Porirua Wastewater Treatment Plant

2022/2023 Annual Resource Consents Report

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Control Sheet

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0	Draft	13/07/2023	Draft for Review
1	Final	31/07/2023	Head of Wastewater Contracts
1.1	Final	12/10/2023	Added the missing September 2022 Shoreline Sampling Results in Appendix IV

Executive Summary

The following report was prepared by Wellington Water on behalf of the Porirua City Council (PCC) for Greater Wellington Regional Council (GWRC). This report includes results and observations that satisfy the reporting requirements of the following Porirua Wastewater Treatment Plant resource consents:

WGN 980083 [33805]

The Porirua WWTP is governed by the resource consent under the Greater Wellington Regional Council consent file number WGN980083. In general, the consent allows the discharge of treated and partially treated effluent from the Porirua City Council's Wastewater Treatment Plant at Rukutane Point through an existing outfall at or about map reference NZMS 260:R27;320.097.

WGN 980083 (02)

The Porirua WWTP is governed by the resource consent under the Greater Wellington Regional Council consent file number WGN980083 (02). In general, the consent allows the discharge of contaminants from the Porirua City Council's Wastewater Treatment Plant to the air at the or about map reference NZMS 260: R27;632.096.

WGN 980083 (03)

To occupy the coastal marine area with a concrete deflection wall and the outfall structures, the resource consent under the Greater Wellington Regional Council consent file number WGN980083 (03) was obtained.

The report will cover the annual period from July 2022 to June 2023 as requested in the resource consent.

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WGN980083 [33805]

Condition (10)

Before 1 October 2003, the permit holder shall sample the treated effluent at the sample point required by condition 9 and the following effluent standards shall apply.

(a) Based on daily 24 hour flow proportioned composite sampling, with a running geometric mean and 90 percentile calculated each day using 90 consecutive daily test results, the effluent shall meet the following standard:

(i) Biochemical Oxygen Demand: Geometric mean of 90 day consecutive BOD5 values shall not exceed 30g/m^3 and no more than 10% of 90 consecutive daily values shall exceed 75g/m^3.

(ii) Suspended solids: Geometric mean of 90 day consecutive daily suspended solids values shall not exceed 30g/m^3 and no more than 10% of 90 consecutive daily values shall exceed 75g/m^3.

(b) Based on no fewer than one flow proportioned 24 hour composite sample collected on a normal Monday to Friday working day on a quarterly basis, concentrations of metals and other specified compounds shall not exceed the following limits:

Arsenic	0.5g/m^3
Cadmium as the element	0.05 g/m^3
Chromium	0.2 g/m^3
Copper as the element	0.8 g/m^3
Nickel as the element	0.05 g/m^3
Lead as the element	0.5 g/m^3
Zinc as the element	2.0 g/m^3
Mercury as the element	0.002 g/m^3
Phenol	0.2 g/m^3
Cyanide as CN	0.1 g/m^3
Chlorinated hydrocarbons	0.01 g/m^3

Condition 10 is no longer in effect since the 1 October 2003 date has passed. Therefore, no reporting for this condition is required.

Condition (11)

After 1 October 2003, the permit holder shall sample the treated effluent at the sample point required by condition 9 and the following effluent standards shall apply.

(a) Based on daily 24 hour flow proportioned composite sampling, with a running geometric mean and 90 percentile calculated each day using 90 consecutive daily test results, the effluent shall meet the following standard:

(i) Biochemical Oxygen Demand: Geometric mean of 90 day consecutive BOD5 values shall not exceed 30g/m^3 and no more than 10% of 90 consecutive daily values shall exceed 75g/m^3.

(ii) Suspended Solids: Geometric mean of 90 day consecutive suspended solids values shall not exceed 30g/m^3 and no more than 10% of 90 consecutive daily values shall exceed 75g/m^3.

(b) Based on no fewer than 20 representative grab samples per month, (such samples shall be taken from the date of commencement of this permit, on separate days per month between the hours of 9am and 5pm), the effluent shall not exceed the following standard:

(i) Faecal coliform bacteria: Geometric mean of 1000 per 100 millilitres and no more than 10% of monthly samples shall exceed 2,000 per 100 millilitres.

(c) Based on no fewer than one flow proportioned 24 hour composite sample collected on a normal Monday – Friday working day on a quarterly basis, concentrations of metals and other specified compounds shall not exceed the following limits:

Arsenic	0.5g/m^3
Cadmium as the element	0.05 g/m^3
Chromium	0.2 g/m^3
Copper as the element	0.8 g/m^3
Nickel as the element	0.05 g/m^3
Lead as the element	0.5 g/m^3
Zinc as the element	2.0 g/m^3
Mercury as the element	0.002 g/m^3
Phenol	0.2 g/m^3
Cyanide as CN	0.1 g/m^3
Chlorinated hydrocarbons	0.01 g/m^3

Section (a)

Figure 1 and Figure 2 below provide a graphical summary of the geometric mean and the 90th percentile compliance for the Biological Oxygen Demand and the Suspended Solids daily analytical results.

The treatment plant was compliant to effluent BOD and suspended solids quality requirement of the consent for financial year 2022/2023.

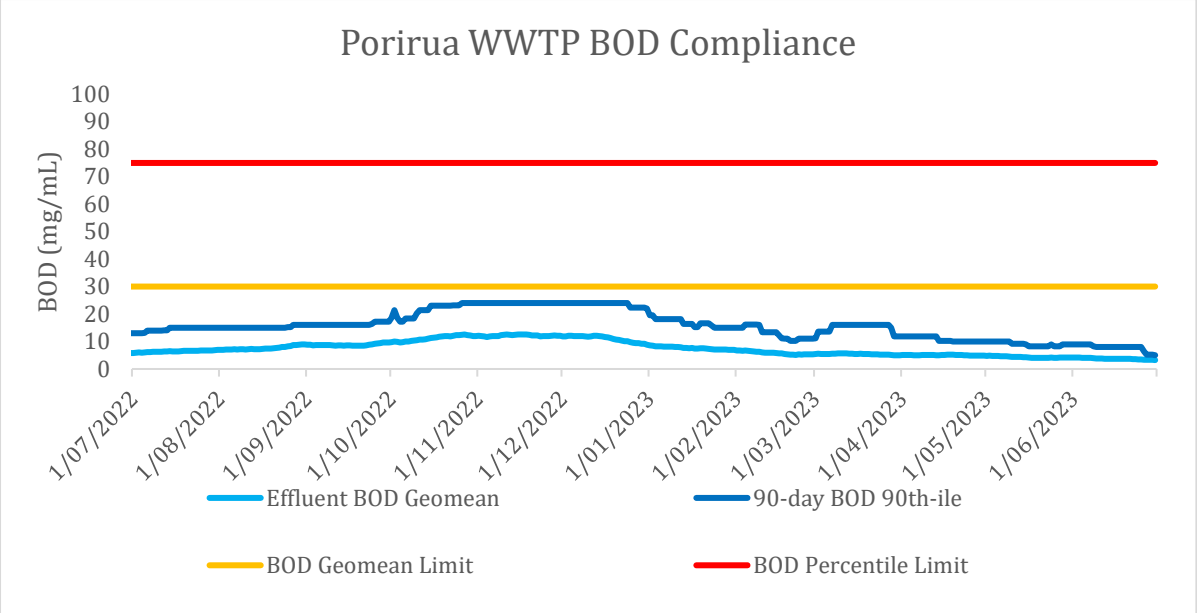

Figure 1- Effluent BOD geomean and 90th percentile data for the FY22/23

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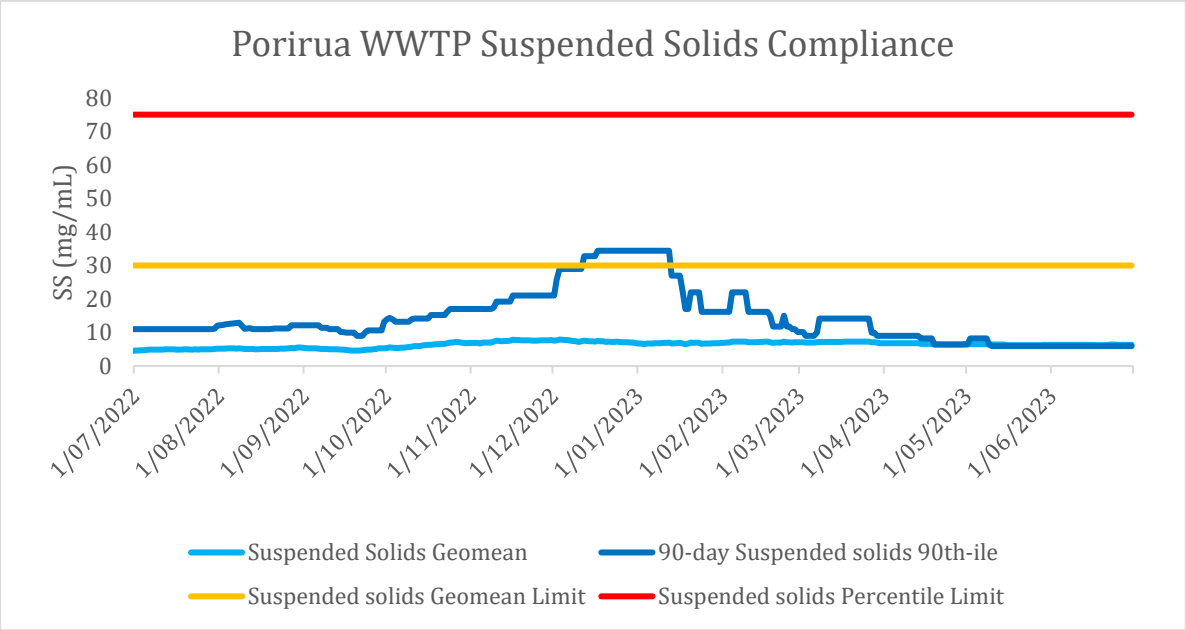


Figure 2- Effluent suspended solids geomean and 90th percentile data for the FY22/23

Section (b)

Table 1 below is a summary of the geometric mean and percent compliance for faecal coliforms analytical results.

In July 2015, an agreement with GWRC was reached to use only the first 20 faecal coliform analytical results for compliance purposes.

The treatment plant was compliant for the effluent faecal coliform quality requirement of the consent for financial year 2022/2023.

Month	Effluent Faecal Coliform	
	20 Sample Geomean	20 Sample % Compliance
	cfu/100 mL	%
Jul-22	94	100
Aug-22	57	100
Sep-22	83	100
Oct-22	70	95
Nov-22	113	100
Dec-22	28	100
Jan-23	40	100
Feb-23	87	95
Mar-23	89	100
Apr-23	36	100
May-23	83	100
Jun-23	36	95

Table 1: Monthly Faecal Coliform Geometric Mean and Percent Compliance

On 10th March 2023, Wellington Water notified GWRC of the cross contamination of the laboratory samples for effluent faecal coliform from 27 February - 9 March 2023. The cross contamination of the samples resulted in some spikes on the daily faecal coliform results during this period.

Wellington Water and Veolia carried out an investigation into the issue. The investigation concluded that the cause of the high daily effluent faecal coliform results during this period was sample cross contamination due to the use of a non-sterilised bucket at the sample point. The findings were provided to the regional council.

On 27 April 2023, GWRC allowed the exclusion of results from 27 February – 9 March in compliance calculations, since the samples were not representative of the treatment plant's operational performance. A formal warning notice was given to Wellington Water due to breach of WGN980083 Condition 8 that requires all methods and procedures for monitoring to be to the satisfaction of the Regional Council.

The March 2023 daily faecal coliform compliance was assessed based on the 10th – 31st March sampling results.

A graphical representation of daily BOD, suspended solids, and faecal coliform effluent results can be found in Appendix I: Daily Effluent Results. The daily values can be provided upon request.

Section (c)

Below is a summary of the quarterly metals and other specified compounds analytical results.

Compound	Units	Limit	04/07/2022	27/10/2022	30/01/2023	27/04/2022
Arsenic	**g/m³**	**0.5**	0.002	0.002	0.002	0.002
Cadmium as the element	**g/m³**	**0.05**	0.000	0.00005	0.00100	0.00100
Chromium	**g/m³**	**0.2**	0.002	0.002	0.008	0.002
Copper as the element	**g/m³**	**0.8**	0.003	0.008	0.042	0.003
Nickel as the element	**g/m³**	**0.05**	0.014	0.020	0.003	0.019
Lead as the element	**g/m³**	**0.5**	0.001	0.001	0.003	0.001
Zinc as the element	**g/m³**	**2.0**	0.000	0.0002	0.097	0.00100
Mercury as the element	**g/m³**	**0.002**	0.000	0.00005	0.001	0.00100
Phenol	**g/m³**	**0.2**	0.002	0.020	0.010	0.010
Cyanide as CN	**g/m³**	**0.1**	0.005	0.005	0.005	0.005
Chlorinated hydrocarbons	**g/m³**	**0.01**	See note	See note	See note	See note

Table 2: Quarterly Metals and other Specified Compounds Analytical Results

Note: The Porirua WWTP Quarterly Reports contain the full analytical results of the metals and other specified compounds as well as the breakdown of the chlorinated hydrocarbons.

Condition (12)

The permit holder shall continuously monitor and record the treatment plant effluent flow. These records shall be supplied to the manager, Consents Management, Wellington Regional Council upon request.

The consent requires the average discharge flow of 24,000 cubic metres per day and a peak discharge flow of 92,800 cubic metres per day.

As agreed between GWRC and the consent holder, the consent holder is required to continuously monitor and record the treatment plant influent flow rather than effluent flow. This being due to the inflow and outflow effluent being equivalent and the flow meters on the inlet being more accurate.

The average daily flow from 1 July 2022 to 30 June 2023 was 29,617 m^3 and the maximum daily flow was 95,608 m^3. There were 220 days throughout this period wherein the flow was greater than 24,000 m^3.

Figure 3 below shows the daily inflow volume to the treatment plant from 1 July 2022 to 30 June 2023.

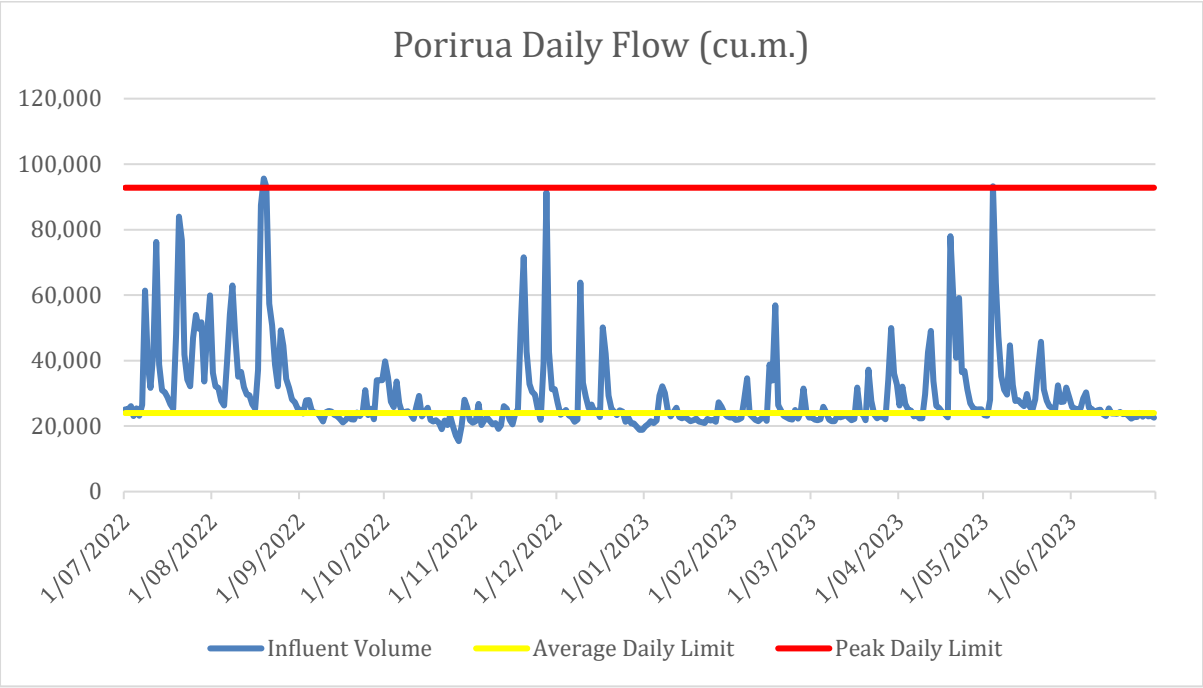


Figure 3- Porirua WWTP Daily Flow FY2022/23

Condition (14)

The permit holder shall monitor the enterococci and faecal coliform contents of the receiving waters at six shoreline locations between Titahi Bay Beach and Te Korohiwa Rocks. The shoreline monitoring locations shall include the following sites:

- At or about 200 metres generally eastwards of the outfall;
- At or about 200 metres generally southwestwards of the outfall; and
- Titahi Bay Beach

In addition, the permit holder shall establish a sample control site and measure background enterococci and faecal coliform contents of the coastal waters. All sampling locations shall be to the satisfaction of the Manager, Consents management, Wellington Regional Council.

The original control site posed a health and safety risk for the technician when collecting samples. A meeting was held with GWRC on-site on 29th August 2020 regarding the relocation of the control site sampling location. GWRC agreed to the new sample location via e-mail on 12th September 2020 and the new control site is located at the end of Whitireia Road. The following is a list of the seven sampling points and a map of their locations:

Sampling Point 1 - Te Korohiwa Rocks
Sampling Point 2 - West of Outfall
Sampling Point 3 - East of Outfall
Sampling Point 4 - Titahi Bay Beach South
Sampling Point 5 - Titahi Bay Beach
Sampling Point 6 - Mount Cooper
Control Point - Whitireia Park.

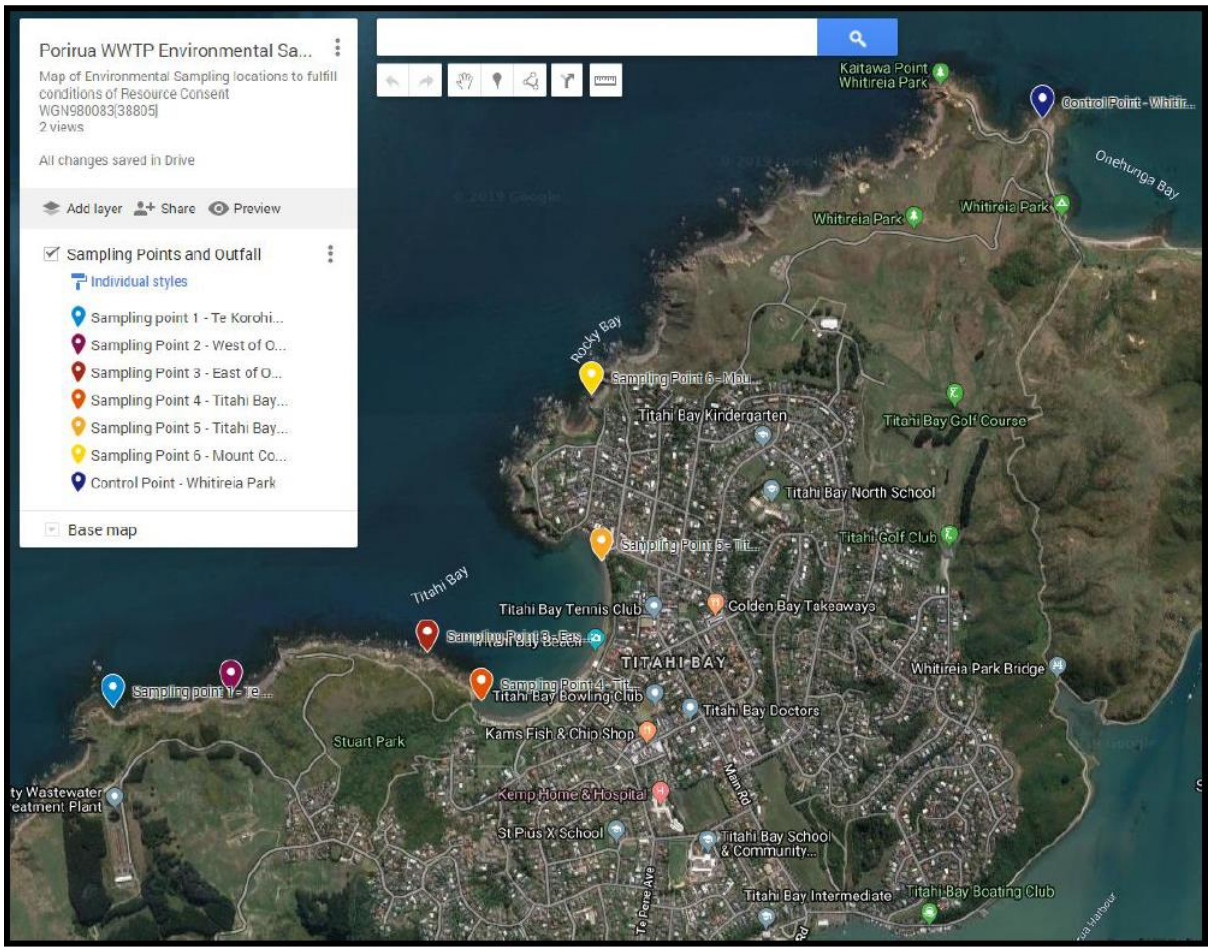


Figure 3: Shoreline Monitoring Sampling Sites

Condition (15)

The water at all sampling locations required by condition 14 shall be monitored for enterococci and faecal coliforms ~~at least three~~ monthly. ~~Between 1 April and 30 September and monthly between 1 October and 31 march, until such time as any new disinfection plant is commissioned. For the first 12 months after commissioning such monitoring shall be carried out on at least a monthly basis. Thereafter, the monitoring may be at such reduced intensity as determined by the Manager, Consents Management, Wellington Regional Council.~~

In the event of a discharge of partly or untreated sewage effluent due to either plant malfunction, or *plant overflow*, or *plant bypass*, the above said waters shall further be monitored at or about 24 hours, 72 hours, and 144 hours after that discharge commenced.

For each water sample required by this condition, the permit holder shall make record of the date, time, weather, wind and tidal conditions at its sampling location. These records for each preceding quarter shall be supplied to the Manager, Consents Management, Wellington Regional Council, in the quarterly monitoring report required by condition 17.

Shoreline samples are collected from all the sampling locations mentioned in Condition (14) during bypass or overflow events 24 hours, 72 hours, 144 hours after the discharge. If there has not been a discharge event during the month period, samples are collected from all sampling locations at the end of the month to comply with Condition (15).

Below is a summary of the bypass and overflow events that have occurred each month over the reporting period. The breakdown for each month and explanation of the events can be found in Condition (21). The results from each set of samples collected can be found in Appendix II: Shoreline Monitoring Data. Analytical results from each set of samples collected can be made available upon request.

Month	Bypass/Overflow Events	
	Consented	Non-Consented
July 2022	4	0
August 2022	2	0
September 2022	0	0
October 2022	0	1
November 2022	0	1
December 2022	0	0
January 2023	0	0
February 2023	0	0
March 2023	0	3
April 2023	0	1
May 2023	0	1
June 2023	0	0

Table 3: Monthly Bypass and Overflow Events

Condition (18)

Notwithstanding any enforcement action Wellington Regional Council may choose to take, should the criteria set out in conditions 10 or 11 be exceeded or breached, or the effects in condition 13 (a) – (c) be caused by the discharge, the permit holder shall undertake the following:

(a) Immediately notify the Manager, Consents Management, Wellington Regional Council.

(b) Immediately investigate the reason why the criteria was exceeded.

(c) Immediately identify and undertake whatever appropriate remedial action to the satisfaction of the Manager, Consents Management, Wellington Regional Council, to mitigate the effects.

(d) Forward within five working days to the Manager, Consents Management, Wellington Regional Council, a report on the steps taken to ensure that the criteria are not breached in the future.

There were no breaches in the condition 11 or 13 during this reporting period.

The following non-compliance notices were given to Wellington Water during the financial year 2022/23.

Month Issued	Facility	Non-compliance Notice	Description
26/08/2022	Porirua WWTP	Infringement Notice I861 and formal warning for Breach of Abatement Notice A961	Non-compliance to Abatement notice A961 due to not completing the UV upgrade by 28 February 2022.
27/04/2023	Porirua WWTP	Formal Warning	Formal warning for cross contamination during sampling of treated wastewater at Porirua WWTP

Table 4: Non-compliance Notices

Condition (21)

In the event of a plant malfunction or the discharge of untreated or partially treated effluent, the permit holder shall: • Immediately notify both the Manager, Consents Management, Wellington Regional Council, and the Public Health Service. • If required by Manager, Consents Management, Wellington regional Council, provide within 48 hours a written report to the Manager, detailing manner and cause of the malfunction and the nature of the released effluent, and the steps taken (and being taken if appropriate) to remedy and control that discharge, and to prevent any such releases of untreated or partially treated effluent.

Table 5 summarises the bypass and/or overflow events for the July 2022 to June 2023 reporting year.

Notifications were submitted to the regional council and RPH for all the discharge incidents.

A report has been provided to regional council on 9th November 2022 for the 27th October 2022 undisinfected wastewater discharge event.

A report has been provided to the regional council on 21st December 2022 for the 17th November 2022 undisinfected wastewater discharge event.

Explanation letters for the failures of the Duron UV system have been submitted on 2nd and 12th May 2023 for the March and April 2023 undisinfected wastewater discharges as per GWRC's request.

Date	Start of Discharge	End of Discharge	Duration	Total Volume of Partially Treated Discharge	Consented	Cause
dd/mm/yy	dd/mm/yy hh:mm	dd/mm/yy hh:mm	hrs:mins	m^3	Y/N	
08/07/2022	7/8/2022 10:51	7/8/2022 15:47	4:56	2931	Y	Heavy rainfall
12/07/2022	7/12/2022 8:45	7/12/2022 22:14	13:29	7105	Y	Heavy rainfall
19/07/2022	7/19/2022 22:03	7/20/2022 19:04	21:01	9423	Y	Heavy rainfall
31/07/2022	7/31/2022 6:04	7/31/2022 15:41	9:37	5337	Y	Heavy rainfall
08/08/2022	8/8/2022 5:38	8/8/2022 13:55	8:17:00	3771	Y	Heavy rainfall
18/08/2022	8/18/2022 14:44	8/21/2022 12:06	69:22:00	42525	Y	Heavy rainfall
27/10/2022	10/27/2022 2:42	10/27/2022 8:05	5:21	–	N	A power spike caused a shutdown of most of the equipment at the Porirua WWTP, including the SCADA, Pager alarm, and UV systems.
17/11/2022	11/17/2022 4:19	11/17/2022 6:15	00:43	142	N	Failure in the level transmitter in the Duron UV Unit.
15/03/2023	15/03/2023 9:06	15/03/2023 9:12	00:06	16	N	Failure of the Duron UV Unit
21/03/2023	21/03/2023 5:00	21/03/2023 8:10	03:10	48	N	Failure of the Duron UV Unit
28/03/2023	28/03/2023 21:04	28/03/22023 22:28	01:24	3265	N	Failure of the Duron UV Unit
19/04/2023	19/04/2023 22:37	20/04/2023 7:34	8:57	28599	N	Failure of the Duron UV Unit
4/05/2023	4/05/2023 19:40	5/05/2023 3:00	7:20	15840	N	Failure of the Duron UV Unit

Table 5: Bypass and Overflow Events

Condition (23)

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.

An inflow and infiltration report can be found in Appendix III.

Condition (24)

Within nine months of the commencement of the permit, the permit holder shall establish a community liaison group. That community liaison group should include representatives of the Titahi Bay Residents and Ratepayers Progressive Assn Inc, Regional Public Health, the community as determined by the risk communication strategy, and the permit holder. Nothing in this condition shall be interpreted as requiring any member of the community liaison group to attend any or all of the group's meetings. The permit holder shall report in writing to the Manager, Consents Management, Wellington Regional Council, annually as to the consultation activities undertaken. A copy of the report shall be forwarded by the permit holder to each member of the community liaison group.

A Community Liaison Group was established with representatives of the Titahi Bay Residents and Ratepayers Progressive Assn Inc, Regional Public Health, the community as determined by the risk communication strategy, and the permit holder.

A community liaison group meeting was held on 13th February 2023. The minutes of the meeting were distributed on 17th February 2023.

WGN980083 (02)

Condition (8)

If required by the Manager, Consents Management, Wellington Regional Council, the permit holder shall carry out monitoring of air-borne pathogens to demonstrate compliance with condition 6 or 7. The ,monitoring shall be undertaken at six monthly intervals and the results forwarded to the Manager, Consents Management, Wellington Regional Council within one moth of each survey being conducted. The location of the sample site shall be mutually agreed by the permit holder and the Manager, Consents Management, Wellington Regional Council. The survey s shall be carried out by a standard method to the satisfaction of the Manager, Consents Management, Wellington Regional Council.

The Manager, Consents Management, Wellington Regional Council has not requested these surveys be performed.

Condition (9)

The permit holder shall keep a record of any complaints received. The complaints will be forwarded to the Manager, Consents Management, Wellington Regional Council, within twenty-four hours of the complaint being received by the permit holder. The permit holder shall endeavor to record the complainant's name, time of the incident, wind direction and speed, as well as the plant operating conditions at the time of the complaint.

Table 6 below shows the complaints received for FY22/23. The complaint has been forwarded to the regional council on 12th May,2023.

Since the complaint was not lodged immediately, the wind direction as well as plant operating conditions we not recorded at the time of the incidents. Wellington Water provided a response to the complainant and encouraged him to lodge the complaint as soon as practicable so that the operations team to carry out the investigation.

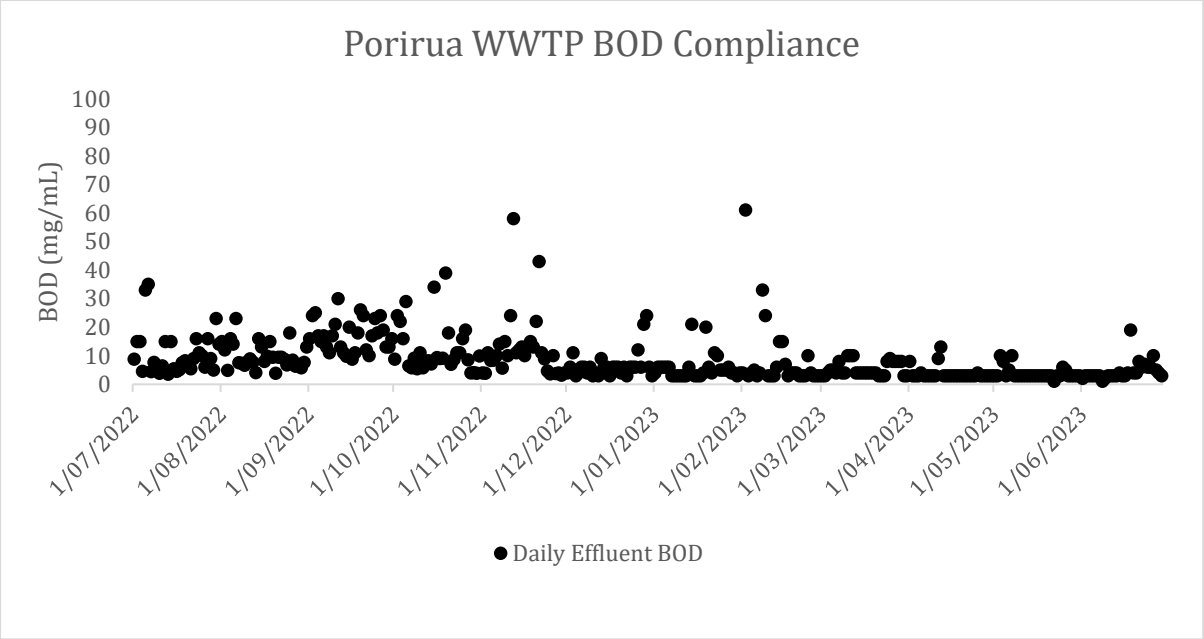
Date and time:	Incident Description	Response
11/05/2023 8:29 pm	Hi there I am [redacted] from [redacted] pikarere street Tītahi Bay i am emailing in regard to the smell being emitted from your sewerage treatment plant.it's a musty poo smell and I have previously complained about it and we have been to a hearing at pcc about smell and in regard to your renewal of resource consent. The smell is getting worse and nothing has been done about it.could someone please come back to me with explanation on where you are at with diffusing the odour and acknowledgement of this email. Smell has occurred on these dates when I have been spending time down the northern part of farm with either calm conditions,sothwest,northwest or westerly winds 2,3,4,6 feb 20 feb 26 feb 10 march 15 ,16,17,18,19,20 march 24,25,26 march 1 April 2 April 5 April 6 April 10,11,12 April 2 may-smell extremely bad	On 12/05/2023, at 1:10 PM, Customer Support Team <customer@wellingtonwater.co.nz> wrote: Hi [redacted]Thank you for your email. We appreciate you taking the time to inform us of this situation. We have notified the relevant teams within Veolia and Wellington Water and your complaint is being looked into as a matter of urgency, with dialogue already underway with management at the treatment plant. In future, to allow us to investigate promptly, can we suggest you call us immediately there is a noticeable problem. This is particularly important with odour complaints, as the situation can rapidly change. The number to use in this situation is 0800 928 371 and it will go directly to Veolia's Duty Manager." Give me a call if any issues, Ngā mihi [redacted] Customer Support Team Ph 04 912 4400

Table 6: Complaints Received FY22/23

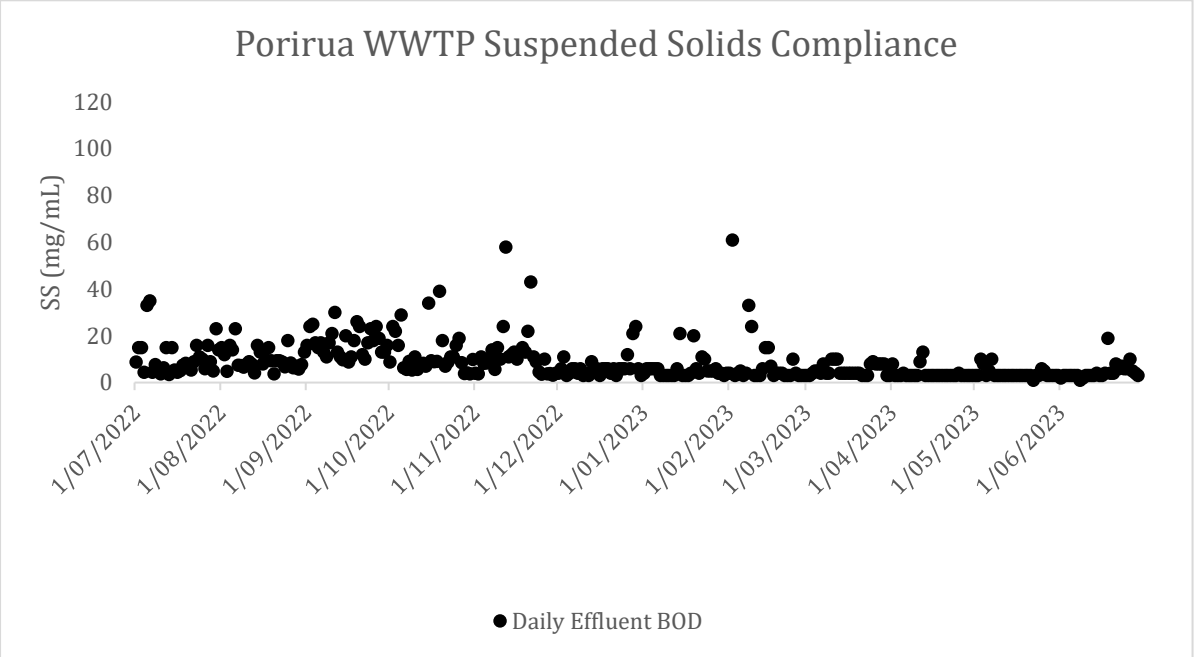
Appendix I

Daily Effluent Quality Results

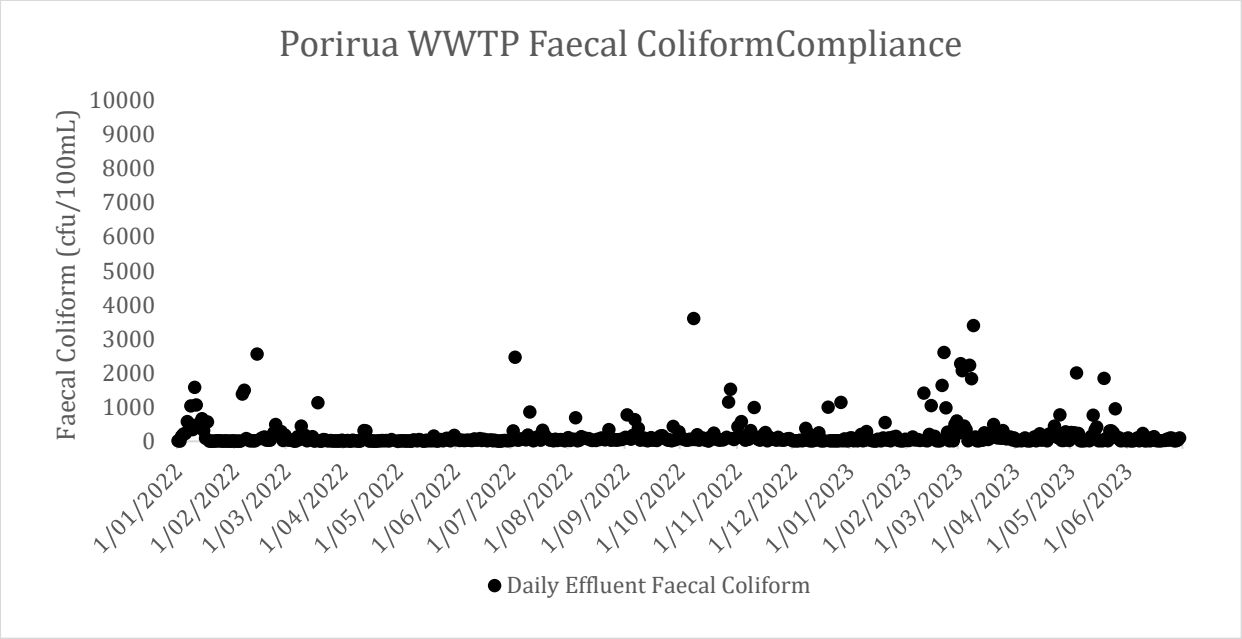
Effluent BOD Results



Effluent Suspended Solid Results



Effluent Faecal Coliforms Results



Appendix II

Shoreline Monitoring Results

Te Korohiwa Rocks

Date	Time	Enterococci	Faecal Coliforms	Wind Direction	Wind Strength	Tide	Sea Conditions	WWTP Bypass/Overflow Event
dd/mm/yyyy	hh:mm	cfu/100mL	cfu/100mL	--	--	--	--	Y/N
8/07/2022	16:00	50	16	N	Moderate	Low	Flood	Y
10/07/2022	18:30	2	2	N	Moderate	High	Ebb	Y - 24hr
12/07/2022	18:30	80	52	S	Light	Mid	Flood	Y - 72hr
14/07/2022	17:05	2	4	N	Light	Low	Flood	Y - 144hr
19/07/2022	9:30	2	2	S	Light	Low	Ebb	Y
20/07/2022	9:25	64	68	S	Light	Low	Flood	Y - 24hr
21/07/2022	17:30	18	2	S	Light	Low	Ebb	Y - 72hr
23/07/2022	17:00	10	4	NW	Light	Low	Ebb	Y - 144hr
27/07/2022	16:05	54	11	S	Moderate	Low	Flood	N
31/07/2022	15:30	13	33	NW	Light	Low	Ebb	Y
02/08/2022	17:25	2	2	SE	Light	Low	Ebb	Y
8/08/2022	14:00	120	84	S	Strong	Mid	Flood	Y
10/08/2022	15:40	2	10	S	Light	Mid	Flood	Y - 24hr
13/08/2022	16:10	2	2	S	Light	Low	Ebb	Y - 72hr
16/08/2022	9:47	24	28	S	Light	Low	Ebb	Y - 144hr
19/08/2022	9:56	2	4	N	Light	Low	Ebb	Y - 24hr
22/08/2022	16:05	52	86	N	Light	High	Ebb	Y - 72hr
24/08/2022	9:43	14	10	N	Strong	High	Flood	Y - 144hr
13/10/2022	06:05	1.8	3.6	S	Light	Low	Ebb	N
13/10/2022	07:25	33	54	S	Light	Low	Ebb	N
27/10/2022	19:45	2.0	4	S	Light	Low	Ebb	Y - 24hr
29/10/2022	09:30	10	22	S	Light	Low	Flood	Y - 72hr
1/11/2022	09:28	2.0	4	S	Light	Low	Ebb	Y - 144hr
15/11/2022	07:20	20	32	N	Moderate	Low	Ebb	N
17/11/2022	9:56	2	2	S	Moderate	Low	Flood	Y - 24hr
19/11/2022	17:46	34	50	N	Moderate	Low	Flood	Y - 72hr
22/11/2022	6:13	8	28	N	Moderate	Low	Ebb	Y - 144hr
16/12/2022	12:08	10	10	E	Light	Low	Ebb	N
17/01/2023	17:10	10	10	NW	Light	Mid	Flood	N
10/02/2023	7:25	10	10	S	Moderat	Low	Flood	N
21/03/2023	15:36:00	140	30	S	Light	Mid	Flood	Y
23/03/2023	09:25:00	10	10	N	Light	Low	Flood	Y - 72hr
26/03/2023	08:14:00	70	30	S	Light	Low	Ebb	Y - 144 hr
28/03/2023	09:30:00	10	10	S	Light	Low	Flood	Y
31/03/2023	09:35:00	10	10	NW	Light	Low	Ebb	Y - 72 hr
03/03/2023	09:40:00	10	10	S	Moderate	Low	Flood	Y - 144 hr
19/04/2023 0:00	5:40:00 am	400	180	N	Strong	Flood	Low	Y
21/04/2023 0:00	10:16:00 am	170	360	N	Light	Flood	High	Y-24h
24/04/2023 0:00	9:44:00 am	10	10	S	Strong	Flood	Mid	Y-72h
26/04/2023 0:00	4:40:00 am	10	10	S	Strong	Ebb	Mid	Y-144h
5/05/2023	15:20	900.0	800	N	Light	Mid	Ebb	Y-24hr
7/05/2023	09:49	10.0	800	W	Light	Low	Flood	Y-72hr
10/05/2023	13:05	10.0	10	NW	Strong	High	Ebb	Y-144hr
12/06/2023	12:45	10.0	10	N	Light	Mid	Flood	N

200m West of Outfall

Date	Time	Enterococci	Faecal Coliforms	Wind Direction	Wind Strength	Tide	Sea Conditions	WWTP Bypass/Overflow Event
dd/mm/yyyy	hh:mm	cfu/100mL	cfu/100mL	--	--	--	--	Y/N
8/07/2022	17:23	40	31	N	Moderate	Low	Flood	Y
10/07/2022	17:15	58	38	N	Moderate	High	Ebb	Y - 24hr
12/07/2022	17:16	42	6	S	Light	Mid	Flood	Y - 72hr
14/07/2022	15:57	6	12	N	Light	Low	Flood	Y - 144hr
19/07/2022	7:37	4	2	S	Light	Low	Ebb	Y
20/07/2022	7:37	25	5.5	S	Light	Low	Flood	Y - 24hr
21/07/2022	16:07	12	4	S	Light	Low	Ebb	Y - 72hr
23/07/2022	17:10	18	60	NW	Light	Low	Ebb	Y - 144hr
27/07/2022	17:16	620	64	S	Moderate	Low	Flood	N
31/07/2022	16:30	170	960	NW	Light	Low	Ebb	Y
02/08/2022	16:07	2	4	SE	Light	Low	Ebb	Y
8/08/2022	16:46	29	20	S	Strong	Mid	Flood	Y
10/08/2022	16:53	4	28	S	Light	Mid	Flood	Y - 24hr
13/08/2022	17:22	10	2	S	Light	Low	Ebb	Y - 72hr
16/08/2022	8:40	2	2	S	Light	Low	Ebb	Y - 144hr
19/08/2022	8:07	58	52	N	Light	Low	Ebb	Y - 24hr
22/08/2022	17:16	30	72	N	Light	High	Ebb	Y - 72hr
24/08/2022	8:40	2	2	N	Strong	High	Flood	Y - 144hr
13/10/2022	05:42	31	84	S	Light	Low	Ebb	N
27/10/2022	19:39	2	4	S	Light	Low	Ebb	Y - 24hr
29/10/2022	07:42	52	480	S	Light	Low	Flood	Y - 72hr
1/11/2022	08:17	2	2	S	Light	Low	Ebb	Y - 144hr
15/11/2022	07:37	12	4	N	Moderate	Low	Ebb	N
17/11/2022	22:26	2	2	S	Moderate	Low	Flood	Y - 24hr
19/11/2022	16:35	64	38	N	Moderate	Low	Flood	Y - 72hr
22/11/2022	5:25	4	8	N	Moderate	Low	Ebb	Y - 144hr
16/12/2022	12:08	10	10	E	Light	Low	Ebb	N
17/01/2023	16:05	45	10	NW	Light	Mid	Flood	N
10/02/2023	7:43	10	10	S	Moderat	Low	Flood	N
15/03/2023	03:05:00	—	1000	S	Light	Low	Flood	Y
21/03/2023	14:36:00	190	1000	S	Light	Mid	Flood	Y
23/03/2023	07:52:00	50	90	N	Light	Low	Flood	Y - 72hr
26/03/2023	08:14:00	120	30	S	Light	Low	Ebb	Y - 144 hr
28/03/2023	08:00:00	60	20	S	Light	Low	Flood	Y
31/03/2023	07:30:00	10	10	NW	Light	Low	Ebb	Y - 72 hr
03/03/2023	08:20:00	1100	1500	S	Moderate	Low	Flood	Y - 144 hr
19/04/2023 0:00	6:50:00	510	110	N	Strong	Flood	Low	Y
21/04/2023 0:00	10:51:00	10	30	N	Light	Flood	High	Y-24h
24/04/2023 0:00	10:55:00	10	10	S	Strong	Flood	Mid	Y-72h
26/04/2023 0:00	4:05:00	10	10	S	Strong	Ebb	Mid	Y-144h
5/05/2023	16:02	50	150	N	Light	Mid	Ebb	Y-24hr
7/05/2023	08:45	10	150	W	Light	Low	Flood	Y-72hr
10/05/2023	12:29	10	10	NW	Strong	High	Ebb	Y-144hr
12/06/2023	12:05	10	10	N	Light	Mid	Flood	N

200m East of Outfall

Date	Time	Enterococci	Faecal Coliforms	Wind Direction	Wind Strength	Tide	Sea Conditions	WWTP Bypass/Overflow Event
dd/mm/yyyy	hh:mm	cfu/100mL	cfu/100mL	--	--	--	--	Y/N
8/07/2022	17:42	5.5	7.3	N	Moderate	Low	Flood	Y
10/07/2022	16:49	62	52	N	Moderate	High	Ebb	Y - 24hr
12/07/2022	19:22	46	6	S	Light	Mid	Flood	Y - 72hr
14/07/2022	17:30	2	2	N	Light	Low	Flood	Y - 144hr
19/07/2022	8:09	6	10	S	Light	Low	Ebb	Y
20/07/2022	8:39	3.6	1.8	S	Light	Low	Flood	Y - 24hr
21/07/2022	17:50	16	60	S	Light	Low	Ebb	Y - 72hr
23/07/2022	17:30	14	8	NW	Light	Low	Ebb	Y - 144hr
27/07/2022	17:30	1.8	1.8	S	Moderate	Low	Flood	N
31/07/2022	16:51	22	40	NW	Light	Low	Ebb	Y
02/08/2022	18:22	6	2	SE	Light	Low	Ebb	Y
8/08/2022	17:42	6	7	S	Strong	Mid	Flood	Y
10/08/2022	17:33	2	4	S	Light	Mid	Flood	Y - 24hr
13/08/2022	17:39	16	4	S	Light	Low	Ebb	Y - 72hr
16/08/2022	8:17	6	6	S	Light	Low	Ebb	Y - 144hr
19/08/2022	8:47	2	7	N	Light	Low	Ebb	Y - 24hr
22/08/2022	17:30	76	130	N	Light	High	Ebb	Y - 72hr
24/08/2022	8:00	2	2	N	Strong	High	Flood	Y - 144hr
13/10/2022	06:05	1.8	3.6	S	Light	Low	Ebb	N
27/10/2022	19:00	4	10	S	Light	Low	Ebb	Y - 24hr
29/10/2022	08:46	10	82	S	Light	Low	Flood	Y - 72hr
1/11/2022	07:55	2	22	S	Light	Low	Ebb	Y - 144hr
15/11/2022	07:56	10	26	N	Moderate	Low	Ebb	N
17/11/2022	21:46	2	2	S	Moderate	Low	Flood	Y - 24hr
19/11/2022	17:30	42	54	N	Moderate	Low	Flood	Y - 72hr
22/11/2022	6:07	44	22	N	Moderate	Low	Ebb	Y - 144hr
16/12/2022	12:08	10	10	E	Light	Low	Ebb	N
17/01/2023	16:25	18	200	NW	Light	Mid	Flood	N
10/02/2023	8:10	10	40	S	Moderat	Low	Flood	N
15/03/2023	03:20:00	—	1000	S	Light	Low	Flood	Y
21/03/2023	16:06:00	160	1000	S	Light	Mid	Flood	Y
23/03/2023	07:36:00	10	10	N	Light	Low	Flood	Y - 72hr
26/03/2023	08:14:00	20	10	S	Light	Low	Ebb	Y - 144 hr
28/03/2023	07:39:00	10	10	S	Light	Low	Flood	Y
31/03/2023	07:52:00	10	10	NW	Light	Low	Ebb	Y - 72 hr
03/03/2023	08:00:00	20	10	S	Moderate	Low	Flood	Y - 144 hr
19/04/2023 0:00	7:12:00	30	50	N	Strong	Flood	Low	Y
21/04/2023 0:00	11:16:00	240	160	N	Light	Flood	High	Y-24h
24/04/2023 0:00	10:48:00	20	30	S	Strong	Flood	Mid	Y-72h
26/04/2023 0:00	3:54:00	10	10	S	Strong	Ebb	Mid	Y-144h
5/05/2023	16:16	270	1100	N	Light	Mid	Ebb	Y-24hr
7/05/2023	08:24	10	1100	W	Light	Low	Flood	Y-72hr
10/05/2023	12:15	30	10	NW	Strong	High	Ebb	Y-144hr
12/06/2023	11:40	10	10	N	Light	Mid	Flood	N

Titahi Bay Beach - South

Date	Time	Enterococci	Faecal Coliforms	Wind Direction	Wind Strength	Tide	Sea Conditions	WWTP Bypass/Overflow Event
dd/mm/yyyy	hh:mm	cfu/100mL	cfu/100mL	--	--	--	--	Y/N
8/07/2022	17:16	13	9.1	N	Moderate	Low	Flood	Y
10/07/2022	17:09	2	2	N	Moderate	High	Ebb	Y - 24hr
12/07/2022	17:10	160	88	S	Light	Mid	Flood	Y - 72hr
14/07/2022	15:50	2	2	N	Light	Low	Flood	Y - 144hr
19/07/2022	7:30	6	8	S	Light	Low	Ebb	Y
20/07/2022	7:30	58	150	S	Light	Low	Flood	Y - 24hr
21/07/2022	16:00	12	10	S	Light	Low	Ebb	Y - 72hr
23/07/2022	16:58	2	6	NW	Light	Low	Ebb	Y - 144hr
27/07/2022	17:06	3.6	1.8	S	Moderate	Low	Flood	N
31/07/2022	16:21	29	72	NW	Light	Low	Ebb	Y
02/08/2022	16:00	50	50	SE	Light	Low	Ebb	Y
8/08/2022	16:37	13	9	S	Strong	Mid	Flood	Y
10/08/2022	16:47	20	240	S	Light	Mid	Flood	Y - 24hr
13/08/2022	17:15	2	2	S	Light	Low	Ebb	Y - 72hr
16/08/2022	8:33	2	2	S	Light	Low	Ebb	Y - 144hr
19/08/2022	8:00	2400	700	N	Light	Low	Ebb	Y - 24hr
22/08/2022	17:07	740	340	N	Light	High	Ebb	Y - 72hr
24/08/2022	8:32	26	14	N	Strong	High	Flood	Y - 144hr
13/10/2022	07:57	68	25	S	Light	Low	Ebb	N
27/10/2022	18:47	14	36	S	Light	Low	Ebb	Y - 24hr
29/10/2022	07:35	260	240	S	Light	Low	Flood	Y - 72hr
1/11/2022	08:10	2	2	S	Light	Low	Ebb	Y - 144hr
15/11/2022	07:50	2	2	N	Moderate	Low	Ebb	N
17/11/2022	22:30	2	2	S	Moderate	Low	Flood	Y - 24hr
19/11/2022	16:27	130	64	N	Moderate	Low	Flood	Y - 72hr
22/11/2022	6:24	2	4	N	Moderate	Low	Ebb	Y - 144hr
16/12/2022	12:08	36	90	E	Light	Low	Ebb	N
17/01/2023	16:35	10	10	NW	Light	Mid	Flood	N
10/02/2023	8:01	10	50	S	Moderat	Low	Flood	N
21/03/2023	14:43	180	50	S	Light	Mid	Flood	Y
23/03/2023	07:59	50	10	N	Light	Low	Flood	Y - 72hr
26/03/2023	08:14	40	10	S	Light	Low	Ebb	Y - 144 hr
28/03/2023	07:53	40	10	S	Light	Low	Flood	Y
31/03/2023	07:37	20	10	NW	Light	Low	Ebb	Y - 72 hr
03/03/2023	08:13	60	30	S	Moderate	Low	Flood	Y - 144 hr
19/04/2023 0:00	6:41:00	2200	360	N	Strong	Flood	Low	Y
21/04/2023 0:00	11:00:00	80	120	N	Light	Flood	High	Y-24h
24/04/2023 0:00	10:35:00	490	200	S	Strong	Flood	Mid	Y-72h
26/04/2023 0:00	4:11:00	10	10	S	Strong	Ebb	Mid	Y-144h
5/05/2023	15:55	240	350	N	Light	Mid	Ebb	Y-24hr
7/05/2023	08:39	10	350	W	Light	Low	Flood	Y-72hr
10/05/2023	12:34	20	10	NW	Strong	High	Ebb	Y-144hr
12/06/2023	12:10	10	10	N	Light	Mid	Flood	N

Titahi Bay Beach

Date	Time	Enterococci	Faecal Coliforms	Wind Direction	Wind Strength	Tide	Sea Conditions	WWTP Bypass/Overflow Event
dd/mm/yyyy	hh:mm	cfu/100mL	cfu/100mL	--	--	--	--	Y/N
8/07/2022	17:00	110	66	N	Moderate	Low	Flood	Y
10/07/2022	17:33	6	8	N	Moderate	High	Ebb	Y - 24hr
12/07/2022	17:35	86	64	S	Light	Mid	Flood	Y - 72hr
14/07/2022	16:14	6	2	N	Light	Low	Flood	Y - 144hr
19/07/2022	7:50	8	10	S	Light	Low	Ebb	Y
20/07/2022	7:49	3.6	1.8	S	Light	Low	Flood	Y - 24hr
21/07/2022	16:25	36	56	S	Light	Low	Ebb	Y - 72hr
23/07/2022	16:46	4	4	NW	Light	Low	Ebb	Y - 144hr
27/07/2022	16:47	540	70	S	Moderate	Low	Flood	N
31/07/2022	16:09	98	180	NW	Light	Low	Ebb	Y
02/08/2022	16:25	2	2	SE	Light	Low	Ebb	Y
8/08/2022	16:22	16	7	S	Strong	Mid	Flood	Y
10/08/2022	16:30	2	2	S	Light	Mid	Flood	Y - 24hr
13/08/2022	17:00	2	2	S	Light	Low	Ebb	Y - 72hr
16/08/2022	8:52	4	4	S	Light	Low	Ebb	Y - 144hr
19/08/2022	9:09	64	40	N	Light	Low	Ebb	Y - 24hr
22/08/2022	16:52	8	18	N	Light	High	Ebb	Y - 72hr
24/08/2022	8:49	2	2	N	Strong	High	Flood	Y - 144hr
13/10/2022	08:15	190	3.6	S	Light	Low	Ebb	N
27/10/2022	20:35	6	24	S	Light	Low	Ebb	Y - 24hr
29/10/2022	07:57	290	240	S	Light	Low	Flood	Y - 72hr
1/11/2022	08:33	2	2	S	Light	Low	Ebb	Y - 144hr
15/11/2022	08:20	2	8	N	Moderate	Low	Ebb	N
17/11/2022	22:43	2	2	S	Moderate	Low	Flood	Y - 24hr
19/11/2022	16:50	100	98	N	Moderate	Low	Flood	Y - 72hr
22/11/2022	5:47	34	32	N	Moderate	Low	Ebb	Y - 144hr
16/12/2022	12:08	55	30	E	Light	Low	Ebb	N
17/01/2023	16:46	10	20	NW	Light	Mid	Flood	N
10/02/2023	8:19	10	10	S	Moderat	Low	Flood	N
21/03/2023	14:53:00	430	50	S	Light	Mid	Flood	Y
23/03/2023	08:13:00	10	20	N	Light	Low	Flood	Y - 72hr
26/03/2023	08:14:00	40	10	S	Light	Low	Ebb	Y - 144 hr
28/03/2023	08:14:00	50	10	S	Light	Low	Flood	Y
31/03/2023	08:36:00	10	10	NW	Light	Low	Ebb	Y - 72 hr
03/03/2023	08:34:00	20	10	S	Moderate	Low	Flood	Y - 144 hr
19/04/2023 0:00	6:30:00	3600	150	N	Strong	Flood	Low	Y
21/04/2023 0:00	10:42:00	70	30	N	Light	Flood	High	Y-24h
24/04/2023 0:00	10:18:00	260	600	S	Strong	Flood	Mid	Y-72h
26/04/2023 0:00	4:18:00	10	10	S	Strong	Ebb	Mid	Y-144h
5/05/2023	15:42	900	600	N	Light	Mid	Ebb	Y-24hr
7/05/2023	09:03	10	600	W	Light	Low	Flood	Y-72hr
10/05/2023	12:42	50	10	NW	Strong	High	Ebb	Y-144hr
12/06/2023	12:20	10	10	N	Light	Mid	Flood	N

Mount Cooper

Date	Time	Enterococci	Faecal Coliforms	Wind Direction	Wind Strength	Tide	Sea Conditions	WWTP Bypass/Overflow Event
dd/mm/yyyy	hh:mm	cfu/100mL	cfu/100mL	--	--	--	--	Y/N
8/07/2022	18:07	20	1.8	N	Moderate	Low	Flood	Y
10/07/2022	16:30	2	2	N	Moderate	Low	Flood	Y - 24hr
12/07/2022	16:00	150	54	N	Moderate	Low	Flood	Y - 72hr
14/07/2022	17:51	2	2	S	Light	Mid	Flood	Y - 144hr
19/07/2022	8:31	2	2	N	Light	Low	Flood	Y
20/07/2022	8:59	82	62	S	Light	Low	Ebb	Y - 24hr
21/07/2022	18:07	52	84	S	Light	Low	Flood	Y - 72hr
23/07/2022	17:51	2	4	S	Light	Low	Ebb	Y - 144hr
27/07/2022	17:46	58	200	NW	Light	Low	Ebb	N
31/07/2022	17:15	11	38	S	Moderate	Low	Flood	Y
02/08/2022	18:00	6	2	NW	Light	Low	Ebb	Y
8/08/2022	17:30	140	130	S	Strong	Mid	Flood	Y
10/08/2022	17:17	4	16	S	Light	Mid	Flood	Y - 24hr
13/08/2022	18:05	4	2	S	Light	Low	Ebb	Y - 72hr
16/08/2022	8:00	46	42	S	Light	Low	Ebb	Y - 144hr
19/08/2022	8:33	140	170	N	Light	Low	Ebb	Y - 24hr
22/08/2022	17:43	24	40	N	Light	High	Ebb	Y - 72hr
24/08/2022	8:17	2	2	N	Strong	High	Flood	Y - 144hr
13/10/2022	08:39	3.6	70	S	Light	Low	Ebb	N
27/10/2022	21:22	2	2	S	Light	Low	Ebb	Y - 24hr
29/10/2022	08:31	2	2	S	Light	Low	Flood	Y - 72hr
1/11/2022	07:30	2	24	S	Light	Low	Ebb	Y - 144hr
15/11/2022	08:50	20	8	N	Moderate	Low	Ebb	N
17/11/2022	22:04	2	4	S	Moderate	Low	Flood	Y - 24hr
19/11/2022	18:30	34	6	N	Moderate	Low	Flood	Y - 72hr
22/11/2022	6:47	18	20	N	Moderate	Low	Ebb	Y - 144hr
16/12/2022	12:08	10	10	E	Light	Low	Ebb	N
17/01/2023	15:40	10	10	NW	Light	Low	Flood	N
10/02/2023	9:00	10	10	S	Moderat	Low	Flood	N
21/03/2023	15:51:00	200	50	S	Light	Mid	Flood	Y
23/03/2023	07:20:00	100	10	N	Light	Low	Flood	Y - 72hr
26/03/2023	08:14:00	30	10	S	Light	Low	Ebb	Y - 144 hr
28/03/2023	07:20:00	10	10	S	Light	Low	Flood	Y
31/03/2023	08:07:00	20	10	NW	Light	Low	Ebb	Y - 72 hr
03/03/2023	07:42:00	30	10	S	Moderate	Low	Flood	Y - 144 hr
19/04/2023 0:00	7:33:00	160	90	N	Strong	Flood	Low	Y
21/04/2023 0:00	11:30:00	30	60	N	Light	Flood	High	Y-24h
24/04/2023 0:00	11:00:00	20	20	S	Strong	Flood	Mid	Y-72h
26/04/2023 0:00	3:40:00	10	10	S	Strong	Ebb	Mid	Y-144h
5/05/2023	16:31	40	200	N	Light	Mid	Ebb	Y-24hr
7/05/2023	08:10	10	200	W	Light	Low	Flood	Y-72hr
10/05/2023	12:02	10	10	NW	Strong	High	Ebb	Y-144hr
12/06/2023	11:55	10	30	N	Light	Mid	Flood	N

Control – Whitireia Park

Date	Time	Enterococci	Faecal Coliforms	Wind Direction	Wind Strength	Tide	Sea Conditions	WWTP Bypass/Overflow Event
dd/mm/yyyy	hh:mm	cfu/100mL	cfu/100mL	--	--	--	--	Y/N
8/07/2022	16:26	11	11	N	Moderate	Low	Flood	Y
10/07/2022	18:00	2	2	N	Moderate	Low	Flood	Y - 24hr
12/07/2022	18:30	80	52	N	Moderate	High	Ebb	Y - 72hr
14/07/2022	16:37	2	2	S	Light	Mid	Flood	Y - 144hr
19/07/2022	9:01	2	4	N	Light	Low	Flood	Y
20/07/2022	8:15	31	7.3	S	Light	Low	Ebb	Y - 24hr
21/07/2022	17:00	46	66	S	Light	Low	Flood	Y - 72hr
23/07/2022	16:27	18	40	S	Light	Low	Ebb	Y - 144hr
27/07/2022	16:30	1.8	1.8	NW	Light	Low	Ebb	N
31/07/2022	15:53	15	25	S	Moderate	Low	Flood	Y
02/08/2022	17:00	2	4	NW	Light	Low	Ebb	Y
8/08/2022	16:05	6	13	S	Strong	Mid	Flood	Y
10/08/2022	16:05	4	4	S	Light	Mid	Flood	Y - 24hr
13/08/2022	16:31	12	4	S	Light	Low	Ebb	Y - 72hr
16/08/2022	9:20	14	16	S	Light	Low	Ebb	Y - 144hr
19/08/2022	9:32	140	190	N	Light	Low	Ebb	Y - 24hr
22/08/2022	16:30	40	130	N	Light	High	Ebb	Y - 72hr
24/08/2022	9:16	26	26	N	Strong	High	Flood	Y - 144hr
13/10/2022	09:15	5.5	5.5	S	Light	Low	Ebb	N
27/10/2022	20:13	2	4	S	Light	Low	Ebb	Y - 24hr
29/10/2022	09:03	2	2	S	Light	Low	Flood	Y - 72hr
1/11/2022	09:01	2	2	S	Light	Low	Ebb	Y - 144hr
15/11/2022	09:25	8	10	N	Moderate	Low	Ebb	N
17/11/2022	21:22	2	4	S	Moderate	Low	Flood	Y - 24hr
19/11/2022	17:20	42	56	N	Moderate	Low	Flood	Y - 72hr
22/11/2022	7:20	12	26	N	Moderate	Low	Ebb	Y - 144hr
16/12/2022	12:08	10	10	E	Light	Low	Ebb	N
17/01/2023	17:10	10	10	NW	Light	Low	Flood	N
10/02/2023	9:32	10	10	S	Moderat	Low	Flood	N
21/03/2023	15:14:00	470	50	S	Light	Mid	Flood	Y
23/03/2023	08:42:00	20	10	N	Light	Low	Flood	Y - 72hr
26/03/2023	08:14:00	10	10	S	Light	Low	Ebb	Y - 144 hr
28/03/2023	08:50:00	60	30	S	Light	Low	Flood	Y
31/03/2023	09:05:00	10	10	NW	Light	Low	Ebb	Y - 72 hr
03/03/2023	09:05:00	30	10	S	Moderate	Low	Flood	Y - 144 hr
19/04/2023 0:00	6:02:00	390	220	N	Strong	Flood	Low	Y
21/04/2023 0:00	10:30:00	10	20	N	Light	Flood	High	Y-24h
24/04/2023 0:00	10:08:00	10	10	S	Strong	Flood	Mid	Y-72h
26/04/2023 0:00	4:25:00	10	10	S	Strong	Ebb	Mid	Y-144h
5/05/2023	15:33	40	50	N	Light	Mid	Ebb	Y-24hr
7/05/2023	09:30	10	50	W	Light	Low	Flood	Y-72hr
10/05/2023	16:10	10	10	NW	Strong	High	Ebb	Y-144hr
12/06/2023	12:25	10	10	N	Light	Mid	Flood	N

Appendix III

Inflow and Infiltration Report

Condition (23)

> 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.

Inflow and Infiltration Report

A variety of mitigation measures have been undertaken to reduce Inflow and Infiltration (I&I) and to contain wastewater within the reticulated wastewater network. This work aims to reduce the demand on the Porirua Wastewater Treatment Plant (WWTP) and to improve waterway health.

Inflow Surveys

Inflow Survey work has been undertaken in the Porirua WWTP Catchment in various sub-catchments, the progress as at June 2023 of the works is shown in Figure 1 below.

Properties in East Tawa are being re-inspected this year. The Tawa Catchment was previously smoke tested in 2017, however phase two of the project (liaison with customers and follow up inspections) were not completed. Inspections have concluded and Wellington Water is awaiting the final report from Stantec which is expected to be delivered soon. Tawa is planned for completion in the 2023-2024 financial year. This area is shown in purple in Figure 1 of this report. It should be noted that although East Tawa within the WCC council boundary, the properties drain to the Porirua WWTP.

The Churton Park Inflow Survey was completed in December 2020, with a total of 39 drainage faults resolved and seven faults outstanding at the end of the project. The Churton Park catchment is located within the Wellington City Council (WCC) boundary but drains to the Porirua WWTP.

The Duck Creek/Whitby Inflow Survey commenced in June 2020 and was completed in 2022. This project was temporarily put on hold in 2021 to enable funding of a Human Health Mitigation Plan Project. Some public faults and major private faults such as cross connections were addressed in 2020- 2021 financial year.

The investigations completed by the Wellington Water Drainage Investigation Team in the 2021- 2022 financial year included smoke testing, dye testing and CCTV inspections for both wastewater and stormwater assets. The investigations were able to identify private and public faults. The inspections completed in the Porirua WWTP Catchment area are listed below:

- Titahi Bay at South Beach Access (smoke/dye: 109 assets, CCTV: 109 assets)
- Semple Street (smoke/dye: 50 assets, CCTV: 137 assets)
- Bothamley Park (smoke/dye: 12 assets, CCTV: 12 assets)

The Wellington Water Drainage Investigation Team is currently working on a number of projects for the 2022-2023 financial year, they are:

- South Beach (Onepoto Stage 2)
- Semple Street Industrial area
- Titahi Bay

Titahi Bay is expected to be finished by the 2022-2023 financial year. South Beach (Onepoto Stage 2) and Semple Street are ongoing. Bothamley Park may require additional work.

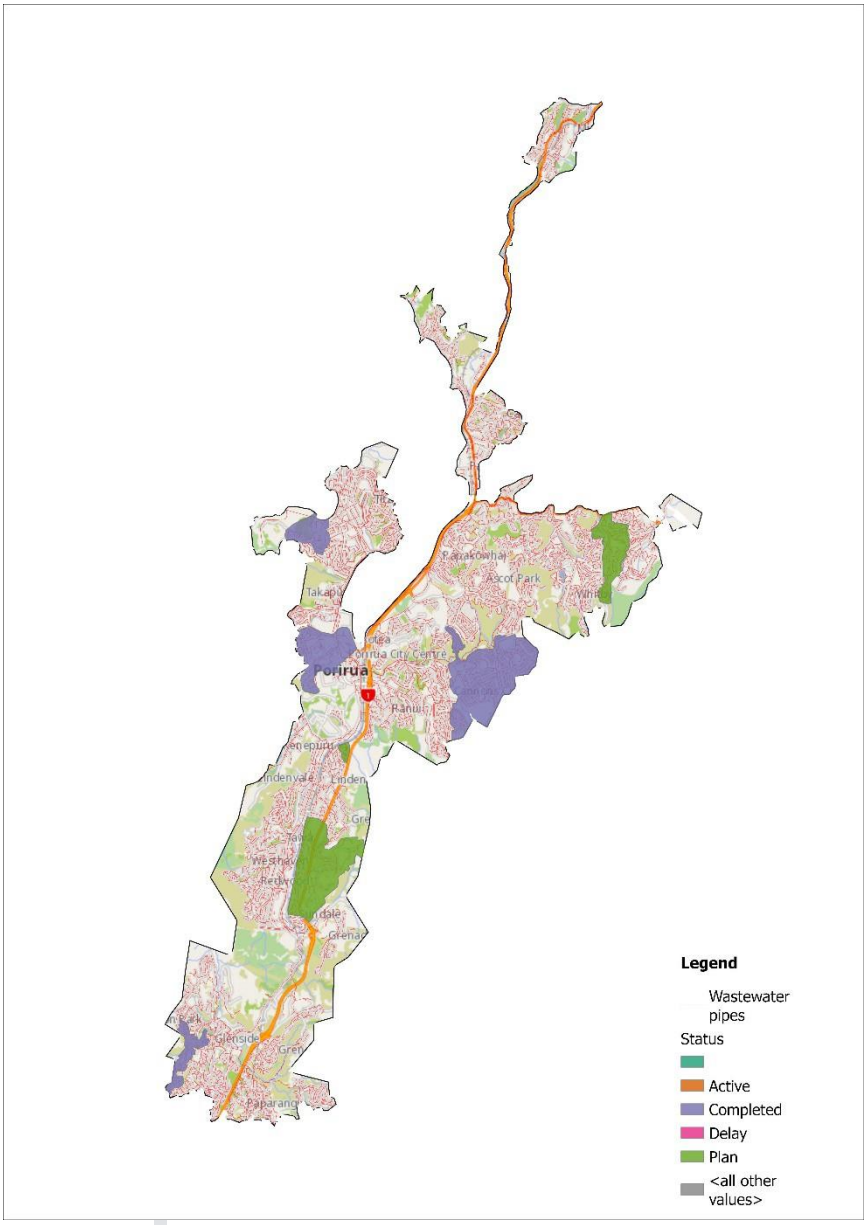


Figure 1 - Inflow Survey Project Locations for Porirua WWTP

Flow Monitoring and Rain Gauge Monitoring

The active monitoring sites within the Porirua WWTP Catchment consist of seven flow, five overflow and two sites that are both flow and overflow. There are also two WCC sites that are in the Porirua WWTP Catchment One monitoring site is located along Porirua City Council (PCC) and WCC boundary, these two sites provide long term records for the WCC flow contributions to Porirua WWTP. The monitoring sites are part of the long-term monitoring contract that is ongoing each year. This data is used to understand network performance and the extent of inflow and infiltration in various catchments. This data also enables investigation of network issues and maintenance of hydraulic models. These monitoring sites are shown below in Figure 2. There are also wastewater monitoring sites located at wastewater pump stations.

There are currently ten regional rain gauges installed and operating in the Porirua WWTP catchment area. The rain gauges sites are listed below:

- Porirua Stream at Woodridge
- Porirua Stream at Seton Nossiter Park
- Porirua Stream at Tawa Junction
- Porirua Stream at Tawa Pool
- Met Station at Porirua Elsdon Park AWS
- Duck Creek at James Cook Reservoir
- Whitireia at RNZ Titahi Bay
- Taupo Stream at Plimmerton The Track
- Taupo Stream at Whenua Tapu

There are also rain gauges installed as part of Regional Long-term Flow and Overflow Monitoring Contract. These are:

- RG01 – Porirua LT Flow Monitoring
- RG01 – 43b Tangere Dr
- RG02 – 25 Herewini St
- RG03 – 2 Pikarere St
- RG04 – Carters Porirua, Kenepuru Dr

This data is used in conjunction with wastewater flow monitoring data to understand the extent of inflow and infiltration.

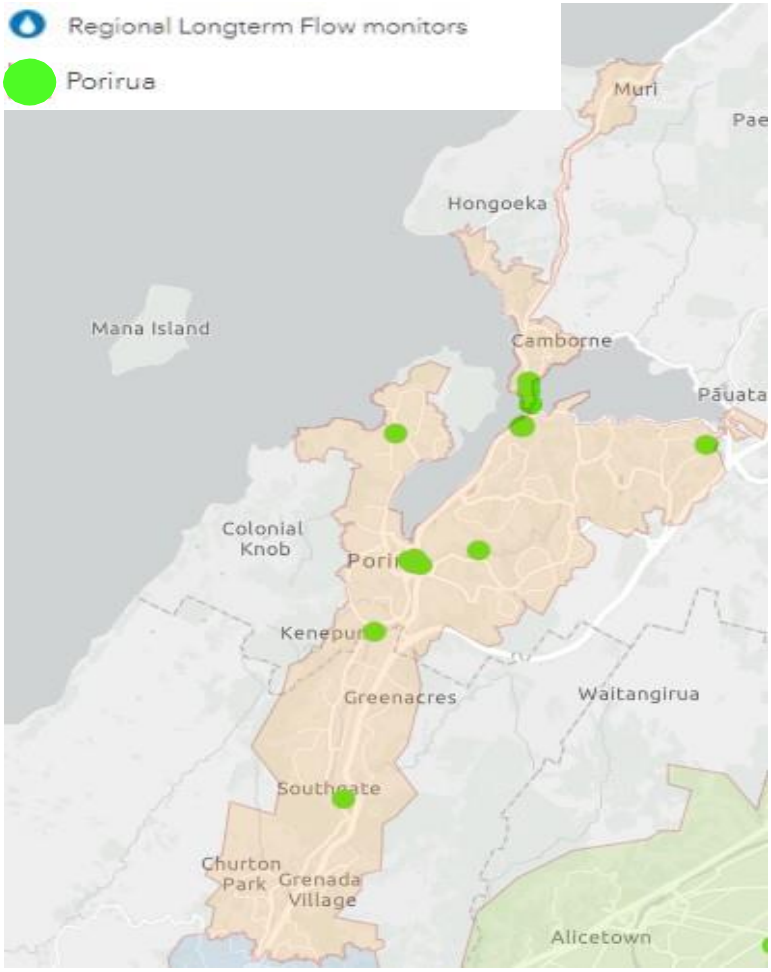


Figure 2 - Map of Active Wastewater Long Term Flow and Overflow Monitoring Sites in Porirua WWTP Catchment

Wastewater Modelling

A strategic model of the Porirua Wastewater treatment plant catchment is under development and planned for delivery by 2023-2024, this model will be used for the network improvement plan.

Condition Assessments

Condition Assessment using closed circuit television (CCTV) footage of wastewater networks is used to identify faults, determine the condition of assets, and inform repair and renewal programs.

Reactive condition assessments completed as of June 2022 2.2 km of wastewater and stormwater pipeline were inspected are shown in Figure 3 below. The primary inspection techniques were CCTV.

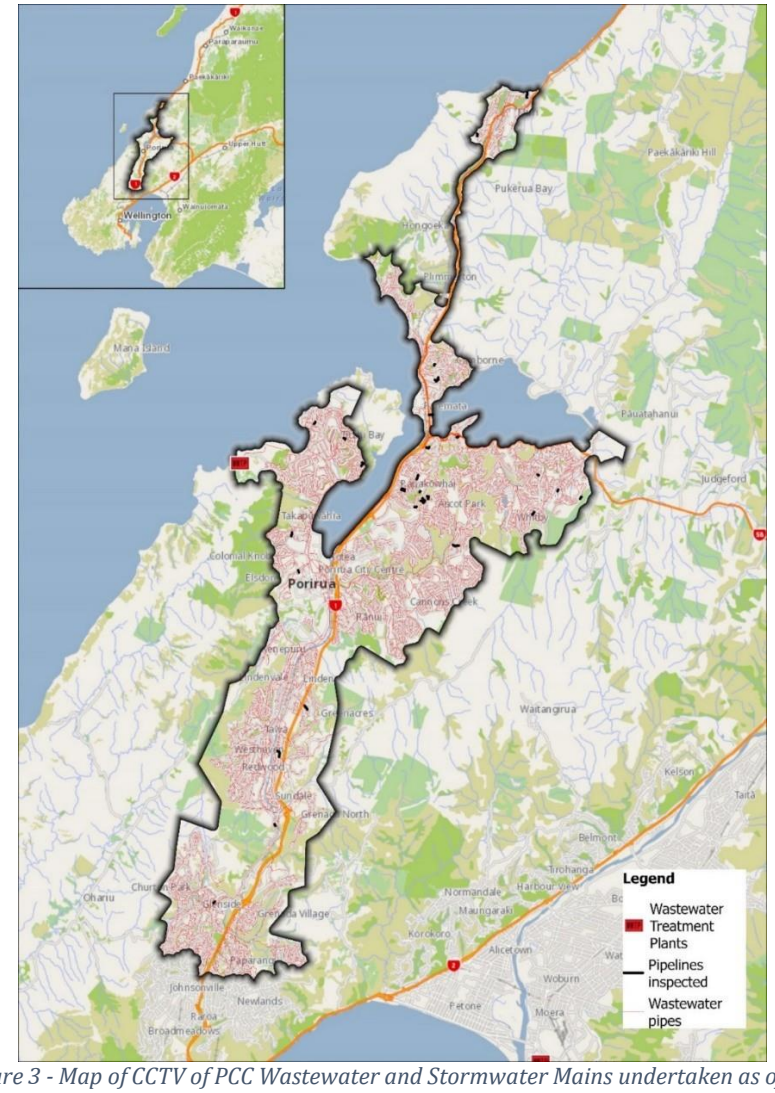


Figure 3 - Map of CCTV of PCC Wastewater and Stormwater Mains undertaken as of June 2022

Stormwater and Wastewater Capital Projects

The following table provides a summary of planned capital projects for wastewater and stormwater assets that were undertaken in 2022-20232 or are scheduled for 2023-2024. Some projects in the table below are noted in both columns as the project is delivered over multiple years or ongoing programmes of work.

Table 1 - Stormwater and Wastewater Capital Projects in the Porirua WWTP Catchment

Activity	2022/2023	2023/2024
Stormwater	• Main Rd (68-74) Tawa Stormwater improvements	• PCC SW manhole cover safety improvements
Wastewater	• Titahi Bay Wastewater pipeline re-lining • WR PCC Wastewater Renewals Titahi Bay 20-21 • Paremata to Porirua WW Trunk Main Upgrade • Tangare Drive WWPS Flow Splitter Replacement	• Plimmerton WW Renewals • Mana Esplanade Pipeline cross connection stage2 • Duck Creek Pump Station wastewater storage tank • Porirua Central City Wastewater Storage

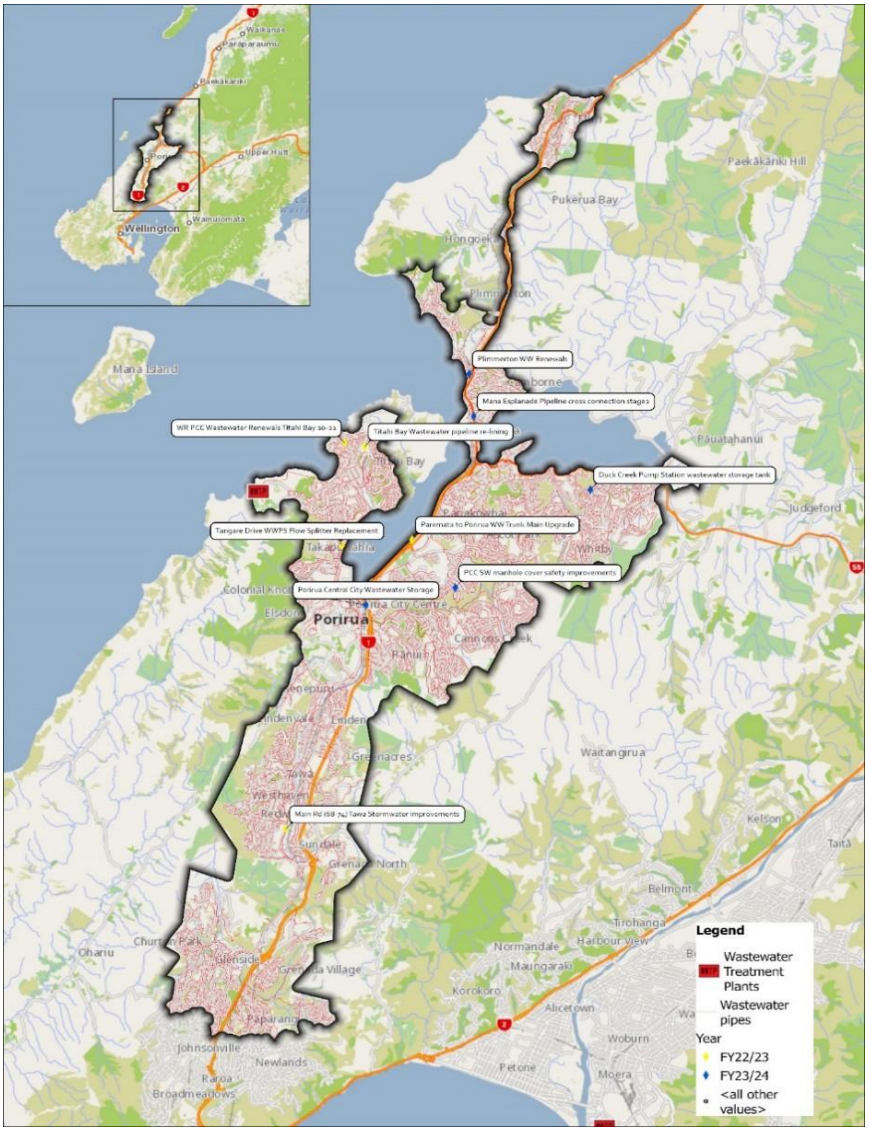


Figure 4 - Map of Capital projects of PCC Wastewater and Stormwater Mains 2022-2024

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Certificate of Analysis
Laboratory Reference:220905-083

Attention:	[redacted]	*Final Report:*	**476999-0**		
Client:	**VEOLIA WATER**	*Report Issue Date:*	**23-Sep-2022**		
Address:	**127 Stewart Duff Drive, Rongotai, Wellington, 6022**	*Received Date:*	**22-Sep-2022**		
		Sampled By:	**Veolia**		
Client Reference:	**Porirua Shoreline Monthly**	*Laboratory Activity Dates:*	**22-Sep-2022**	-	**23-Sep-2022**
Purchase Order:	**7300203118**	*Quote Reference :*	**11592**		

Sample Details		WATERS	WATERS	WATERS	WATERS
Lab Sample ID:		**220905-083-1**	**220905-083-2**	**220905-083-3**	**220905-083-4**
Client Sample ID:					
Sample Date/Time		22/09/2022 06:15	22/09/2022 05:30	22/09/2022 06:09	22/09/2022 06:36
Description:		Porirua Location 1: 200m E of Outfall Grab 1Month	Porirua Location 2: 200m SW of Outfall Grab 1Month	Porirua Location 3: Titahi Bay Beach Point 1 Grab 1Month	Porirua Location 4: Titahi Bay Beach Point 2 Grab 1Month
Microbiology					
Enterococci by Membrane Filtration					
Enterococci	cfu/100 mL	8.0	14	<2.0	4.0
Faecal coliforms by Membrane Filtration					
Faecal coliforms	cfu/100 mL	14	4.0	<2.0	14

Sample Details		WATERS	WATERS	WATERS
Lab Sample ID:		**220905-083-5**	**220905-083-6**	**220905-083-7**
Client Sample ID:				
Sample Date/Time		22/09/2022 05:47	22/09/2022 07:02	22/09/2022 07:32
Description:		Porirua Location 5: Te Horohiwa Rocks Grab 1Month	Porirua Location 6: Mount Cooper Coastal Grab 1Month	Porirua Sample Control Site Grab 1Month
Microbiology				
Enterococci by Membrane Filtration				
Enterococci	cfu/100 mL	2.0	<2.0	6.0
Faecal coliforms by Membrane Filtration				
Faecal coliforms	cfu/100 mL	2.0	4.0	8.0

*Results marked with * are not accredited to International Accreditation New Zealand. A dash indicates no test performed.*

Where samples have been supplied by the client, they are tested as received.
The results of analysis contained in this report relate only to the sample(s) tested. Where sample collection was performed by the laboratory, the results of analysis contained in this report relate only to the sample(s) collected.

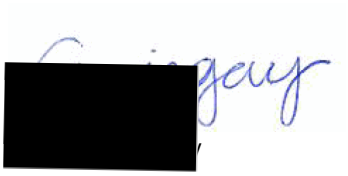
Reference Methods
The sample(s) referred to in this report were analysed by the following method(s)

Analyte	Method Reference	MDL	Samples	Location
Microbiology				
Enterococci by Membrane Filtration				
Enterococci	APHA (online edition) 9230 C	1 cfu/100 mL	All	Wellington
Faecal coliforms by Membrane Filtration				
Faecal coliforms	APHA (online edition) 9222 D	1 cfu/100 mL	All	Wellington

The method detection limit (MDL) listed is the limit attainable in a relatively clean matrix. If dilutions are required for analysis the detection limit may be higher. For more information please contact the Compliance and Projects Manager.

Samples, with suitable preservation and stability of analytes, will be held by the laboratory for a period of two weeks after results have been reported, unless otherwise advised by the submitter.

Watercare Laboratory Services is a division of Watercare Services Limited .



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