



Investigation report -
Porirua UVT Event - 2 May 2025

Control Sheet

Document Title:	Investigation report - Porirua UVT Event 2 May 2025
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Document Control

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Incident Outline

Date	20 May 2025
Location	Porirua Waste Water Treatment Plant (PWWTP)
Consent Ref	Resource Consent WGN200229 [36816] applies, specifically conditions 12B, 12C and 12D.
Background	<p>Average hourly UV transmissivity fell below 45% on 30 April.</p> <p>As per conditions referred above, if / when the hourly average UV transmissivity reduces below 45% the Regional Council is to be notified and an investigation shall be undertaken.</p>
Description	<p>On 30 April, the Porirua Wastewater Treatment Plant experienced significant hydraulic overloading due to high flows¹. As a result of these high flows, all clarifiers reached maximum capacity, leading to an unplanned discharge.</p> <p>The UVT sensors in both channels recorded zero / near zero readings between 30 April - 2 May.</p> <p>Consent Requirements: If the hourly average UV transmissivity recorded in accordance with 12C reduces below 45% it is a consent requirement to:</p> <ol style="list-style-type: none"> Notify the Manager as soon as practicable; and Initiate an investigation that meets the following requirements. <p>Action (a) was completed on 5 May in the discharge notifications (appended).</p> <p>This report addresses action (b). The investigation must be communicated within 10 days of the event, which, in this instance, is Wednesday 14 May.</p> <p>It must address the following four details:</p> <ol style="list-style-type: none"> 1. Consider the results of the suspended solids monitoring, UV transmissivity from the daily grab samples, and other relevant plant performance measurements routinely taken by the consent holder. 2. Assess the likely cause of the UV transmissivity reducing below 45%. 3. If considered necessary, recommend further investigations, improvements, operational actions (including changes to the Operational Management and Contingency Plan (OMCP)) or upgrades to reduce the risk of similar UV transmissivity records occurring in the future. 4. Include an implementation programme for any recommendations.

¹ Severe weather at the time caused weather-related discharges for all four WWTPs in Wellington.

Chronology		
Date	Time	Activity
30 April	21:18	Discharge commences
30 April	22:33	Initial discharge notification issued. It noted <ul style="list-style-type: none"> • The discharge was unconsented, • Partially treated wastewater was being discharged, • UVT was below 45% (instant value), • Elevated clarifier blanket levels indicate a sludge carry-over occurring due to high flows into the Plant.
1 May	05:12	Discharge ceases
1 May	09:18	Discharge resumes
1 May	13:12	Discharge ceases
2 May	03:24	Discharge resumes
2 May	14:58	Discharge ceases
2 May	17:24	Discharge resumes
2 May	22:31	Discharge ceases
5 May	12:53	Four final discharge notifications issued. Each noted: <ul style="list-style-type: none"> • The discharge was unconsented, • Average and peak inflows, • Was caused by high rainfall that exceeded the Plant's capacity, • UVT was below 45% (UVT sensors in both channels recorded zero / near zero readings on four instances between 30 April - 2 May), • Signs placed along coastline to alert water users, • Sampling monitoring initiated (see results below), • Sludge carry-over occurred due to high flows into the Plant, • Operators were working to minimise any carryover, • Duration of discharge and • Volume discharged.

Ref	Consent WGN200229 [36816] - Condition 12D Investigation Scope	
a	Notify the Manager as soon as practicable	Notification issued on 5 May 2025
b ii	Results of the suspended solids monitoring, UV transmissivity from the daily grab samples, and other relevant plant performance measurements routinely taken.	Refer Process / Quality Control section below.
b iii	Assessment of the likely cause of the UV transmissivity reducing below 45%.	<p>The region experienced a significant weather event that impacted all four WWTPs.</p> <p>On 30 April 2025 at 21:18 the Porirua Wastewater Treatment Plant experienced significant hydraulic overloading due to high flows. As a result of these high flows, all clarifiers reached maximum capacity, leading to an unplanned discharge and impacted the UV transmissivity.</p>
b iv	If considered necessary, recommend further investigations, improvements, operational actions (including changes to the OMCP) or upgrades to reduce the risk of similar UV transmissivity records occurring in the future.	A solid reduction programme is planned to bring down the solids to reduce the clarifier blanket level. This is expected to provide more capacity for the clarifiers to receive high flow and reduce the risk of solid carry over during rain events.
b v	Include an implementation programme for any recommendations.	<p>This will be a multi-day programme (estimated at 14 days) to reduce the MLSS in aeration basin from ~6000 mg/l to ~4000-4500 mg/L (the target recommended by Stantec is 3500 mg/l)</p> <p>This work involves increasing sludge production by dewatering more and moving more bins out of the plant to the landfill. After the initial (14 day) period, the results will be assessed and evaluated for effect.</p> <p>Improving sludge handling capacity, so it doesn't build up in the system, will reduce the risk of Sludge carry-over occurring with the consequential impact on the UV systems.</p>

Process Quality Control

UVT Trends

Figure 1: UVT SCADA Trend - TAK system 30 April - 5 May 2025

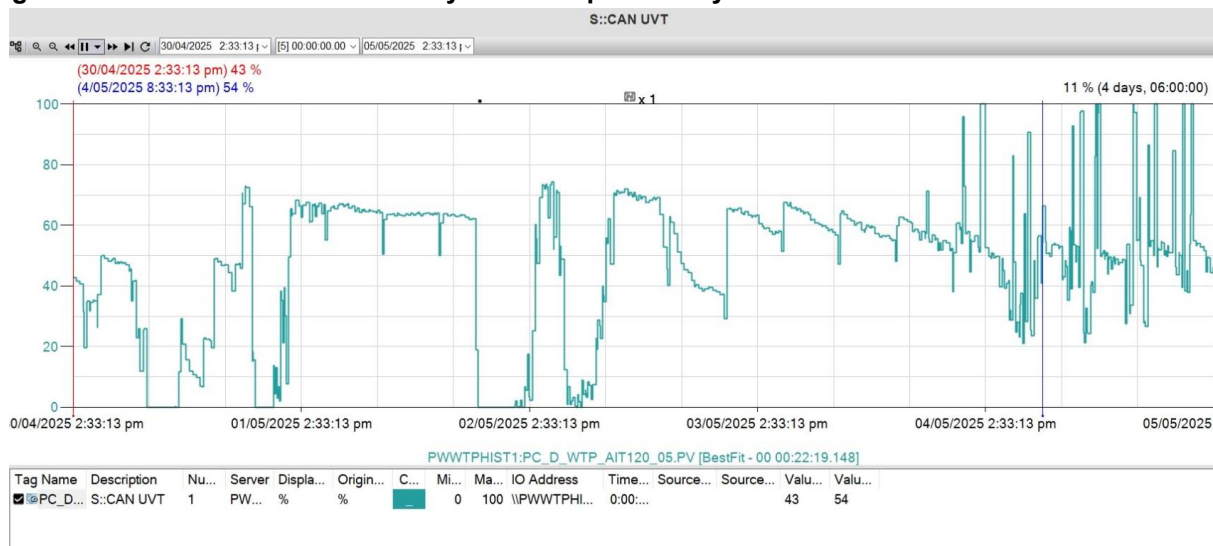
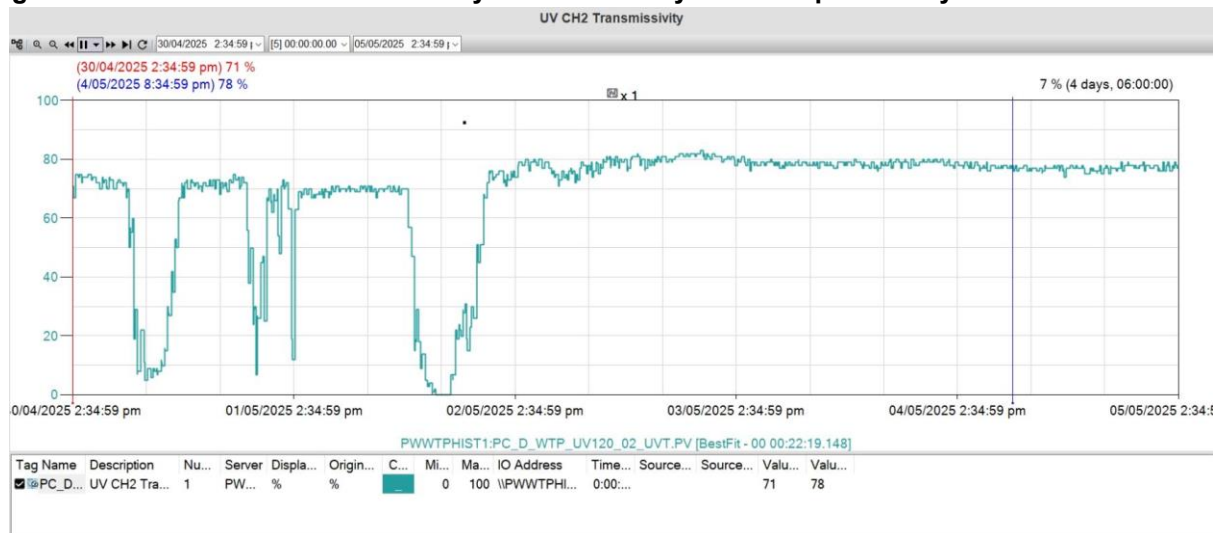


Figure 2: UVT SCADA Trend - Duron System - Duron system 30 April - 5 May 2025



Inlet Flows Porirua WWTP 9 April - 7 May 2025			
Day	Average	Peak	Total
	L/s	L/s	m3
9 Apr	251	835	21,675
10 Apr	236	839	20,353
11 Apr	221	823	19,133
12 Apr	244	850	21,057
13 Apr	250	858	21,605
14 Apr	230	818	19,889
15 Apr	227	842	19,596
16 Apr	217	844	18,710
17 Apr	208	876	17,947
18 Apr	237	1,201	20,492
19 Apr	238	856	20,552
20 Apr	506	1,422	43,737
21 Apr	369	1,238	31,898
22 Apr	259	852	22,378
23 Apr	248	858	21,407
24 Apr	243	1,214	21,003
25 Apr	248	857	21,398
26 Apr	237	860	20,520
27 Apr	265	859	22,915
28 Apr	236	860	20,404
29 Apr	237	860	20,488
30 Apr	627	1,288	54,161
1 May	693	1,325	59,902
2 May	826	1,303	71,405

3 May	434	1,201	37,535
4 May	302	831	26,101
5 May	267	836	23,045
6 May	242	846	20,949
7 May	239	848	20,667

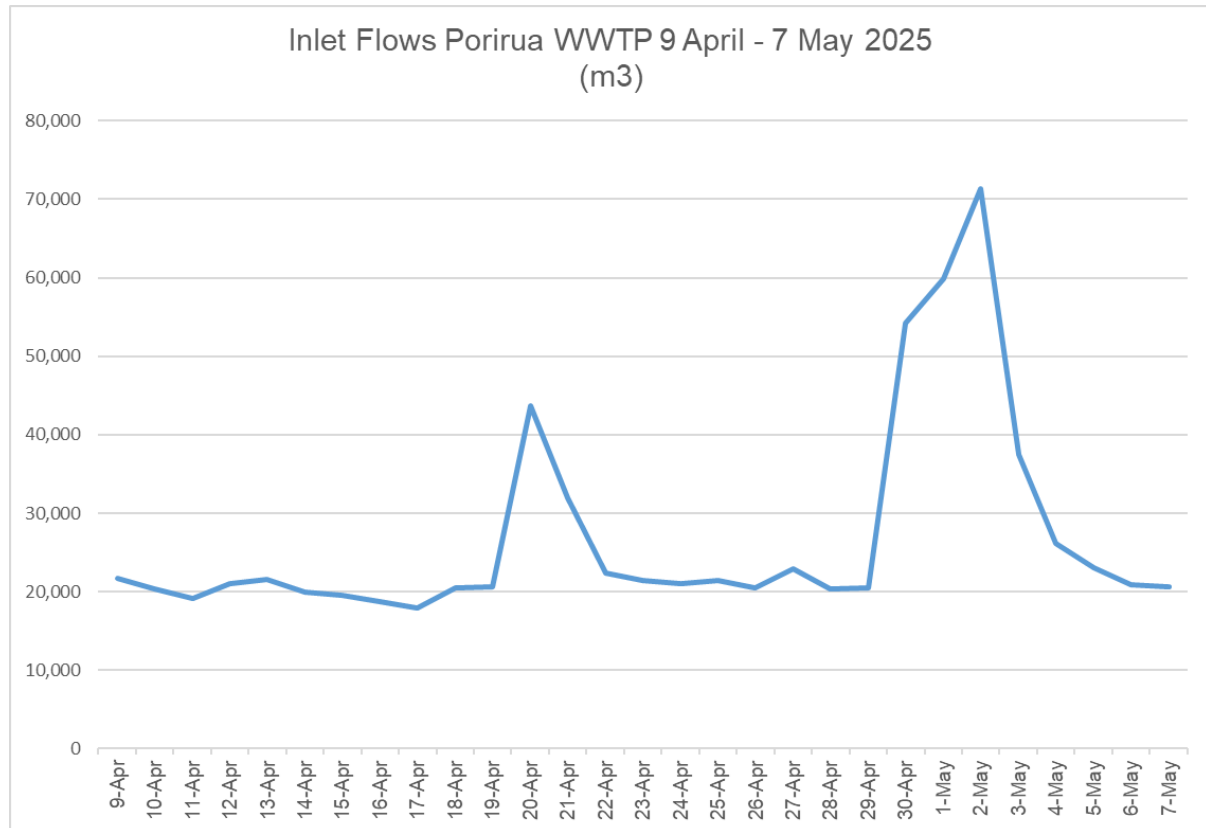


Table 1 and Figure 3 - Porirua WWTP Inflows - April 2025

Table 1 and figure 3 above shows a significant spike for inflows on 20th and 21st April.

BOD₅ (NZ.WEL.POR.WE01.TOT_BOD5.DRESULT)					
	Daily Results	90 Day Geometric Mean	90 Day Percentile	Limit	
Date	g/m³	g/m³	g/m³	Geometric Mean	Percentile
30/04/2025	82	15.9	31	30	90
01/05/2025	42	16.2	31.2	30	90
02/05/2025	27	16.5	31.2	30	90
03/05/2025	9	16.5	31.2	30	90
04/05/2025	15	16.6	31.2	30	90

05/05/2025	19	16.8	31.2	30	90
06/05/2025	14	16.9	31.2	30	90
07/05/2025	11	17	31.2	30	90

Table 2 - BOD5 results 21-24 April 2025

Suspended Solids (NZ.WEL.POR.WE01.TSS.DRESULT)					
	Daily Results	90 Day Geometric Mean	90 Day Percentile	Limit	
Date	g/m3	g/m3	g/m3	Geometric Mean	Percentile
30/04/2025	268	8.3	16.3	30	90
01/05/2025	117	8.6	19	30	90
02/05/2025	42	8.8	19.1	30	90
03/05/2025	6	8.7	19.1	30	90
04/05/2025	6	8.7	19.1	30	90
05/05/2025	9	8.7	19.1	30	90
06/05/2025	6	8.8	19.1	30	90
07/05/2025	6	8.8	19.1	30	90

Table 3 - Suspended Solids results 21-24 April 2025

Clarifier blanket height levels (meters)						
Date	Morning			Afternoon		
	#1	#2	#3	#1	#2	#3
30/04/2025	2.5	1.7	0.5	2.6	2.0	0.5
01/05/2025	3.0	3.0	2.0	3.0	2.9	2.5
02/05/2025	3.0	2.8	Full	Full	3.0	Fu;;
03/05/2025	2.5	2.0	0.5	Saturday - no reading taken		
04/05/2025	2.2	1.8	0.3	Sunday - no reading taken		
05/05/2025	1.3	1.0	0.7	1.5	0.8	0.7
06/05/2025	1.7	1.1	0.8	1.5	1.4	0.6
07/05/2025	1.4	1.7	0.6	1.5	2.0	0.5

Table 4 - Clarifier blanket height levels 21-24 April 2025

Shoreline Monitoring Results 1 - 5 May 2025

Date	Time	Total Ammonia Nitrogen	Dissolved Reactive Phosphorus	Enterococci	Nitrate Nitrogen	Nitrite Nitrogen	Salinity	Total Nitrogen	Total Phosphorus
dd/mm	hh:mm	g/m3	g/m3	cfu/100mL	g/m3	g/m3	ppt	g/m3	g/m3
Control									
01/05/2025	08:01	<0.01	0.005	180	<0.1	<0.1	34	0.128	<0.025
02/05/2025	10:17	0.94	<0.002	80	<0.1	<0.1	35	0.197	0.062
03/05/2025	09:46	0.27	<0.002	20	<0.1	<0.1	34	0.180	0.043
04/05/2025	09:30	0.31	<0.002	<10	<0.1	<0.1	35	0.255	0.057
05/05/2025	07:53	0.32	<0.002	<10	<0.1	<0.1	35	0.195	0.050
140m East of Outfall									
01/05/2025	08:49	0.29	0.031	70	<0.1	0.14	35	0.299	0.108
02/05/2025	09:44	0.26	0.013	120	<0.1	<0.1	35	0.308	0.147
03/05/2025	09:21	0.29	0.034	<10	<0.1	<0.1	35	0.207	0.058
04/05/2025	08:46	0.27	0.014	<10	<0.1	<0.1	34	0.493	0.060
05/05/2025	08:30	0.27	0.010	20	<0.1	<0.1	35	0.265	0.048
200m South West of Outfall									
01/05/2025	08:57	0.02	0.012	30	<0.1	<0.1	35	0.227	<0.01
02/05/2025	09:34	0.33	0.032	220	<0.1	<0.1	34	0.482	0.298
03/05/2025	09:14	0.31	0.029	20	<0.1	<0.1	35	0.288	0.072
04/05/2025	08:56	0.40	0.087	170	<0.1	<0.1	25	0.582	0.244
05/05/2025	08:36	0.29	0.017	10	<0.1	<0.1	35	0.197	<0.05
Titahi Bay Surf Club									
01/05/2025	08:18			280			35		
02/05/2025	10:01			100			35		
03/05/2025	08:05			10			35		
04/05/2025	09:15			10			35		
05/05/2025	07:35			10			35		

Table 5 - Monitoring Results following Discharges on 30 April 2025

Please note that the samples were analysed by the contract laboratory and that bathing beach guidelines were used to generate the colouring for the Enterococci samples. The following are the limits for both bacterial species:

Bacterial Species	Amber Limit	Red Limit
	cfu/100mL	cfu/100mL
Enterococci	140	280

Table 5 - Bathing Beach Guidelines for Enterococci

Comment - The 'red' reading of 280 on 1/05/25, coincides with a 'amber' limit reading at the Control Site. This has been observed previously and indicates high background enterococci during wet weather events. Across all sites, elevated enterococci dissipate within 48 hours, sometimes sooner.

Notification

Notifications were issued on 5 May in accordance with condition 12D (a) of the Consent and are appended.

No action taken other than notification.

Conclusion

As a result of high flows, all clarifiers reached maximum capacity, which, in turn, led to an unplanned discharge, and impacted the UV transmissivity.

Appendix A - Photos

Monitoring Photos - 1 May



Outfall



140m East of Outfall



200m South West of Outfall



Surf Club



Control Site

Monitoring Photos - 2 May



Outfall



140m East of Outfall



200m South West of Outfall



Surf Club



Control Site

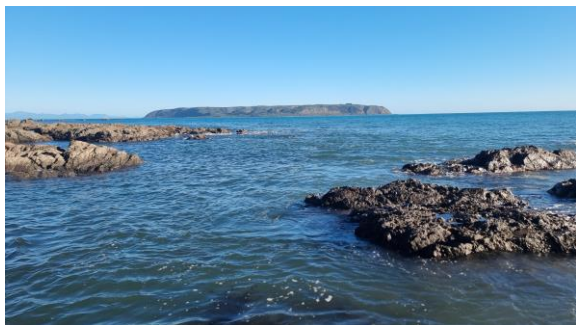
Monitoring Photos - 3 May



Outfall



140m East of Outfall



200m South West of Outfall



Surf Club



Control Site

Monitoring Photos - 4 May



Outfall



140m East of Outfall



200m SW of Outfall



Surf Club



Control Site

Monitoring Photos - 5 May



Outfall



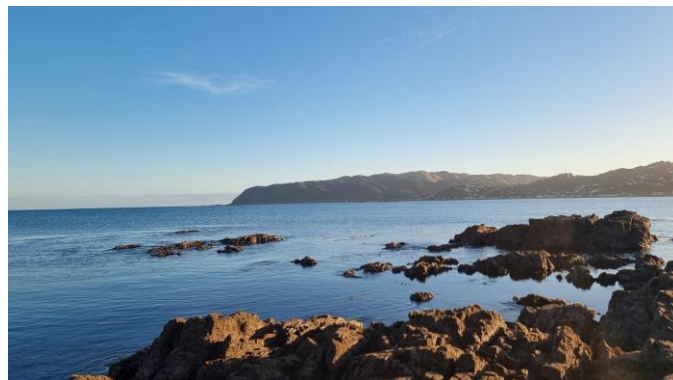
140m East of Outfall



200m SW of Outfall



Surf Club



Control Site

Appendix B - Notifications



Document:
Date: 19/11/2019

Temporary Wastewater Discharge & Notification Form

Site:	Porirua WWTP	Notifier:	
Phone:	0800-928-371	Phone:	
Date:	5/5/2025	E-mail:	

Discharge Information		
Type of discharge (e.g. Partially treated wastewater, Fully treated wastewater, etc.) Location		Biologically treated but undisinfected effluent discharged into Rukutane point
Cause		High inflows due to wet weather
Consent	Number	WGN200229 [36816]
	Consented? (Y/N)	N
Weather Conditions		Wet weather
Actions Taken		Signs placed along the coastline to alert water users of areas which may be impacted by this event. Sampling monitoring initiated.
Comments		Porirua wastewater treatment plant had a UVT lower than 45% and elevated clarifier blanket levels. Sludge carryover occurred due to high flows into the plant. The operators monitored the plant via the SCADA system and made adjustments to minimise any carryover

Is there any direct contact between wastewater and the following: (Y/N)	
Human food sources (i.e. puha, watercress, grazing pastures)	N
Human drinking water supply source	N
Surface or ground water systems	N
Human recreation activities both land and water	Y

Discharge Parameters		Units	Result
Date	Start	DD/MM/YYYY HH:MM	30/04/2025 21:18
	Stop	DD/MM/YYYY HH:MM	01/05/2025 05:12
Duration		hh:mm	07:54

Average Flow	Plant Inlet	litres per second	617
	Discharge to Coastal Marine Area	litres per second	677
Maximum Flow	Plant Inlet	litres per second	1221
	Discharge to Coastal Marine Area	litres per second	1275
Total Treated Volume		cubic metres	19256
Discharge Volume	Coastal Marine Area	cubic metres	19256
Dilution Ratio		--	

Interested Party	Contact Details	
	Phone Number	Email Address
Wellington Water	04 912 4400	customer@wellingtonwater.co.nz WWTPManager@wellingtonwater.co.nz
Greater Wellington Regional Council	0800 496 734	notifications@gw.govt.nz
Regional Public Health	04 570 9002	healthprotection@huttvalleydhb.org.nz

Temporary Wastewater Discharge & Notification Form

Site:	Porirua WWTP	Notifier:	
Phone:	0800-928-371	Phone:	
Date:	5/5/2025	E-mail:	

Discharge Information		
Type of discharge (e.g. Partially treated wastewater, Fully treated wastewater, etc.)		Biologically treated but undisinfected effluent discharged into Rukutane point
Location		
Cause		High inflows due to wet weather
Consent	Number	WGN200229 [36816]
	Consented? (Y/N)	N
Weather Conditions		Wet weather
Actions Taken		Signs placed along the coastline to alert water users of areas which may be impacted by this event. Sampling monitoring initiated.
Comments		Porirua wastewater treatment plant had a UVT lower than 45% and elevated clarifier blanket levels. Sludge carryover occurred due to high flows into the plant. The operators monitored the plant via the SCADA system and made adjustments to minimise any carryover

Is there any direct contact between wastewater and the following: (Y/N)	
Human food sources (i.e. puha, watercress, grazing pastures)	N
Human drinking water supply source	N
Surface or ground water systems	N
Human recreation activities both land and water	Y

Discharge Parameters		Units	Result
Date	Start	DD/MM/YYYY HH:MM	01/05/2025 09:18
	Stop	DD/MM/YYYY HH:MM	01/05/2025 13:12
Duration		hh:mm	03:54

Average Flow	Plant Inlet	litres per second	1021
	Discharge to Coastal Marine Area	litres per second	1017
Maximum Flow	Plant Inlet	litres per second	1232
	Discharge to Coastal Marine Area	litres per second	1282
Total Treated Volume		cubic metres	14275
Discharge Volume	Coastal Marine Area	cubic metres	14275
Dilution Ratio		--	

Interested Party	Contact Details	
	Phone Number	Email Address
Wellington Water	04 912 4400	customer@wellingtonwater.co.nz WWTPManager@wellingtonwater.co.nz
Greater Wellington Regional Council	0800 496 734	notifications@gw.govt.nz
Regional Public Health	04 570 9002	healthprotection@huttvalleydwb.org.nz



Temporary Wastewater Discharge & Notification Form

Site:	Porirua WWTP	Notifier:	
Phone:	0800-928-371	Phone:	
Date:	5/5/2025	E-mail:	

Discharge Information		
Type of discharge (e.g. Partially treated wastewater, Fully treated wastewater, etc.)	Biologically treated but undisinfected effluent discharged into Rukutane point	
Location		
Cause	High inflows due to wet weather	
Consent	Number	WGN200229 [36816]
	Consented? (Y/N)	N
Weather Conditions	Wet weather	
Actions Taken	Signs placed along the coastline to alert water users of areas which may be impacted by this event. Sampling monitoring initiated.	
Comments	Porirua wastewater treatment plant had a UVT lower than 45% and elevated clarifier blanket levels. Sludge carryover occurred due to high flows into the plant. The operators monitored the plant via the SCADA system and made adjustments to minimise any carryover	

Is there any direct contact between wastewater and the following: (Y/N)	
Human food sources (i.e. puha, watercress, grazing pastures)	N
Human drinking water supply source	N
Surface or ground water systems	N
Human recreation activities both land and water	Y

Discharge Parameters		Units	Result
Date	Start	DD/MM/YYYY HH:MM	02/05/2025 03:24
	Stop	DD/MM/YYYY HH:MM	02/05/2025 14:58
Duration		hh:mm	11:34

Average Flow	Plant Inlet	litres per second	951
	Discharge to Coastal Marine Area	litres per second	962
Maximum Flow	Plant Inlet	litres per second	1300
	Discharge to Coastal Marine Area	litres per second	1394
Total Treated Volume		cubic metres	40068
Discharge Volume	Coastal Marine Area	cubic metres	40068
Dilution Ratio		--	

Interested Party	Contact Details	
	Phone Number	Email Address
Wellington Water	04 912 4400	customer@wellingtonwater.co.nz WWTPManager@wellingtonwater.co.nz
Greater Wellington Regional Council	0800 496 734	notifications@gw.govt.nz
Regional Public Health	04 570 9002	healthprotection@huttvalleydwb.org.nz



Temporary Wastewater Discharge & Notification Form

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Phone:	0800-928-371	Phone:	
Date:	5/5/2025	E-mail:	

Discharge Information		
Type of discharge (e.g. Partially treated wastewater, Fully treated wastewater, etc.)		Biologically treated but undisinfected effluent discharged into Rukutane point
Location		
Cause		High inflows due to wet weather
Consent	Number	WGN200229 [36816]
	Consented? (Y/N)	N
Weather Conditions		Wet weather
Actions Taken		Signs placed along the coastline to alert water users of areas which may be impacted by this event. Sampling monitoring initiated.
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Is there any direct contact between wastewater and the following: (Y/N)	
Human food sources (i.e. puha, watercress, grazing pastures)	N
Human drinking water supply source	N
Surface or ground water systems	N
Human recreation activities both land and water	Y

Discharge Parameters		Units	Result
Date	Start	DD/MM/YYYY HH:MM	02/05/2025 17:24
	Stop	DD/MM/YYYY HH:MM	02/05/2025 22:31
Duration		hh:mm	05:07

Average Flow	Plant Inlet	litres per second	724
	Discharge to Coastal Marine Area	litres per second	807
Maximum Flow	Plant Inlet	litres per second	1263
	Discharge to Coastal Marine Area	litres per second	960
Total Treated Volume		cubic metres	14857
Discharge Volume	Coastal Marine Area	cubic metres	14857
Dilution Ratio		--	

Interested Party	Contact Details	
	Phone Number	Email Address
Wellington Water	04 912 4400	customer@wellingtonwater.co.nz WWTPManager@wellingtonwater.co.nz
Greater Wellington Regional Council	0800 496 734	notifications@gw.govt.nz
Regional Public Health	04 570 9002	healthprotection@huttvalleydwb.org.nz