Investigation report - Porirua UVT Event - 21 April 2025

Control Sheet

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Document Control

Version	Status	Date	Details of Revision
0.1	Draft	6 May 2025	Draft Investigation report - Porirua UV Event 19 Feb 2025
0.2	Review	6 May 2025	Internal Review
1.0	Final	7 May 2025	Approved for release

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Table of contents

Incident Outline

Date	5 May 2025
Location	Porirua Waste Water Treatment Plant (PWWTP)
Consent Ref	Resource Consent WGN200229 [36816] applies, specifically conditions 12B, 12C and 12D.
Background	Average hourly UV transmissivity fell below 45% on 21 April 2025. 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.
Description	On 21 April 2025 at 08:04, the Porirua Wastewater Treatment Plant experienced significant hydraulic overloading due to high flows[1]. As a result of these high flows, all clarifiers reached maximum capacity, leading to an unplanned discharge. The UVT sensors in both channels recorded zero readings for an extended duration. **Consent Requirements:** If the hourly average UV transmissivity recorded in accordance with 12C reduces below 45% it is a consent requirement to: a. Notify the Manager as soon as practicable; and b. Initiate an investigation that meets the following requirements. Action (a) was completed on 22 April in the discharge notification (appended). This report addresses action (b). The investigation must be communicated within 10 days of the event, which, in this instance, is Tuesday 6 May 2025. It must address the following four details: 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 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**
21 April	08:04	Discharge commences
21 April	08:47	Initial discharge notification. It noted ● The discharge was unconsented, ● It involved fully treated wastewater, ● UVT was below 45% (instant value), ● A solids carry-over was involved, and ● Discolouration around the outfall (within 200m).
21 April	08:04	Discharge ceases
21 April	18:27	Email from [redacted] to [redacted], [redacted] [redacted] and S[redacted] [redacted] with further information regarding the discharge and UV drop.
22 April	16:11	Final discharge notification issued. It noted: ● 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 readings for an extended duration), ● Signs placed along coastline to alert water users, ● Sampling monitoring initiated (see results below), ● A solids carry-over was involved, ● 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 21 April at 08:47
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%.	The region experienced a significant weather event that impacted all four WWTPs. On 21 April 2025 at 0;804, 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.
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.	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) Commencement date / timing has not yet been confirmed. 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.

UVT Trends

Figure 1: UVT SCADA Trend - TAK system

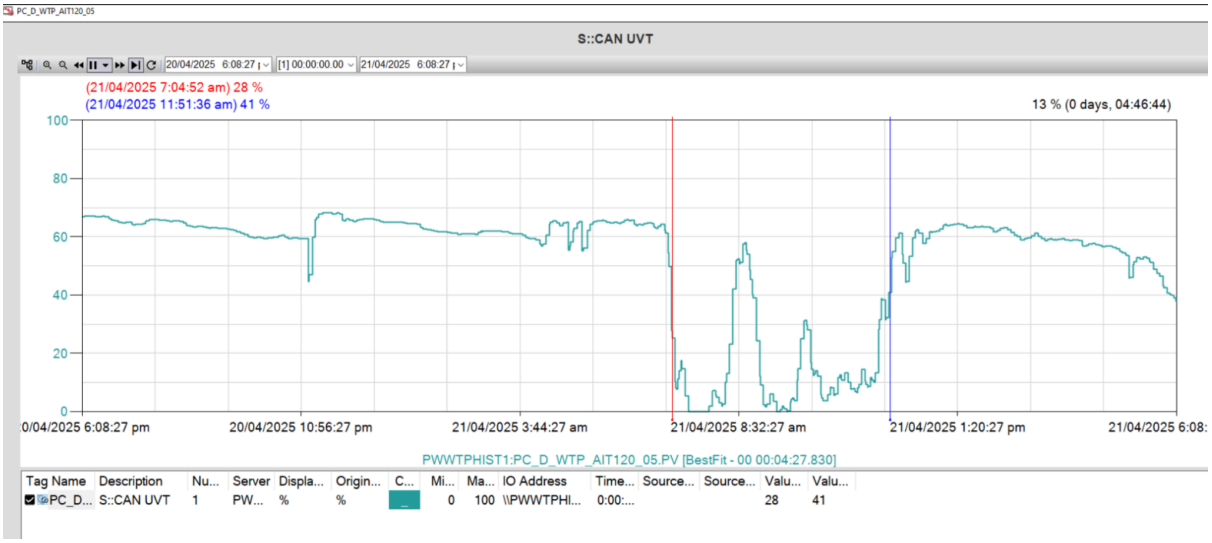

Figure 2: UVT SCADA Trend - Duron System

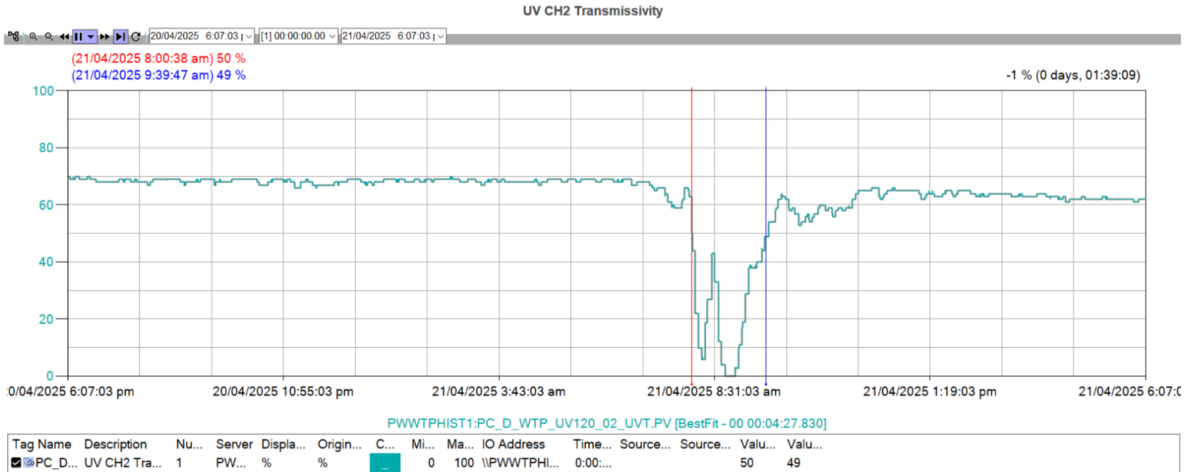

Image 1 Rukutane Point Outfall Area - Discolouration evident

Image 2 Rukutane Point Outfall - Discolouration evident

Image 3: Rukutane Point Outfall - Discolouration evident

Image 4: Aeration Basin - Showing at Capacity

Image 5: Clarifier 1 - At Capacity

Image 6: Common Pit, both channels running

Photos

Inlet Flows Porirua WWTP April 2025			
Day	Average	Peak	Total
	L/s	L/s	m3
1 Apr	227	798	19,620
2 Apr	215	539	18,586
3 Apr	266	825	22,965
4 Apr	493	1,303	42,570
5 Apr	262	848	23,550
6 Apr	318	845	27,450
7 Apr	274	851	23,659
8 Apr	311	854	26,867
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

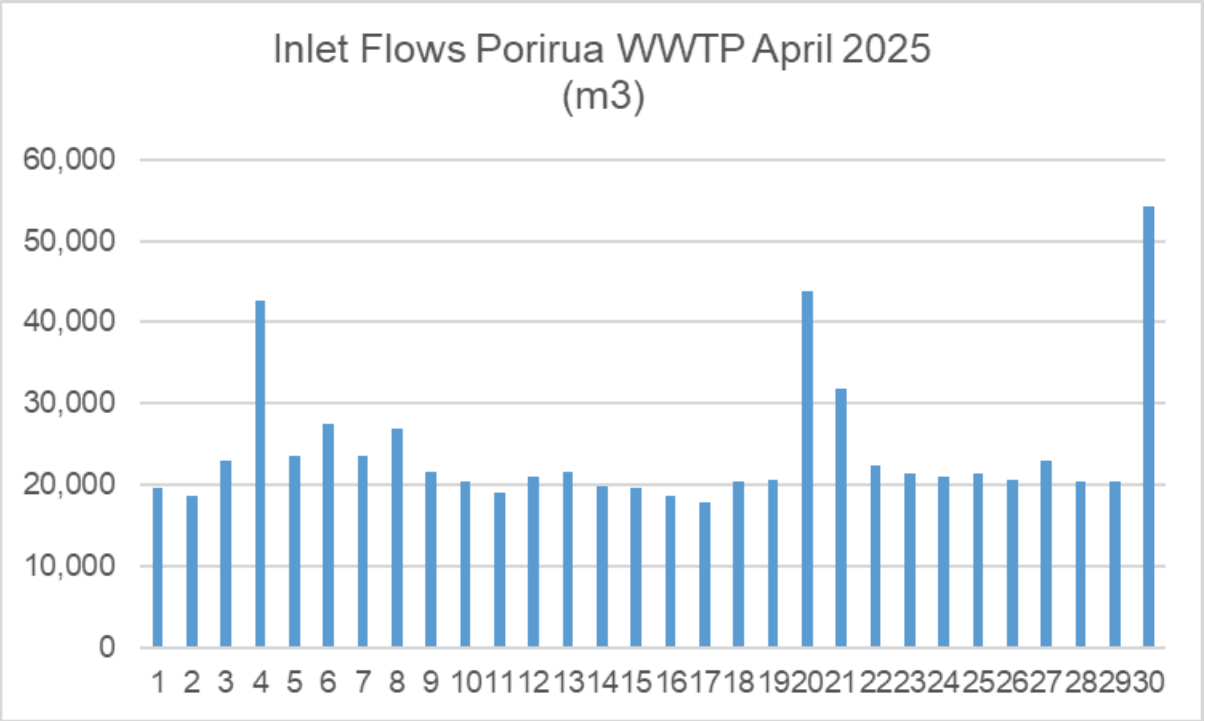

Table 1 and Figure 3 - Porirua WWTP Inflows - April 2025

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

BOD_5 (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
21/04/2025	33	14.4	30.1	30	90
22/04/2025	15	14.5	30.1	30	90
23/04/2025	12	14.6	30.1	30	90
24/04/2025	17	14.8	30.1	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
21/04/2025	20	8.7	19.1	30	90
22/04/2025	5	8.6	19.1	30	90
23/04/2025	5	8.5	19	30	90
24/04/2025	6	8.4	19	30	90

Table 3 - Suspended Solids results 21-24 April 2025

Clarifier blanket height levels (meters)						
	Morning			Afternoon		
Date	#1	#2	#3	#1	#2	#3
21/04/2025	Full	2.8	3.5	*Not taken as was a stat holiday*		
22/04/2025	2.5	1.7	2.4	2	1.4	2
23/04/2025	2.0	1.4	3.0	1.8	0.7	1.5
24/04/2025	1.7	0.7	1.5	1.8	1.8	1.3

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

Shoreline Monitoring Results 21 - 23 April 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									
21/04	10:17	0.30	<0.002	600	<0.1	<0.1	33	0.280	0.052
22/04	09:10	0.28	<0.002	60	<0.1	<0.1	34	0.311	0.053
23/04	10:08	0.31	<0.002	30	<0.1	<0.1	35	0.341	<0.025
140m East of Outfall									
21/04	09:48	0.30	0.014	1400	<0.1	<0.1	29	0.379	0.082
22/04	09:39	0.33	<0.002	40	<0.1	<0.1	33	0.320	0.059
23/04	09:16	0.31	<0.002	<10	<0.1	<0.1	34	0.206	0.029
200m South West of Outfall									
21/04	11:30	0.29	0.051	4000	0.38	<0.1	22	1.08	0.146
22/04	09:53	0.28	0.067	80	<0.1	<0.1	28	0.571	0.200
23/04	09:26	0.32	0.083	30	<0.1	<0.1	33	0.295	0.233
Titahi Bay Surf Club									
21/04	11:30			540			35		
22/04	09:23			10			35		
23/04	09:47			200			35		

Table 5 - Monitoring Results following Discharge on 21 April 2025

Please note that the samples were analysed by the contract laboratory.

Please note 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

Notification

A notification was issued on 22 April in accordance with condition 12D (a) of the Consent and is 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, impacted the UV transmissivity and caused discoloration of the coastal marine area within 200m of the outfall.

Appendix

Notification

VEOLIA

Page: 1 of 1
Document:
Date: 19/11/2019

Temporary Wastewater Discharge & Notification Form

Site:	Porirua WWTP	**Notifier:**	[redacted]
Phone:	0800-928-371	**Phone:**	[redacted]
Date:	22/4/2025	**E-mail:**	[redacted]

Discharge Information		
Type of discharge (e.g. Partially treated wastewater, Fully treated wastewater, etc.) Location		Treated but not fully disinfected wastewater
Cause		Was a result of high rainfall that exceeded capacity
Consent	Number	WGN980083 [33805]
	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		The Porirua Wastewater Treatment Plant experienced significant hydraulic overloading due to high flows. As a result, all clarifiers reached maximum capacity, leading to an unplanned discharge. The UVT sensors in both channels recorded zero readings for an extended duration.

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	21/04/2025 08:04
	Stop	DD/MM/YYYY HH:MM	21/04/2025 09:31

Duration		hh:mm	01:27
Average Flow	Plant Inlet	litres per second	794
	Discharge to Coastal Marine Area	litres per second	878
Maximum Flow	Plant Inlet	litres per second	1363
	Discharge to Coastal Marine Area	litres per second	1742
Total Treated Volume		cubic metres	4582
Discharge Volume	Coastal Marine Area	cubic metres	4582
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