13 October 2023

File No: WGN980083

Greater Wellington Regional Council
100 Cuba Street
Te Aro,
Wellington

Attn: [redacted]

[redacted],

Request for an explanation for the discharge of untreated wastewater due to mechanical failure at Porirua Wastewater Treatment Plant

Thank you for the opportunity to explain the partially treated discharge from the Porirua WWTP into the coastal marine area on 2nd October 2023.

The following is our response to the questions in the Please Explain letter submitted to Wellington Water on the 3rd October 2023.

Please find our response to your questions below:

1. What caused the untreated discharge to occur? Please provide pictures/evidence to aide in description.

The screenings (i.e. rags, paper, etc.) is removed from the wastewater by milliscreening, are conveyed to a Noggerath wash machine (often referred to as Nogwash) which uses recycled fully treated effluent water to clean/press these screenings making them drier/lighter. The screenings are conveyed to a skip bin for landfill disposal and the wash water from the machine goes to an underground sump chamber. A single submersible pump then pumps this wash water to the aeration basin. The discharge occurred due to this sump pump becoming blocked with rags causing the level in the sump to rise and escape via a manhole where it was then able to run into a nearby stormwater drain. The subsequent investigation discovered this stormwater drain connects to the inlet channel of the UV system where it mixes with the treated wastewater prior to UV disinfection before being discharged to the coastal marine area via the short outfall.

Appendix I Is a GIS diagram showing the location of the storm water line and its connection to the wastewater line. Appendix II shows the overflow site. Appendix III shows the Noggerath Screenings Wash machine.

2. Was adverse weather a factor in this discharge?

Adverse weather was not a factor in this event. The discharge occurred due to a mechanical failure of a pump detailed in our response to question 1.

3. Why is there uncertainty in the type of discharge that occurred?

During the recent hydraulic upgrade of the plant there were changes in the stormwater piping connections and there was concern that the stormwater drain was connected to the overflow bypass channel which conveys directly to the CMA. Upon further investigation, it was confirmed that the pipework was changed during the project and the stormwater drain conveys to the treated effluent in pre-UV channel. From this point it is diluted with treated effluent before being disinfected by the UV system.

4. What treatment processes did occur / were bypassed?

The Noggerath machine cleans the screenings taken from the milliscreens using fully treated recycled effluent water from the plant. The wash water conveys to the aeration basin via a sump pump. This pump failure meant it bypassed this biological and sedimentation process (clarifiers). Instead, the wash water conveyed to a nearby stormwater drain and into the pre-UV channel where it mixed with treated effluent and was UV disinfected before being discharged to the CMA.

It should be noted the impurities content of the wash water is expected to be considerably lower than the raw wastewater entering the plant as it has undergone the full treatment process before being recycled to be used for various machinery around the facility.

5. What was the total volume of the discharge to the outfall, the start time and end time of the discharge and rate of discharge?

Veolia was unable to determine the exact start time and duration of the incident. The discharge occurred sometime between 1st October 11:45am and 2nd October 7:30am when the operator arrived on site stopping the discharge. Assuming a maximum duration of 19 hours and 45 minutes, the estimated total volume of discharge was approximately 85 cubic meters. The volume of fully treated wastewater during the assumed discharge duration was 21,709 cubic meters, which will have significantly diluted the partially treated wastewater further. The UVT results shown in Appendix V also support this. The discharge volume noted is the worst-case volume estimate.

6. What alert systems failed and why?

The sump pump did not have any instrumentation connected which would enable an alarm to notify the operators when it failed. As a result of the discharge, work is underway to rectify this by allowing the pump status to display on the SCADA system, automatically alerting operators immediately if the pump faults.

7. What sampling was carried out during and after the discharge and comment how these relate to consent requirements?

Shoreline monitoring was performed as per condition 16 of Resource Consent WGN20029[36816]. The sampling results can be found in Appendix IV.

8. What effect did the discharge have on receiving environment? Please use laboratory analysis and supporting photos / field notes.

Shoreline monitoring results from the discharge indicate a negligible effect on results (see Appendix IV). The volume of the wash water that was mixed with the fully treated wastewater during the incident resulted in high dilution. The ratio of the wash water volume to fully treated wastewater is estimated at 1:255.

Veolia have provided a graph showing the UVT readings from the UV disinfection channel during the incident. The graph shows no significant drop in UVT indicating there was no negative effect on the effluent quality and therefore no effect on the receiving environment. This graph is shown in Appendix V.

9. What steps were taken to remedy adverse environmental effects arising from the discharge?

WWL and Veolia undertook shoreline sampling and communications requirement as required by the new consent. This included erecting no-swimming signage and notifying stakeholders directly via email under the Porirua Management Plan.

10. What on-site and off-site actions could have been taken to reduce the timeframes of the discharge occurring?

Work is underway which will allow the pump status to display on the SCADA system, automatically alerting operators if the pump faults. The alarm will allow the operators to respond to the fault immediately, reducing the response time, potentially before the sump fills up and overflows.

11. How should this discharge be managed under the Operational Management and Contingency Plan (OMCP) and what measures will be put in place (and by what date) to ensure that such incidents do not occur again?

The protocol under the OMCP for shoreline monitoring (sampling), erecting signs and stakeholder notifications were followed for this discharge incident.

Under the OMCP, alarms are set to notify the operators if there are any critical abnormalities in the WWTP. In this case, there's a gap in the alarm notification system which prevented the alarm to be sent out to the operator.

Work is underway to allow the pump status to display on the SCADA system, automatically alerting operators immediately if the pump faults. The contractor to perform the work has been engaged and it is expected to be completed before the end of October.

12. What risks does WWL identify that may cause a delay in the timeframes stated above, please provide planned measures to reduce the likelihood of these risks.

The main factors that could cause potential delay are contractor availability and procurement of the alarm transmitter needed for the pump. Both of these factors have been addressed and are not expected to cause delay at this stage. Wellington Water has instructed Veolia to prioritize this job

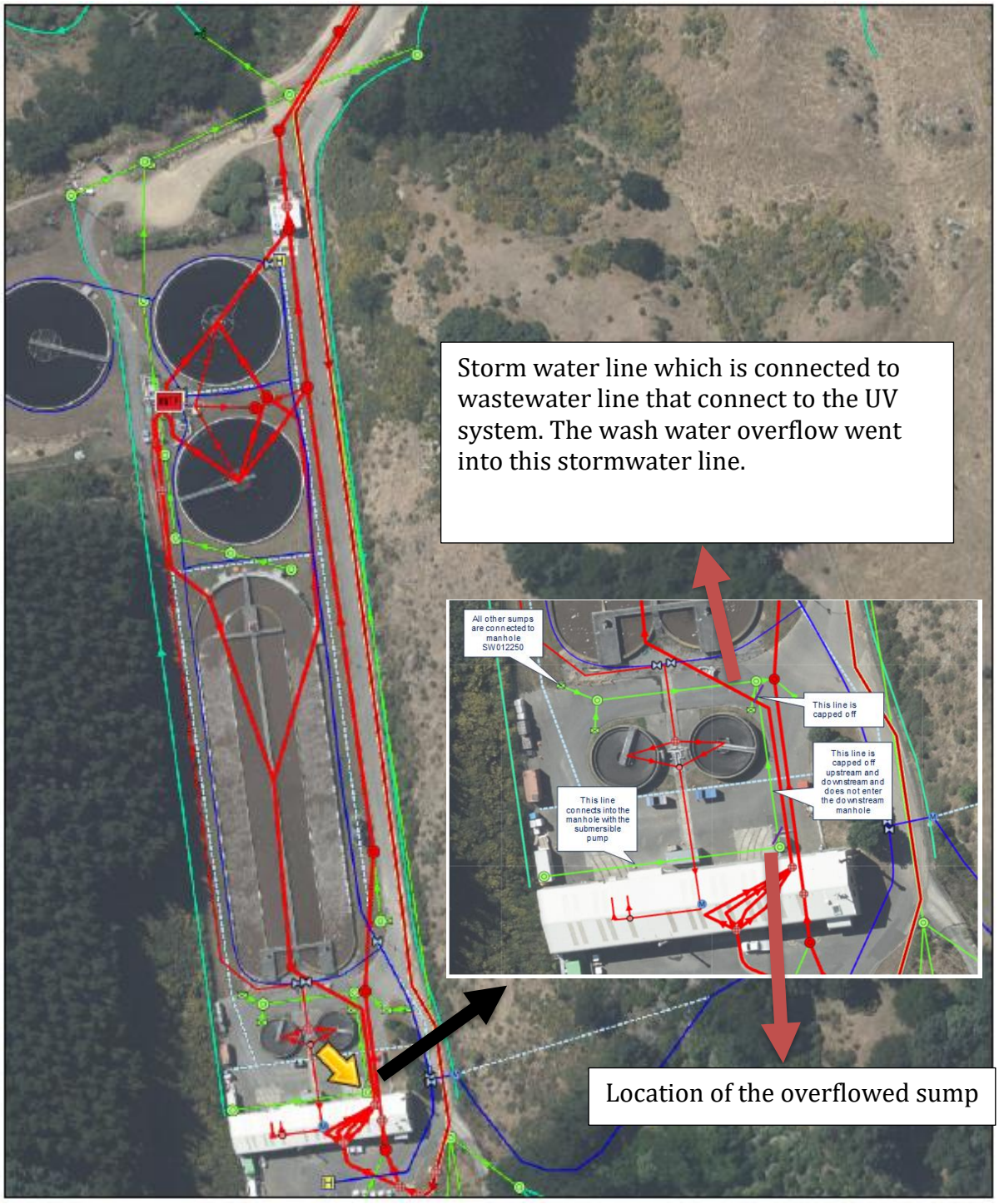
and a work order has been created on their VAMS system. The pump itself is part of a quarterly PM schedule and records show good performance, indicating another blockage soon is highly unlikely. However, WWL has asked Veolia to carry out a weekly check on the pump until the alarm is fitted on the pump to further reduce any risk.

We trust that this explanation satisfactorily answers the questions raised in the Please Explain letter of 3rd October. Should further detail or clarification be required, please contact the writer directly.

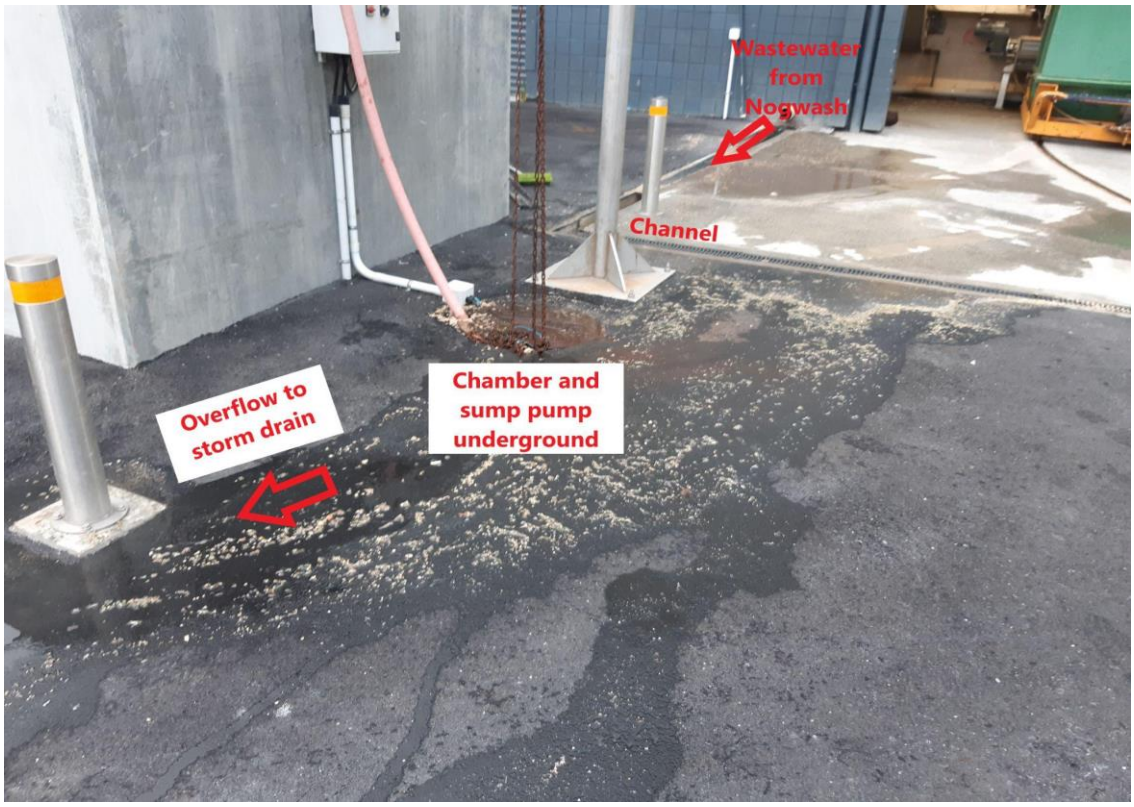
Yours sincerely

[redacted]
Wellington Water

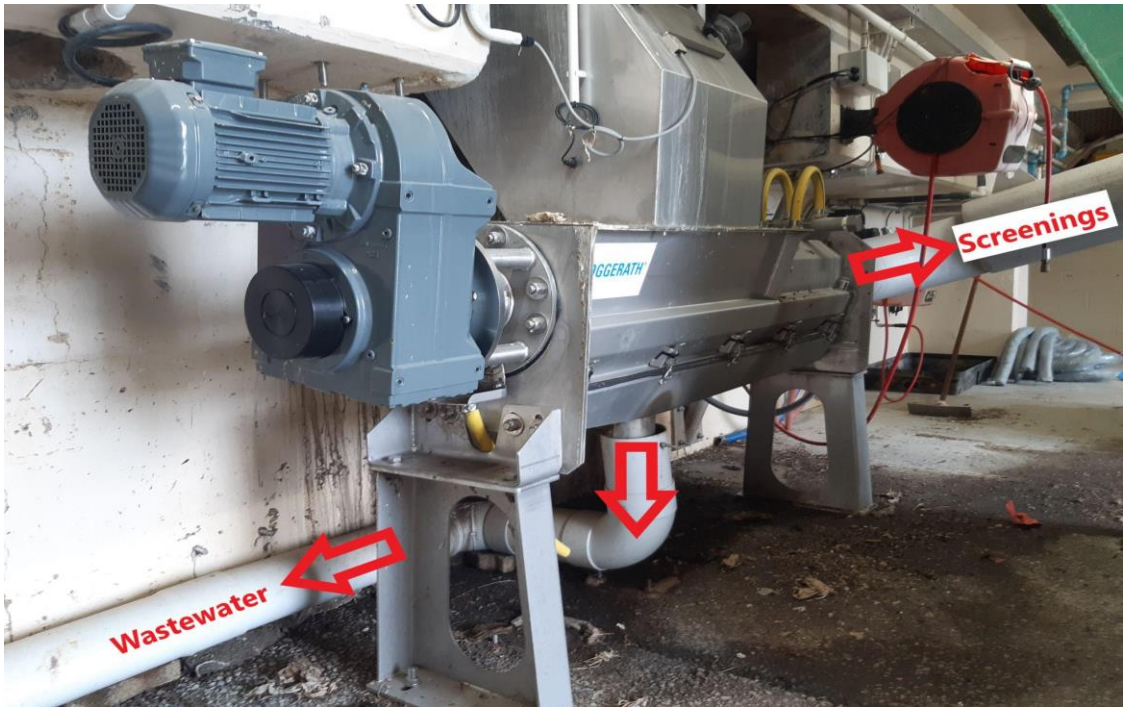
Appendix I: GIS Map



Appendix II: Overflow site



Appendix III: Noggerath Screenings Wash Machine



Appendix IV: Shoreline sampling results

140m generally eastwards of the outfall

Date	Time	Enterococci	pH	Salinity	Dissolved Oxygen	Temp.	Wind Direction	Wind Strength	Tide	Sea Conditions
dd/mm/yyyy	hh:mm	cfu/100mL	-	g/m3	g/m3	C	--	--	--	--
2/10/2023	12:20	10	8.2	34	10.94	11.6	N	Strong	High	Ebb
4/10/2023	12:38	10	7.9	35	10.73	13.7	N	Moderate	High	Ebb

Table 4: Shoreline Monitoring

Date	Time	Total Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Dissolved Reactive Phosphorus	Total Nitrogen	Total Phosphorus
dd/mm/yyyy	hh:mm	g/m3	g/m3	g/m3	g/m3	g/m3	g/m3
2/10/2023	12:20	0.07	0.1	0.1	0.047	0.67	0.1
4/10/2023	12:38	0.08	0.1	0.1	0.035	0.27	0.1

200m generally southwestwards of the outfall

Date	Time	Enterococci	pH	Salinity	Dissolved Oxygen	Temp.	Wind Direction	Wind Strength	Tide	Sea Conditions
dd/mm/yyyy	hh:mm	cfu/100mL	-	g/m3	g/m3	C	--	--	--	--
2/10/2023	11:50	10	8.2	34	10.7	12.8	N	Strong	High	Ebb
4/10/2023	13:05	10	7.6	35	10.5	13.6	N	Moderate	High	Ebb

Table 5: Shoreline Monitoring

Date	Time	Total Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Dissolved Reactive Phosphorus	Total Nitrogen	Total Phosphorus
dd/mm/yyyy	hh:mm	g/m3	g/m3	g/m3	g/m3	g/m3	g/m3
2/10/2023	11:50	0.11	0.1	0.1	0.039	0.78	0.1
4/10/2023	13:05	0.09	0.1	0.1	0.033	0.16	0.1

Titahi Bay Beach At Toms Road - Surf Club

Date	Time	Enterococci	pH	Salinity	Dissolved Oxygen	Temp.	Wind Direction	Wind Strength	Tide	Sea Conditions
dd/mm/yyyy	hh:mm	cfu/100mL	-	g/m3	g/m3	C	--	--	--	--
2/10/2023	12:43	10	8.2	36	10.9	12.2	N	Strong	High	Ebb
4/10/2023	12:20	10	8.1	36	10.5	13.8	N	Moderate	High	Ebb

Table 6: Shoreline Monitoring

Control

Date	Time	Enterococci	pH	Salinity	Dissolved	Temp.	Wind Direction	Wind Strength	Tide	Sea Conditions

					Oxygen					
dd/mm/yyyy	hh:mm	cfu/100mL	-	g/m3	g/m3	C	--	--	--	--
2/10/2023	13:10	20	8.1	35	10.6	12.1	N	Strong	High	Ebb
4/10/2023	11:50	10	8.1	34	10.6	14.3	N	Moderate	High	Ebb

Table 10: Shoreline Monitoring

Date	Time	Total Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Dissolved Reactive Phosphorus	Total Nitrogen	Total Phosphorus
dd/mm/yyyy	hh:mm	g/m3	g/m3	g/m3	g/m3	g/m3	g/m3
2/10/2023	13:10	0.01	0.1	0.1	0.011	0.26	0.1
4/10/2023	11:50	0.01	0.1	0.1	0.007	0.19	0.1

Appendix V: UVT (%) Disinfection Channel