
O1311 Temperature	10.0	Deg C	25/06/2020	Gordon McArthur Transcribed by	
P1855 Aqueous Total Metal Digestion	Completed		26/06/2020	Stephen Hutton Analyst	
P1859 Sample Filtration	Completed		26/06/2020	Robyn Madge .	

Sample	Site	Map Ref.	Date Sampled	Date Received	Order No.
20/31626-02	Fresh Water		25/06/2020 13:15	25/06/2020 14:06	P1060560
Notes: 100m Downstream of Wainuiomata Wastewater Treatment Plant Requested by Joemar Cacnio					
Test	Result	Units	Test Date	Signatory	
0055 Conductivity at 25°C	12.9	mS/m	26/06/2020	Gordon McArthur KTP	
0083 Total Kjeldahl Nitrogen	< 0.8	g/m ³	27/06/2020	Gordon McArthur KTP	
0602 Chloride	22.9	g/m ³	07/07/2020	Shanel Kumar KTP	
0605 Nitrate - Nitrogen	0.26	g/m ³	07/07/2020	Shanel Kumar KTP	
0726 Hexavalent Chromium	< 0.005	g/m ³	29/06/2020	Divina Lagazon KTP	
0760 Ammonia Nitrogen	0.01	g/m ³	30/06/2020	Divina Lagazon KTP	
2088 Dissolved Reactive Phosphorus	0.014	g/m ³	30/06/2020	Divina Lagazon KTP	
6617 Iron - Total	0.2	g/m ³	26/06/2020	Shuyu Zhao KTP	
6621 Manganese - Total	0.008	g/m ³	26/06/2020	Shuyu Zhao KTP	
6703 Arsenic - Dissolved	< 0.001	g/m ³	26/06/2020	Shuyu Zhao KTP	
6708 Cadmium - Dissolved	< 0.0002	g/m ³	26/06/2020	Shuyu Zhao KTP	
6713 Copper - Dissolved	< 0.0005	g/m ³	26/06/2020	Shuyu Zhao KTP	
6718 Lead - Dissolved	< 0.0005	g/m ³	26/06/2020	Shuyu Zhao KTP	
6724 Nickel - Dissolved	< 0.0005	g/m ³	26/06/2020	Shuyu Zhao KTP	
6738 Zinc - Dissolved	0.003	g/m ³	26/06/2020	Shuyu Zhao KTP	
O1306 pH - onsite reading	7.36		25/06/2020	Gordon McArthur Transcribed by	



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Rolleston 7675
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Dunedin
16 Lorne Street
South Dunedin 9012
Phone: (03) 972-7963

Sample	Site	Map Ref.	Date Sampled	Date Received	Order No.
20/31626-02	Fresh Water		25/06/2020 13:15	25/06/2020 14:06	P1060560
Notes: 100m Downstream of Wainuiomata Wastewater Treatment Plant Requested by Joemar Cacnio					
Test	Result	Units	Test Date	Signatory	
O1311 Temperature	10.1	Deg C	25/06/2020	Gordon McArthur Transcribed by	
P1855 Aqueous Total Metal Digestion	Completed		26/06/2020	Stephen Hutton Analyst	
P1859 Sample Filtration	Completed		26/06/2020	Robyn Madge .	

Comments:

Sampled by customer using ELS approved containers.

Test Methodology:

Test	Methodology	Detection Limit
Conductivity at 25°C	APHA Online Edition Method 2510 B.	0.1 mS/m
Total Kjeldahl Nitrogen	APHA Online Edition 4500-N(org) B	0.8 g/m ³
Chloride	Ion Chromatography following APHA 4110B.	0.02 g/m ³
Nitrate - Nitrogen	Ion Chromatography following APHA 4110B.	0.01 g/m ³
Hexavalent Chromium	Discrete Analyser. In House method based on APHA Online Edition Method 3500-Cr B.	0.005 g/m ³
Ammonia Nitrogen	Flow Injection Autoanalyser following APHA Online Edition Method 4500 NH3-H.	0.01 g/m ³
Dissolved Reactive Phosphorus	Flow Injection Autoanalyser following APHA Online Edition Method 4500-P G.	0.005 g/m ³
Iron - Total	ICP-MS following APHA Online Edition method 3125 (modified)	0.1 g/m ³
Manganese - Total	ICP-MS following APHA Online Edition method 3125 (modified)	0.001 g/m ³
Arsenic - Dissolved	ICP-MS following APHA Online Edition method 3125 (modified).	0.001 g/m ³
Cadmium - Dissolved	ICP-MS following APHA Online Edition method 3125 (modified).	0.0002 g/m ³
Copper - Dissolved	ICP-MS following APHA Online Edition method 3125 (modified).	0.0005 g/m ³
Lead - Dissolved	ICP-MS following APHA Online Edition method 3125 (modified).	0.0005 g/m ³
Nickel - Dissolved	ICP-MS following APHA Online Edition method 3125 (modified).	0.0005 g/m ³
Zinc - Dissolved	ICP-MS following APHA Online Edition method 3125 (modified).	0.002 g/m ³
Aqueous Total Metal Digestion	Follows APHA Online Edition Method 3030E (modified) using nitric acid.	n/a
Sample Filtration	Sample filtered through 0.45 micron filter following APHA Online Edition Method 3030B.	n/a

Onsite Observation Methodology:

Test	Methodology	Detection Limit
pH - onsite reading	Analysed on site by sampler.	0.1
Temperature	Analysed on site by sampler.	0.1 Deg C

Unless otherwise stated, all tests are performed in Wellington.

The laboratory is not responsible for the information provided by the customer which can affect the validity of the results.

"<" means that no analyte was found in the sample at the level of detection shown. Detection limits are based on a clean matrix and may vary according to individual sample.

g/m³ is the equivalent to mg/L and ppm.

Samples will be retained for a period of time, in suitable conditions appropriate to the analyses requested.

This laboratory is accredited by International Accreditation New Zealand and its reports are recognised in all countries affiliated to the International Laboratory Accreditation Co-operation Mutual Recognition Arrangement (ILAC-MRA). The tests reported have been performed in accordance with our terms of accreditation, with the exception of tests marked "not an accredited test", which are outside the scope of this laboratory's accreditation.

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