

Greater Wellington Regional Council
Wellington Office
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Te Aro, Wellington 6011
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Attn: [REDACTED], Senior Resource Advisor, Greater Wellington Regional Council

10/04/2024

Subject: Discolouration to the coastal marine area around Rukutane Point on 4th and 15 – 16th of March 2024

Attached to this letter are the investigation reports that Veolia undertook for the 4th and 15-16th of March 2024 incidents. We would like to provide you a copy of the reports to ensure transparency regarding these incidents.

Please find Wellington Water's point of view regarding these incidents:

Cause of the incident:

Based on the outcome of the investigation reports and our own experience and knowledge, Wellington Water believes that:

- the discoloration to the coastal marine area around Rukutane Point on 4th March can be considered a sludge carryover incident as defined by the plant's consent and has been supported by very high daily effluent TSS result which is 548 g/m³
- the discoloration to the coastal marine area around Rukutane Point on the 15th – 16th March is a case of high suspended solids content of the effluent discharge for a short period of time but has been mitigated before it could result in a sludge carry over. Furthermore, the daily effluent TSS results for 15th and 16th March (6 g/m³ for both dates) were compliant with the consent limits which was unlikely if a sludge carryover has occurred.

Both incidents caused the UVT hourly values to drop below the 45% hourly average threshold as required by the plant's consent.

The cause of these incidents is high solids inventory (MLSS) in the system.

The plant was unable to maintain optimal MLSS level due to sludge dewatering system failures which have caused the solids to build up in the system over the last few months. High influent flow to the treatment plant due to wet weather events should not have led to these incidents causing a discoloration in the coastal marine area, if the MLSS concentration has been maintained within the optimum levels.

The treatment plant has difficulty in maintaining the optimum MLSS level due to the following reasons:

1. Accumulation of solids in the system due to failure in the sludge dewatering system.
2. Equipment spares inventory held at the plant for likely failures did not cover the dewatering equipment failures encountered recently.
3. Difficulty in reducing the MLSS to optimum levels due to constraints imposed by the landfill's dewatered sludge acceptance schedule.
4. Lack of sludge dewatering system redundancy to match the landfill operating requirements.

An optimum MLSS level of around 3,500 g/m³ in the treatment plant is necessary to ensure that the plant can handle the flow up to 1,300 L/s without affecting the discharge effluent quality. Please note that the 1,300 L/s influent flow is the current maximum flow that the Tangere and Rukutane Pump Stations can deliver to the treatment plant. It is expected that the MLSS level of the treatment plant would need to be around 3,000 g/m³ to treat the maximum flow of 1,550 L/s while ensuring the effluent quality complies with the consent limits. These MLSS optimum levels were determined in 2021 following the sludge carryover incidents in the treatment plant which were shared to Veolia.

Mitigating Measures:

Maintaining a reliable sludge dewatering operation to ensure that the plant operates at optimum MLSS levels is necessary to prevent this incident from happening again. The following short to medium term mitigating measures are currently being explored. Wellington Water will provide timeframes, dependency and assign the mitigating measures to responsible parties as soon as it has been discussed with Veolia and PCC Landfill Operations regarding their feasibility. The list of these mitigating measures can be found on the table below.

Type	Mitigating Measures
Short Term	Fast track the reduction of MLSS to optimum levels by extending the operation of two centrifuges temporarily to increase the daily dewatered sludge production
Short Term	Review current sludge dewatering operations to assess whether that it is being operated at optimum conditions within the current operational constraints
Short Term	Consider establishing a Service Level Agreement with the external expert contractor to deliver reliable sludge dewatering equipment performance
Short Term	Procurement of the spares for the whole Sludge Dewatering System (i.e., centrifuge, sludge feed pumps, polymer dosing system)
Short Term	Investigate alternative sludge production options, working with Landfill, to enable acceptability of greater volumes of solids by removing current operational constraints
Medium Term	Undertake an investigation to install another centrifuge unit and/or other mechanism to augment the sludge dewatering capacity in the WWTP while solids handling upgrade project is still underway
Medium Term	Undertake specialist investigation and condition assessment to determine the consequence and likelihood of failure of the current solids handling system and review the current mitigating measures

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The long-term solution is the completion of the solids handling upgrade for the treatment plant which is currently in design. Initial cost estimates have been submitted in the 2024-34 LTP and is subject to funding approval.

Effect to the receiving environment:

As noted by the reports, there was discoloration observed for both incidents but within the 200m radius of the outfall as per Veolia's reports. The discharges were not reported to emit any objectionable odour.

The results of the shoreline monitoring for the 4th of March incident as stated in Veolia's report showed that discharge have negligible effect to the receiving environment.

Veolia have yet to provide the results for the shoreline monitoring for the 15th – 16th March incident.

Yours sincerely,



Head of Wastewater Contracts

Wellington Water Limited

Date: 10/04/2024

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Wellington Water is owned by the Hutt, Porirua, Upper Hutt and Wellington City Councils, South Wairarapa District Council and Greater Wellington Regional Council. We manage their drinking water, wastewater and stormwater services.



Incident Investigation Report:
Investigation report - UV Transmissivity reduction below
the compliance limit 45% (15 & 16/3/24)

CONTROL SHEET

Document Title:	Investigation report - UV Transmissivity values reduction below the compliance limit 45% (15 & 16/3/24)	
Prepared by:	██████████	Operations Manager (Wellington) - Veolia
Reviewed by:	██████████	Process Engineer -Veolia
Authorised by:	██████████	Regional Manager (Wellington)- Veolia

DOCUMENT CONTROL

Version	Status	Date	Details of Revision
0	Draft	18/03/2024	Draft for review.
1	Final	27/03/2024	Final version submitted to the Client

Internal Distribution	Company	Position	Email	Distribution
██████████	Veolia	Regional Manager (Wellington)	██████████	Internal
██████████	Veolia	Operations Manager (Wellington)	██████████	Internal
██████████	Veolia	Process Engineer	██████████	Internal
██████████	Veolia	Operations Coordinator (Northern)	██████████	Internal
██████████	Veolia	Northern Team Leader	██████████	Internal
██████████	WWL	Head of Wastewater Contracts	██████████	External
██████████	WWL	Senior Wastewater Operations and Assets Advisor	██████████	External

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INCIDENT DETAILS

Date	16. March 2024
Location	Porirua WWTP
Description	On 15. and 16. March 2024, UV Transmissivity (UVT) values in the final effluent dropped below the limit of 45 % defined by condition 12D of Resource Consent WGN200229.
Cause	Rain events during the 15 and 16. March 2024 led to increased flows entering the Porirua WWTP.
	At the time of the high flows, Mixed Liquor Suspended Solids (MLSS) in the treatment system were outside of the optimum range.
	The increased flows coupled with a high Mixed Liquor Suspended Solids resulted in higher than optimum sludge blanket levels in clarifier #3 leading to low UVT values in the final effluent.
Actions (during the day of the incident)	Low UVT values in the final effluent and high sludge blanket levels in clarifier #3 were observed during routine SCADA checks. This triggered the actions listed below.
	Inlet valves to clarifier 1 & 2 were adjusted to alter the flow distribution between the clarifiers. These were adjusted remotely.
	On-call operator attended site with no delay to conduct the manual adjustment of the clarifier #3 inlet penstocks. The penstocks in clarifier #3 can be adjusted manually on-site only.
	Photos of the outfall were taken and since a discoloration in the vicinity of the outfall was observed, a shoreline sampling campaign was initiated.
	Duty operator notified the on-call manager and he was directed to send a notification to WWL via email.
	No pager alarms were received during the low UVT values period indicating issues with the alarming system. Therefore an external contractor (AFI) was contacted to check and reset the pager system.
Impacts	Reduction of the UVT values in the final effluent below the limit defined by the Resource consent (45%).
	Visible discoloration in the vicinity of the outfall was observed on March 16th.

TIMELINE

The following is a list of events and when they occurred:

Pre-event	
Beginning of February	Spare rotating assembly was sent for a service
01/02/2024	Sludge line blocked resulting in contained spillage and flow meter fault.
02/02/2024	Centrifuge #1 not operational due to the sludge feed flow meter failure. This reduced the dewatering capacity.
18/02/2024	New flow meter and transmitter delivered. Centrifuge #1 put back in operation.
19/02/2024	High vibration limit detected on centrifuge #1 requiring inspection.
22/02/2024	Centrifuge #1 inspection and clean conducted. It was identified that the sludge accumulation occurred due to the incorrect polymer dosing. Centrifuge back in operation.
27/02/2024	Increased vibration detected on centrifuge #2. Sludge feed to the centrifuge decreased.
	#2 polymer dosing pump issues identified (polymer underdosing)- the pump was replaced.
08/03/2024	#1 polymer dosing pump failed and is still not operational.
12/03/2024	Contractor on site to conduct a clean of centrifuge #1 and #2 to mitigate the vibration issues.
Day of the incident	
16/03/2024 07:16	The on-call operator attended the site to carry out the routine site checks and took manual dip measurements of all three clarifier sludge blanket levels. The levels were measured at clarifier #1 - 2.8 clarifier #2 - 1.8 and clarifier #3 - 0.7 which is within the normal operational parameters.
16/03/2024 13:00	Operator left the site.
16/03/2024 15:30	Routine SCADA checks were carried out by the team leader via remote control. It was noticed that the UVT sensor was reading 0 and the blanket in clarifier #3 was above the maximum recommended level. As the flow into clarifier 3 can only be controlled by using the on-site stop boards, the inlet valves to clarifiers #1 & #2 were opened to 20- 25% on SCADA to allow more flow into clarifiers #1 & #2 and reduce the flow into clarifier #3.
16/03/2024 16:00	The on-call operator attended site at 16:00 and closed 1 penstock into clarifier #3. No visible effluent discoloration of the effluent was observed and the UVT values were showing increasing trend (40% - 50%) Photos of the outfall were taken, and a shoreline sampling campaign was initiated.
16/03/2024 17:07	WWL notified by email.
16/03/2024 20:00	The duty operator received confirmation test pages generated by the automatic pager system. This confirmed the correct function of the system.
18/03/2024	Data analysis done as part of the investigation identified a decrease in the UVT value during the night hours on 15. March (22:30).

PROCESS/QUALITY CONTROLS

Following parameters were analysed to investigate the root cause of the low UVT values.

UV transmissivity and Suspended Solids concentration

Figure 1 shows the trend for the UVT values in the final effluent. Two significant drops are visible on 15/03/2024 and 16/03/2024. Hourly averages for the UVT values were 13% and 4% respectively (Table 1).

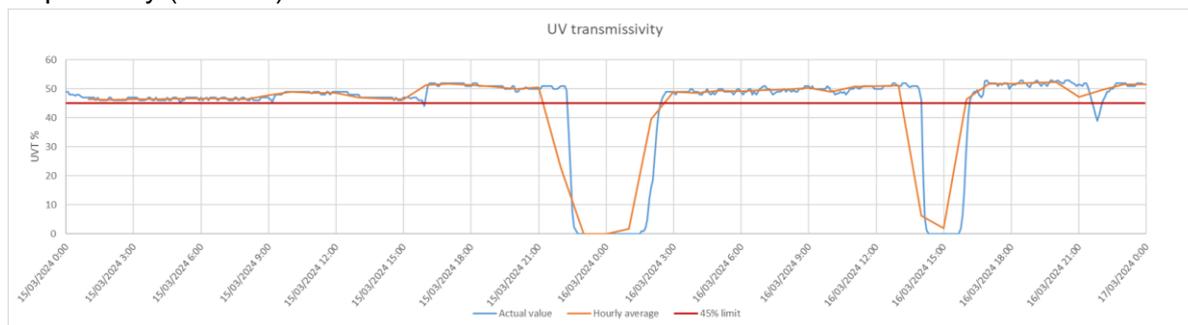


Figure 1

Date	Average UVT value <45%
15/03/2024	13
16/03/2024	4

Table 1

UV transmissivity is a parameter showing the clarity of the water i.e., content of solids in the water. Therefore, there is a strong correlation between these two parameters. Low UVT value indicates increased suspended solids concentration. Table 2 shows daily results for the Total suspended solids (TSS) concentrations in the final effluent (24-hours composite sample). No significant increase in the solids can be seen in the final effluent and the suspended solids show average values. The results for the Biochemical Oxygen Demand-5 days (BOD5) show good effluent quality as well.

Date	TSS (g/m3) - final effluent*	BOD5 (g/m3)-final effluent*
15/03/2024	6	8
16/03/2024	6	7

Table 2

* The Certificates of Analysis are attached as Appendix I.

This can be explained either by sensor faulty reading or by high dilution of the solids carried-over from the secondary clarifiers. Data analysis given below excludes issues with the sensor. Details on reasons for the solids carry-over are given below.

Sludge Blanket Levels

Analysis of the sludge blanket levels from March 15th and 16th shows that blanket levels in clarifiers #1 and #2 were around the average values and below a maximum level (3.0 m). For clarifier #3 the maximum level (4 m) was exceeded. The times of increased levels (4.5 m) correlate with times of low UVT values.

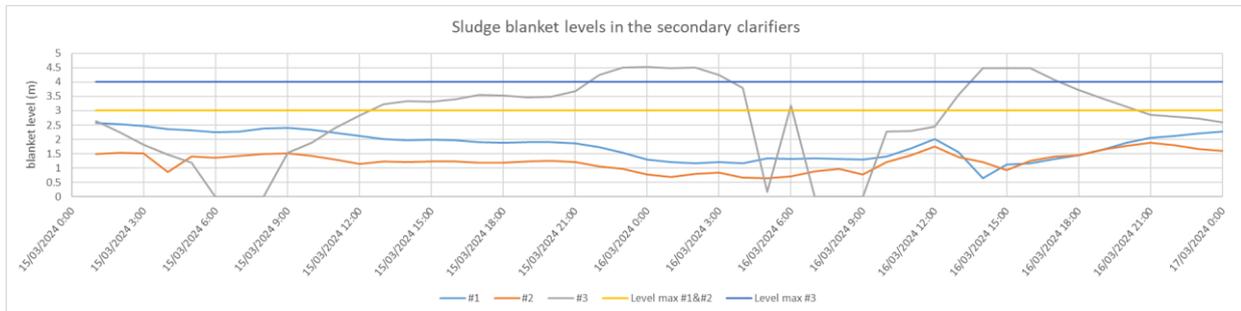


Figure 2

Exceedance of the maximum blanket levels and low UVT values indicate solids carry-over from the secondary clarifiers. However, this can't be seen in the final effluent results - which can be explained by short-duration of the carry-over and significant dilution. Table 3 shows the duration of the low UVT values period and volume of treated water during this time expressed as percentage of the total daily volume.

Date	Duration	% of the daily flow volume (dilution)
15/03/2024	4h 35min	19.8
16/03/2024	2h 40min	12.3

Table 3

Blanket levels in clarifier #3 being above the maximum limits was a result of increased flows entering the plant and high biomass concentration in the biological reactor. Details are given below.

Inlet flows

During March 15th and 16th, high flows entering the plant occurred. Figure 3 shows the trends for the inlet flows and the sludge blanket levels.



Figure 3

Periods highlighted in the red circle are periods of consistently increased flows causing the sludge blanket disturbance and its subsequent increase. It is important to note, that in this case the high flows were a contributing factor and the main reason for the blanket increase were high values of biomass in the aeration basin (MLSS).

Mixed Liquor Suspended Solids (MLSS)

To keep good effluent quality during high flows events, it is required to maintain MLSS concentration (biomass volume) in an optimum range to reduce the risk of sludge blanket increase with subsequent solids carry-over.

Due to a number of breakdowns of the dewatering system, the MLSS is higher than optimal. See the MLSS values in Figure 4.

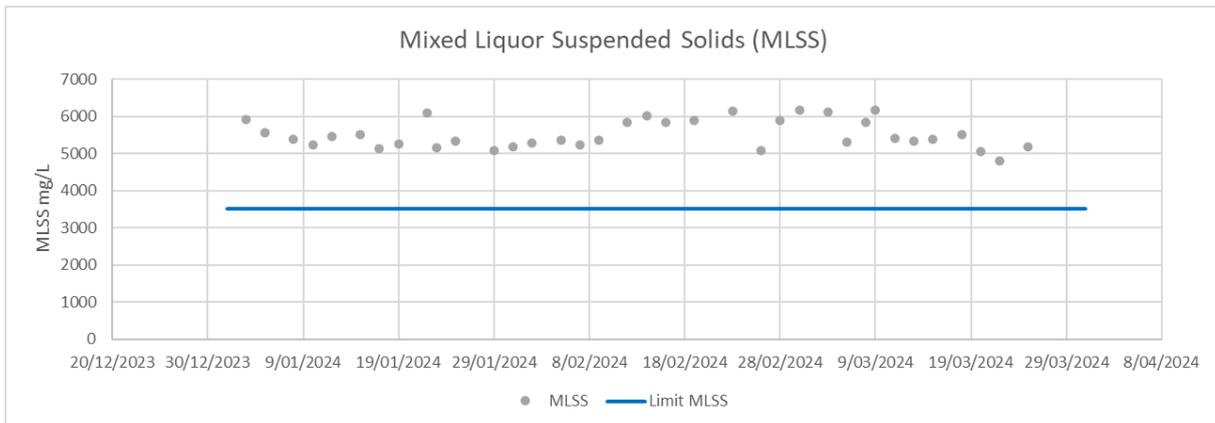


Figure 4

The increased flows coupled with a high Mixed Liquor Suspended Solids resulted in low UVT values in the final effluent.

ABSENT/FAILED DEFENCES

Alarm paging system outage

Online monitoring of the sludge blanket levels and UV transmissivity of the final effluent are available together with alarms integrated into the control system. However, it is important to note that the online monitoring does not activate any automatic action but operator's manual intervention is required. Once an alarm setpoint is reached, the SCADA system sends an alarm to the on-call operator and duty manager.

During the event on March 16th, a pager alarm indicating low UVT values was not sent due to a paging system fault. External contractor, AFI, was contacted and resolved the issue. The reason for the outage was not identified.

While this would not have prevented the solids carry-over from occurring, it would have made the response time quicker and would shorten the event duration.

INDIVIDUAL - HUMAN FACTORS/TEAM ACTIONS

To compensate for a negative effect of high flows and high biomass volumes in the system, a list of actions and adjustments has been identified. These are summarised in the Standard Operation Procedure (SOP) attached in [Appendix II](#).

Both team leader and the duty operator followed the instructions defined in the SOP and no omissions were identified.

TASK/ENVIRONMENTAL CONDITIONS

After the low UVT trends were observed, the duty operator attended the site to conduct the process inspection:

- No visible solids carry-over from the secondary clarifiers was observed.
- As a part of the routine the outfall was checked, and pictures were taken (see the section below).
- Discoloration was noticed in the surroundings of the outfall and even though it did not exceed the 200-metre radius of the outfall discharge point (condition 13 of RC WGN200229), a precautionary shoreline sampling campaign was triggered by the Operations manager.

Note:

- The results of the shoreline monitoring are not available at the time of preparing this report since it takes 10 working days to process the samples.

PHOTOS

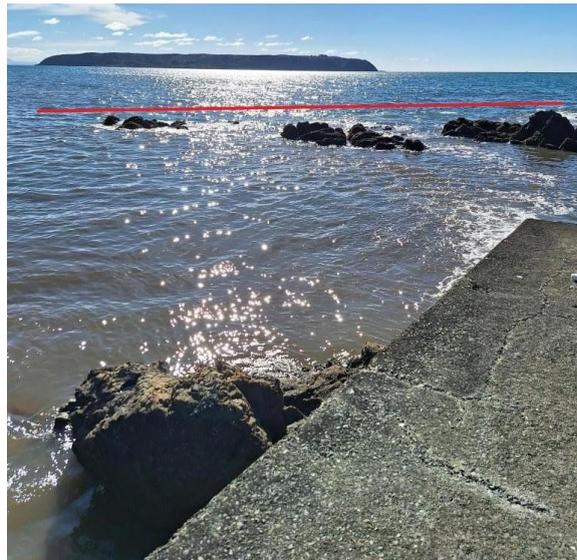
16/03/2024 16:11

Photo of the effluent common pit - This photo was taken as soon as the operator was onsite



16/03/2024 16:38

Red line indicates approximately how far the discoloration made its way past the outfall. Operator approximates it less than 100m



ORGANISATIONAL FACTORS

Understanding Resource Consent conditions

Though initial training was undertaken between the Porirua WWTP operators and compliance officer, it has been identified there is still uncertainty/confusion regarding the classification and notification requirements for condition 12D.

CORRECTIVE ACTIONS

Corrective Action	Reference of issue on captured system or Defect raised	Responsibility	Measurement
Spares list for the centrifuges to be prepared	Mechanical breakdowns of the dewatering system contributed to the accumulation of biomass in the aeration basin and secondary clarifiers. To eliminate the down-down of the equipment, a list of spares will be created, and parts will be purchased accordingly.	Team Leader/ Coordinator	Document created and submitted to WWL for review/approval. Rivo action.
Alarm system review to identify the reason for alarms not being generated	UVT and sludge blanket level sensors are installed, and alarms are integrated to send warning once the specific parameters are outside of the required range. The system didn't generate required alarms during March 15th and 16th. The issue was resolved but further monitoring is required.	Process engineer/SCADA engineer	Alarms in place. Rivo action.
Updation of Notification Forms according to the new resource consent.	The existing form does not reflect requirements given by the current Resource consent. The new form needs to be created.	Compliance Officer	Document created and available for the relevant staff. Rivo action.
Workflow for the proper communication channels to be clarified.	Communication workflow needs to be confirmed to ensure that the correct information in a correct context is provided.	Operations Manager	Document created and available for the relevant staff. Rivo action.
SOPs to be made in specific to notifications required by the Resource consent and The Regional contract	Therefore, a Standard Operation Procedure will be created to clarify the instructions for sending the notifications. At the same time, communication workflow needs to be confirmed to ensure that the correct information in a correct context is provided.	Compliance Officer/Process Engineer	Document created and available for the relevant staff. Rivo action.
Consent 12D training	Revisit training on Porirua's consent conditions, and if required, engagement of GWRC for clarification.	Compliance Officer	Rivo action.

CONCLUSION

- According to the condition 12D of Resource consent WGN200229, the hourly average of UV transmissivity (UVT) values shall not reduce below 45%.
- Values of hourly average for UVT dropped below the limit on March 15th and 16th
- Low values of the UVT parameter normally indicate poor water quality with increased suspended solids concentration.
- Operational data analysis show sludge blanket levels in the secondary clarifier #3 were above the maximum level which was caused by the combination of high inlet flows during the March 15th and 16th and high concentration of Mixed Liquor Suspended Solids (MLSS)
- Increased MLSS values are a result of mechanical breakdowns of the sludge dewatering equipment.
- Daily results for the suspended solids in the effluent composite sample show average water quality suggesting that the temporary drop in the water quality (low UVT) had a minor effect on the final effluent quality during March 15th and 16th. Results for the parameter BOD₅ show normal values as well.
- Pictures taken of the outfall on March 16th show the discoloration in the vicinity of the outfall however this was contained within the 200-metre radius.

APPENDIX I



Food & Water Testing ANALYTICAL REPORT

REPORT CODE	AR-24-NW-017606-01	REPORT DATE	23/03/2024
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Attention Veolia Water - Wellington

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NEW ZEALAND

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Email ann.shibu@veolia.com

Copy to: Robins (nico.robins@veolia.com), Vachova (petra.vachova@veolia.com), Lawlor (rik.lawlor@veolia.com), Mundwa

Contact for your orders: Deb Bottrill
Contract: Porirua Regular Testing

Order code: EUNZWE-00173575

Purchase Order Number: 7300341721

SAMPLE CODE	812-2024-00039986		
Sampling Point code:	POR_INF_C_1D	Sampling Point name:	Porirua Influent Composite 1Day
Reception Date & Time:	16/03/2024 11:11	Analysis Ending Date:	23/03/2024
Analysis Started on:	18/03/2024	Sampled Date & Time	15/03/2024 07:30
Product Type	Waste water	Sampled by Eurofins	No
Sampler(s)	customer		

	RESULTS	LOQ	
NW014 Biochemical Oxygen Demand			
Biochemical oxygen demand (BOD)	85 mg/l	1	
NW206 Suspended Solids			
Suspended Solids	39 mg/l	3	

SAMPLE CODE	812-2024-00039987		
Sampling Point code:	POR_EFF_C_1D	Sampling Point name:	Porirua Effluent Composite 1Day
Reception Date & Time:	16/03/2024 11:11	Analysis Ending Date:	23/03/2024
Analysis Started on:	18/03/2024	Sampled Date & Time	15/03/2024 07:35
Product Type	Waste water	Sampled by Eurofins	No
Sampler(s)	customer		

	RESULTS	LOQ	SPECIFICATIONS
NW014 Biochemical Oxygen Demand			
Biochemical oxygen demand (BOD)	8 mg/l	1	<30mg/L mg O2/l ✓ National Guideline
NW206 Suspended Solids			
Suspended Solids	<8 mg/l	3	<30mg/L mg/l ✓ National Guideline

SAMPLE CODE	812-2024-00039988		
Sampling Point code:	POR_EFF_G_1D_AM	Sampling Point name:	Porirua Effluent Grab 1Day AM
Reception Date & Time:	16/03/2024 11:12	Analysis Ending Date:	17/03/2024
Analysis Started on:	16/03/2024	Sampled Date & Time	16/03/2024 07:36
Product Type	Waste water	Sampled by Eurofins	No
Sampler(s)	customer		

	RESULTS	LOQ
ZM001 Enumeration of Enterococci By Membrane Filtration		

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Food & Water Testing ANALYTICAL REPORT

REPORT CODE	AR-24-NW-018077-01	REPORT DATE	25/03/2024
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Attention Veolia Water - Wellington

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Contact for your orders: Deb Bottrill
Contract: Porirua Regular Testing

Order code: EUNZWE-00173835

Purchase Order Number: 7300341721

SAMPLE CODE 812-2024-00040173	
Sampling Point code: POR_INF_C_1D	Sampling Point name: Porirua Influent Composite 1Day
Reception Date & Time: 17/03/2024 12:00	Analysis Ending Date: 25/03/2024
Analysis Started on: 20/03/2024	Sampled Date & Time: 16/03/2024 07:20
Product Type: Waste water	Sampled by Eurofins: No
Sampler(s): Customer	

RESULTS	LOQ
NW014 Biochemical Oxygen Demand	
Biochemical oxygen demand (BOD) 84 mg/l	1
NW206 Suspended Solids	
Suspended Solids 47 mg/l	3

SAMPLE CODE 812-2024-00040174	
Sampling Point code: POR_EFF_C_1D	Sampling Point name: Porirua Effluent Composite 1Day
Reception Date & Time: 17/03/2024 12:00	Analysis Ending Date: 25/03/2024
Analysis Started on: 20/03/2024	Sampled Date & Time: 16/03/2024 07:35
Product Type: Waste water	Sampled by Eurofins: No
Sampler(s): Customer	

RESULTS	LOQ	SPECIFICATIONS
NW014 Biochemical Oxygen Demand		
Biochemical oxygen demand (BOD) 7 mg/l	1	<30mg/L mg O2/l ✓ National Guideline
NW206 Suspended Solids		
Suspended Solids <6 mg/l	3	<30mg/L mg/l ✓ National Guideline

SAMPLE CODE 812-2024-00040175	
Sampling Point code: POR_EFF_G_1D_AM	Sampling Point name: Porirua Effluent Grab 1Day AM
Reception Date & Time: 17/03/2024 12:00	Analysis Ending Date: 18/03/2024
Analysis Started on: 17/03/2024	Sampled Date & Time: 17/03/2024 07:36
Product Type: Waste water	Sampled by Eurofins: No
Sampler(s): Customer	

RESULTS	LOQ
ZM0U1 Enumeration of Enterococci By Membrane Filtration	

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APPENDIX II

[Porirua WWTP Sludge Management \(Version 1\)](#)



Incident Investigation Report:
UV Transmissivity reduction below the compliance limit
45% (4/3/24)

CONTROL SHEET

Document Title:	Investigation report - UV Transmissivity values reduction below the compliance limit 45% (04/03/24)	
Prepared by:	██████████	Process Engineer-Veolia
Reviewed by:	██████████	Operations Manager (Wellington) -Veolia
Authorised by:	██████████	Regional Manger (Wellington) - Veolia

DOCUMENT CONTROL

Version	Status	Date	Details of Revision
0	Draft	25/02/2024	Draft for review.
1	Final	02/04/2024	Final version sent to WWL.

Internal Distribution	Company	Position	Email	Distribution
██████████	Veolia	Regional Manager (Wellington)	██████████	Internal
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██████████	WWL	Senior Wastewater Operations and Assets Advisor	██████████	External

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INCIDENT DETAILS

Date	04 March 2024
Location	Porirua WWTP
Description	<p>On 4. March 2024, UV Transmissivity (UVT) values in the final effluent dropped below the limit of 45 % defined by condition 12D of Resource Consent WGN200229.</p> <p>Based on the analytical data received from the external laboratory, the suspended solids in the composite sample for that day were higher than normal confirming poor quality of the effluent.</p> <p>Data analysis shows that the poor effluent quality is related to the high accumulation of solids in the system and high rain flow events.</p>
Cause	High Rainfall in the catchment area on the 4. March led to increased influent flows through the plant.
	The MLSS in the aeration basin was higher than optimal and solids were carried into the clarifiers at an increased rate overloading the clarifiers.
Actions	The Site Operators followed the Porirua Sludge Management SOP. Regularly checking the sludge blanket levels and adjusting the clarifier inlet valves and stopboards to balance the blanket levels in the 3 clarifiers. RAS flows were increased to remove sludge off the bottom of the clarifiers and return it to the aeration basin.
	The blowers supplying process air were paused to aid the sludge retention in the aeration basin.
	Poor effluent quality was observed based on the low UVT values and the duty operator notified the operations coordinator and initial notification form was submitted.
	Photos of the outfall were taken and since a discoloration in the vicinity of the outfall was observed, a shoreline sampling campaign was initiated.
Impacts	Reduction of the UVT values in the final effluent below the limit defined by the Resource consent (45%).
	Poor quality effluent left a visible discoloration in the vicinity of the outfall.

TIMELINE

The following is a list of events and when they occurred:

Pre-event	
Beginning of February	Spare rotating assembly was sent for a service
01/02/2024	Sludge line blocked resulting in contained spillage and flow meter fault.
02/02/2024	Centrifuge #1 not operational due to the sludge feed flow meter failure. This reduced the dewatering capacity.
18/02/2024	New flow meter and transmitter delivered. Centrifuge #1 put back in operation.
19/02/2024	High vibration limit detected on centrifuge #1 requiring inspection.
22/02/2024	Centrifuge #1 inspection and clean conducted. It was identified that the sludge accumulation occurred due to the incorrect polymer dosing. Centrifuge back in operation.
27/02/2024	Increased vibration detected on centrifuge #2. Sludge feed to the centrifuge decreased.
	#2 polymer dosing pump issues identified (polymer underdosing)- the pump was replaced.
29/02/2024	Following the instructions in Standard Operation Procedure Adjustment (Porirua WWTP Sludge management) the inlet penstock was closed to control the sludge blanket level in clarifier #3 .
01/03/2024	Further adjustments to control the sludge blankets were made (Rotorks in clarifier #1 and #2 were closed to 70%).
3 March 2024	
20:30	Notification of the wet weather forecast shared with the operations team.
21:56	Notification of the wet weather forecast shared with the management/wider team.
07:30	Increased RAS rates to attempt to drop levels in the clarifiers.
Day of the incident	
4 March 2024	
09:16	High blanket levels in all clarifiers observed. Additional change of the Rotork settings via SCADA was made and effluent from the clarifiers was visually checked.
13:00	Decreasing effluent quality observed at 1pm - closed all but one gate to clarifier 3 and restricted splitters to 15% to hold MLSS in aeration basin.
14:30	Blowers were taken offline to try and aid settling in the aeration basin - not successful.
15:00	Maximum acceptable blanket levels reached in the aeration basin and all clarifiers.
14:50	Instant UVT values in the final effluent decreased below 45%.
15:05	Hourly rolling average of the UVT values in the final effluent decreased below 45%.
15:30	WWL was informed (Plant Coordinator to Senior Wastewater Operations and Assets Advisor via phone)

15:33	Coastal photos were taken by operator and provided to Operations Plant Coordinator and Operations Manager
16:00	Additional inlet penstocks to clarifier #3 opened to prevent overflow from the aeration basin. Continuous Monitoring through SCADA in the evening by the Operations Team leader.
5 March 2024	
05:30	Instant UVT values increased above 45%.
09:55	Hourly rolling average UVT values increased above 45%.
07:00	Shoreline sampling campaign was initiated and photos of the outfall vicinity were taken by the external contractor (Martin McCullagh IRD).

PROCESS/QUALITY CONTROLS

Following parameters were analysed to investigate the root cause of the low UVT values.

UV transmissivity and Suspended Solids concentration

Figure 1 shows the trend for the UVT values in the final effluent. As per timeline given above, the hourly rolling average for UVT values dropped below 45% at 14:50 pm. The period of poor effluent quality lasted until March 5th 5:30am.

Number of minor drops can be seen as well (average values are provided in table 1). Given the sludge blanket trends shown on figure 2, it is suggested that these are related to poor effluent quality however it is important to note that minor UVT reductions of this magnitude are usually related to incorrect positioning of the UVT sensor (details on corrective action are given further).

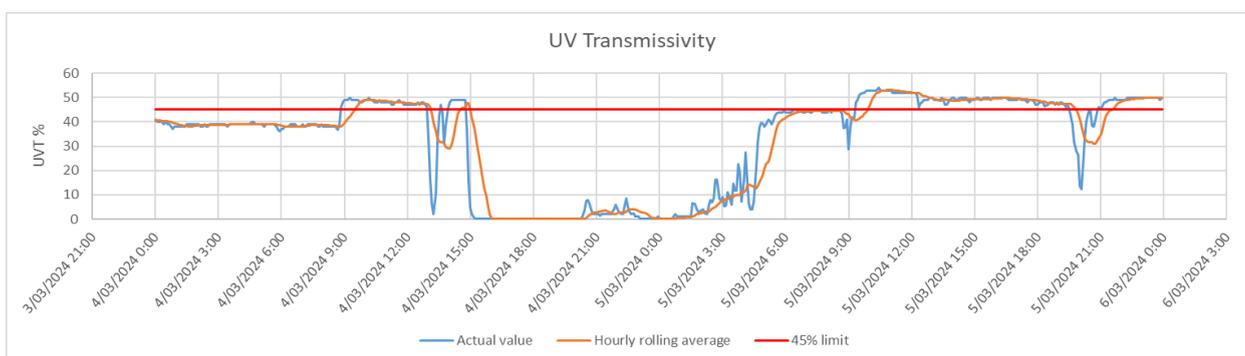


Figure 1

Date	Hourly rolling average UVT value <45%
03/03/2024	40
04/03/2024	34
04-05/03/2024	14

Table 1

UV transmissivity is a parameter showing the clarity of the water i.e content of solids in the water. Therefore, there is a strong correlation between these two parameters. Low UVT value indicates increased suspended solids concentration. Table 2 shows daily results for the Total suspended solids (TSS) concentrations in the final effluent (24-hours composite sample). Significant increase in the solids can be seen in the final effluent indicating the poor effluent quality during March 4th. Results for the Suspended solids on March 3rd show that the reduced UVT values do not correlate with any significant effluent quality drop.

Date	TSS (g/m3) - final effluent*	90-day Geometric mean	90-day 90th Percentile
01/03/2024	**	6	100
02/03/2024	6	6	100
03/03/2024	6	6	100
04/03/2024	548	6	99
05/03/2024	6	6	99
Limit	N/A	30	90

Table 2

* The Certificates of Analysis are attached as Appendix I.

** The results for this analysis are still not available at the time of preparing this report.

Sludge Blanket Levels

Analysis of the sludge blanket levels from the investigated periods shows that blanket levels in clarifiers #1 and #2 exceeded the maximum acceptable level (3.0 m) For clarifier #3 the maximum level (4 m) was exceeded as well. The times of increased levels (4.5 m) correlate with times of low UVT values.

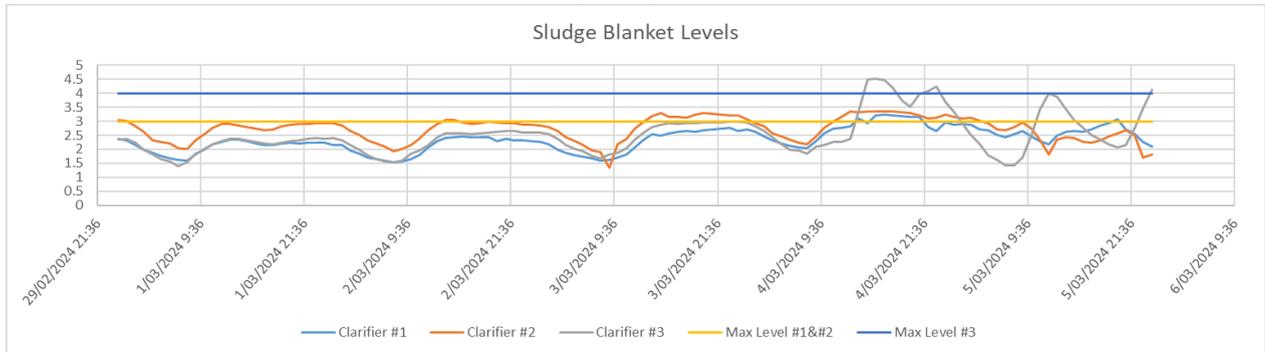


Figure 2

Exceedance of the maximum blanket levels and low UVT values indicate solids carry-over from the secondary clarifiers.

Blanket levels in clarifier #3 being above the maximum limits was a result of increased flows entering the plant and high solids concentration in the biological reactor. Details are given below.

Inlet flows

During the investigated period high flows entering the plant occurred. Figure 3 shows the trends for the inlet flows.

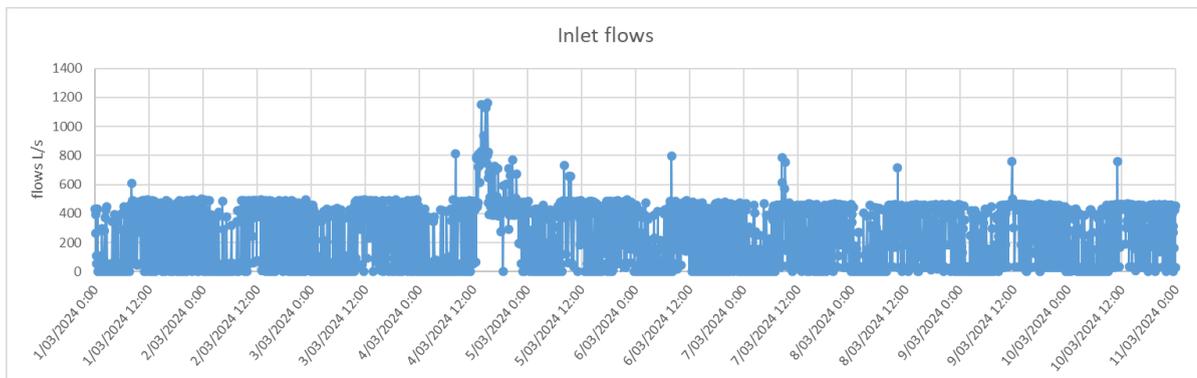


Figure 3

During the investigated period the average flow increased compared to the average flows with peak of 1163 L/s. Data are given in table 3.

Date	Average flow	Peak flow
01/03/2024	210	610
02/03/2024	212	495
03/03/2024	236	495
04/03/2024	351	1163
05/03/2024	276	729
06/03/2024	229	796
07/03/2024	211	785
08/03/2024	214	714
09/03/2024	220	757
10/03/2024	232	757

Table 3

It is important to note, that in this case the high flows were a contributing factor and the main reason for the blanket increase were high values of biomass in the aeration basin (MLSS).

Mixed Liquor Suspended Solids (MLSS)

To keep good effluent quality during high flows events, it is required to maintain MLSS concentration (biomass volume) in an optimum range to reduce the risk of sludge blanket increase with subsequent solids carry-over.

Due to a number of breakdowns of the dewatering system, the MLSS is higher than optimal. See the MLSS values in Figure 4.

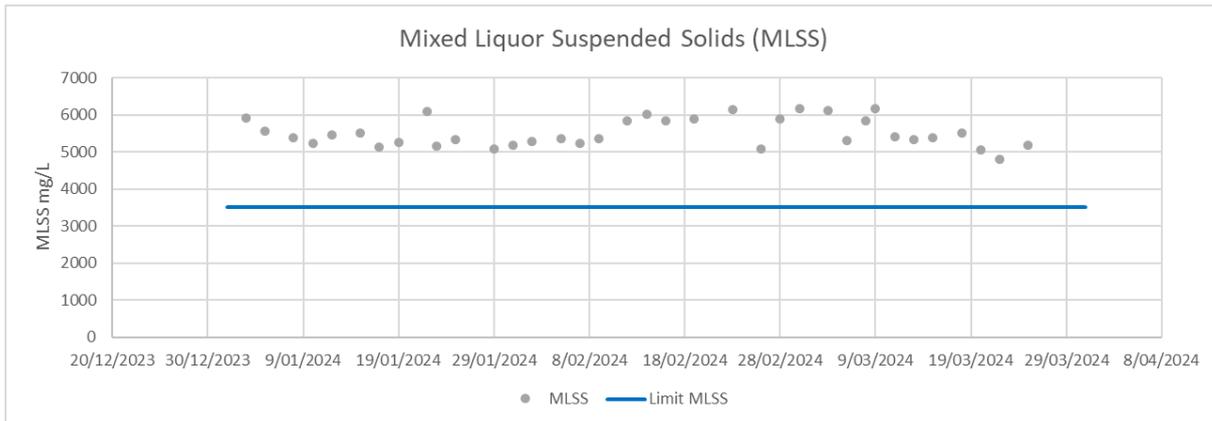


Figure 4

The increased flows coupled with a high Mixed Liquor Suspended Solids resulted in low UVT values in the final effluent.

ABSENT/FAILED DEFENCES

Online monitoring of the sludge blanket levels and UV transmissivity of the final effluent are available together with alarms integrated into the control system. However, it is important to note that the online monitoring does not activate any automatic action, but operator's manual intervention is required. In the investigated event, all alarms were received, and the paging alarm system worked as required. The operation relied on manual adjustments described below.

INDIVIDUAL - HUMAN FACTORS/TEAM ACTIONS

Porirua WWTP was experiencing mechanical issues with the centrifuges and polymer system since the beginning of February 2024. Multiple issues with the dewatering system resulted in reduced dewatering capacity causing a gradual build up of the mixed liquor suspended solids (biomass) in the biological treatment tanks and increase in the sludge blanket levels in the secondary clarifiers.

Prior to the rain event the weather forecast was monitored closely. At the same time sludge management procedure was followed before and during the investigated period to compensate for the increased biomass accumulation in the system. No omissions were identified in the steps undertaken.

ORGANISATIONAL FACTORS

On March 4th, after the operations team observed decreased effluent quality, a shoreline sampling campaign was initiated, and photos of the outfall were taken. Discoloration in the vicinity of the outfall was observed during the inspection and duty manager was notified.

The duty manager was informed that there was suspended solid carryover from the Porirua WWTP and assumed that a discharge did not meet the requirements of Resource Consent WGN200229 condition 13 i.e., that the discharge caused discoloration beyond 200 metres occurred.

Since the duty manager was engaged in a meeting, the northern plant coordinator was requested to submit the discharge notification. This miscommunication caused the notification to be sent including inaccurate information.

Reasons for this are as follows:

- The training covering introduction of the current resource consent WGN200229 has not covered all the requirements given by this new resource Consent. Therefore, misinterpretation during the investigated event occurred resulting in providing inaccurate information.
- The notification form submitted was not updated according to the current resource consent conditions and did not cover all the requirements given by the RC WGN200229.

TASK/ENVIRONMENTAL CONDITIONS

The following is a summary of the monthly shoreline monitoring performed as part of resource consent WGN200229 [36816].

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	--	--	--	--
05/03/2024	06:47	110	8.26	34	10.02	16.9	SW	Strong	High	Low
06/03/2024	06:26	10	8.16	38	9.75	16.7	S	Light	High	Low
07/03/2024	09:33	30	8.14	34	10.25	16.8	SW	Light	High	Ebb

Table 4: Shoreline Monitoring 140m generally eastwards of the outfall

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
05/03/2024	06:47	0.17	0.1	0.1	0.015	0.570	0.081
06/03/2024	06:26	0.26	0.1	0.1	0.010	0.950	0.050
07/03/2024	09:33	0.02	0.1	0.1	0.008	0.500	0.050

Table 5: Shoreline Monitoring 140m generally eastwards of the outfall

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	--	--	--	--
05/03/2024	07:06	110	8.28	34	10.13	16.7	SW	Moderate	High	Low
06/03/2024	06:26	10	8.1	38	10.18	16.0	S	Calm	High	Low
07/03/2024	09:33	10	8.1	34	10.07	17.7	SW	Light	High	Ebb

Table 6: Shoreline Monitoring 200m generally southwestwards of the outfall

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
05/03/2024	07:06	0.15	0.1	1.0	0.055	0.840	0.173
06/03/2024	06:26	0.25	0.1	0.1	0.023	0.990	0.050
07/03/2024	09:33	0.02	0.1	0.1	0.031	0.610	0.100

Table 7: Shoreline Monitoring 200m generally southwestwards of the outfall

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	--	--	--	--
05/03/2024	06:37	380	8.21	34	9.86	16.9	SW	Strong	High	Low
06/03/2024	06:26	20	8.14	38	10.54	15.6	S	Light	High	Low
07/03/2024	09:33	10	8.27	34	9.79	17.5	S	Light	High	Ebb

Table 8: Shoreline Monitoring

Control site

The control site is closed due to fire hazard therefore no sampling was initiated.

PHOTOS

Date: 04/03/2024

Time: 15:33



Discoloration was limited to the area immediately around the outfall.

Date: 05/03/2024

Time: 07:00



CORRECTIVE ACTIONS

Corrective Actions	Reference of issue on captured system or Defect raised	Responsibility	Measurement
Workflow for the proper communication channels to be clarified.	Communication workflow needs to be confirmed to ensure that the correct information in a correct context is provided.	Operations Manager	Document created and available for the relevant staff. Rivo action.
SOPs to be made in specific to notifications required by the Resource consent and The Regional contract	Therefore, a Standard Operation Procedure will be created to clarify the instructions for sending the notifications. At the same time, communication workflow needs to be confirmed to ensure that the correct information in a correct context is provided.	Compliance Officer/Process Engineer	Document created and available for the relevant staff. Rivo action.
Updating of the Notification Forms according to the new resource consent.	The existing form does not reflect requirements given by the current Resource consent. The new form needs to be created.	Compliance Officer	Document created and available for the relevant staff. Rivo action.
Consent 12D training	Revisit training on Porirua's consent conditions, and if required, engagement of GWRC for clarification. This should be expanded to all Duty-managers.	Compliance Officer	Rivo action.
Spares list for the centrifuges to be prepared	Mechanical breakdowns of the dewatering system contributed to the accumulation of biomass in the aeration basin and secondary clarifiers. To eliminate the down-down of the equipment, a list of spares will be created, and parts will be purchased accordingly.	Team Leader/ Coordinator	Document created and submitted to WWL for review/approval. Rivo action.

CONCLUSION

- According to the condition 12D of Resource consent WGN200229, the hourly average of UV transmissivity (UVT) values shall not reduce below 45%.
- Values of hourly average for UVT dropped below the limit on March 3rd and 4th.
- Low values of the UVT parameter indicated poor water quality with increased suspended solids concentration. Increased suspended solids in the final effluent for March 4th were confirmed by the daily samples analysis (548 mg/L).
- Operational data analysis shows sludge blanket levels in the secondary clarifiers were above the maximum acceptable level.
- Combination of high inlet flows (flows peaking up to 1163 L/s) during the March 3rd and 4th and high concentration of Mixed Liquor Suspended Solids (MLSS) resulted in the blanket disturbance and poor effluent quality.
- Increased MLSS values are a result of mechanical breakdowns of the sludge dewatering equipment.
- Photos taken of the outfall on March 4th show the discoloration in the vicinity of the outfall however this was contained within the 200-metre radius.
- There is an ongoing discussion around the classification of the investigated event. To address this, relevant sections, and conditions of the RC WGN200229 are concluded and evaluated below:
 - The definition of a Sludge carry is described in Porirua Wastewater Treatment Plant Coastal Discharge Permit consent conditions WGN200229 [36816] under the title INTERPRETATION and reads: “**Coastal Discharge Permit consent conditions WGN200229 [36816]: Sludge carry-over means a discharge of part of the sludge blanket from the clarifiers. A sludge carry-over discharge to the coastal marine area is not within the scope of this consent**”.
 - During the investigated event the quality of the final effluent met all the requirements given by condition 12.
 - During the event, criteria defined by the condition 12D were met (UVT reduces <45%) and therefore notification was sent, and investigation was conducted.
 - According to condition 13 notification shall be sent when the discharge cause any of the following effects in the receiving waters beyond a 200-metre radius of the discharge point:
 - a. The production of any conspicuous oil or grease films, scums or foams, or floatable or suspended material.
 - b. Any conspicuous change in colour or visual clarity.
 - c. Any emission of objectionable odour from the discharge to water.
 - d. Any significant adverse effect on aquatic life.

Based on the pictures and observation of the onsite operator, the discoloration was visible in the immediate vicinity of the outfall and the 200 metre radius was not exceeded.

APPENDIX I



Food & Water Testing ANALYTICAL REPORT

REPORT CODE **AR-24-NW-013533-01** REPORT DATE **07/03/2024**

Attention Veolia Water - Wellington

Wastewater Treatment Plant
P.O. Box 14744
WELLINGTON 6041
Wellington
NEW ZEALAND

Phone (04) 388 0067

Email ann.shibu@veolia.com

Copy to: Robins (nico.robins@veolia.com), Vachova (petra.vachova@veolia.com), Lawlor (rik.lawlor@veolia.com), Mundwa

Contact for your orders: Deb Bottrill Order code: EUNZWE-00170877
Contract: Porirua Regular Testing Purchase Order Number: 7300341721

SAMPLE CODE 812-2024-00032034

Sampling Point code: POR_INF_C_1D Sampling Point name: Porirua Influent Composite 1Day
Reception Date & Time: 02/03/2024 11:45 Analysis Ending Date: 07/03/2024
Analysis Start Date & Time: 02/03/2024 14:52 Product Type: Waste water
Sampled Date & Time: 01/02/2024 08:05
Sampler(s): customer Sampled by Eurofins: No

	RESULTS	LOQ
NW014 Biochemical Oxygen Demand		
Biochemical oxygen demand (BOD)	212 mg/l	1
NW206 Suspended Solids		
Suspended Solids	490 mg/l	3

SAMPLE CODE 812-2024-00032035

Sampling Point code: POR_EFF_C_1D Sampling Point name: Porirua Effluent Composite 1Day
Reception Date & Time: 02/03/2024 11:45 Analysis Ending Date: 07/03/2024
Analysis Start Date & Time: 02/03/2024 14:52 Product Type: Waste water
Sampled Date & Time: 01/02/2024 08:12
Sampler(s): customer Sampled by Eurofins: No

	RESULTS	LOQ	SPECIFICATIONS
NW014 Biochemical Oxygen Demand			
Biochemical oxygen demand (BOD)	4 mg/l	1	<30mg/L mg O2/l ✓ National Guideline
NW206 Suspended Solids			
Suspended Solids	<8 mg/l	3	<30mg/L mg/l ✓ National Guideline

SAMPLE CODE 812-2024-00032036

Sampling Point code: POR_EFF_G_1D_AM Sampling Point name: Porirua Effluent Grab 1Day AM
Reception Date & Time: 02/03/2024 11:45 Analysis Ending Date: 03/03/2024
Analysis Start Date & Time: 02/03/2024 14:21 Product Type: Waste water
Sampled Date & Time: 02/03/2024 08:15
Sampler(s): customer Sampled by Eurofins: No

	RESULTS	LOQ
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ZM001 Enumeration of Enterococci By Membrane Filtration

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www.eurofins.co.nz



Food & Water Testing ANALYTICAL REPORT

REPORT CODE **AR-24-NW-014572-01** REPORT DATE **11/03/2024**

Attention Veolia Water - Wellington

Wastewater Treatment Plant
P.O. Box 14744
WELLINGTON 6041
Wellington
NEW ZEALAND

Phone (04) 388 0067

Email ann.shibu@veolia.com

Copy to: Robins (nico.robins@veolia.com), Vachova (petra.vachova@veolia.com), Lawlor (nik.lawlor@veolia.com), Mundwa

Contact for your orders: Deb Bottrill
Contract: Porirua Regular Testing

Order code: EUNZWE-00170922

Purchase Order Number: 7300341721

SAMPLE CODE 812-2024-00032168

Sampling Point code:	POR_INF_C_1D	Sampling Point name:	Porirua Influent Composite 1Day
Reception Date & Time:	03/03/2024 11:18	Analysis Ending Date:	11/03/2024
Analysis Started on:	05/03/2024	Sampled Date & Time	02/03/2024 08:00
Product Type	Waste water	Sampled by Eurofins	No
Sampler(s)	customer		

	RESULTS		LOQ	
NW014 Biochemical Oxygen Demand				
Biochemical oxygen demand (BOD)	229	mg/l	1	
NW206 Suspended Solids				
Suspended Solids	466	mg/l	3	

SAMPLE CODE 812-2024-00032169

Sampling Point code:	POR_EFF_C_1D	Sampling Point name:	Porirua Effluent Composite 1Day
Reception Date & Time:	03/03/2024 11:19	Analysis Ending Date:	11/03/2024
Analysis Started on:	05/03/2024	Sampled Date & Time	02/03/2024 08:08
Product Type	Waste water	Sampled by Eurofins	No
Sampler(s)	customer		

	RESULTS		LOQ	SPECIFICATIONS
NW014 Biochemical Oxygen Demand				
Biochemical oxygen demand (BOD)	<3	mg/l	1	<30mg/L mg O2/l ✓ National Guideline
NW206 Suspended Solids				
Suspended Solids	<6	mg/l	3	<30mg/L mg/l ✓ National Guideline

SAMPLE CODE 812-2024-00032170

Sampling Point code:	POR_EFF_G_1D_AM	Sampling Point name:	Porirua Effluent Grab 1Day AM
Reception Date & Time:	03/03/2024 11:19	Analysis Ending Date:	04/03/2024
Analysis Started on:	03/03/2024	Sampled Date & Time	03/03/2024 08:12
Product Type	Waste water	Sampled by Eurofins	No
Sampler(s)	customer		

	RESULTS		LOQ	
ZM0U1 Enumeration of Enterococci By Membrane Filtration				

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Food & Water Testing ANALYTICAL REPORT

REPORT CODE	AR-24-NW-014577-01	REPORT DATE	11/03/2024
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Attention Veolia Water - Wellington

Wastewater Treatment Plant
P.O. Box 14744
WELLINGTON 6041

Wellington
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Contact for your orders: Deb Bottrill
Contract: Porirua Regular Testing

Order code: EUNZWE-00171014

Purchase Order Number: 7300341721

SAMPLE CODE	812-2024-00032467		
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Sampling Point code: POR_INF_C_1D Reception Date & Time: 04/04/2024 11:45 Analysis Started on: 05/03/2024 Product Type: Waste water Sampler(s): customer	Sampling Point name: Porirua Influent Composite 1Day Analysis Ending Date: 11/03/2024 Sampled Date & Time: 03/03/2024 07:35 Sampled by Eurofins: No
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RESULTS	LOQ
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NW014	Biochemical Oxygen Demand				
	Biochemical oxygen demand (BOD)	203	mg/l	1	
NW206	Suspended Solids	231	mg/l	3	

SAMPLE CODE	812-2024-00032468		
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Sampling Point code: POR_EFF_C_1D Reception Date & Time: 04/04/2024 11:45 Analysis Started on: 05/03/2024 Product Type: Waste water Sampler(s): customer	Sampling Point name: Porirua Effluent Composite 1Day Analysis Ending Date: 11/03/2024 Sampled Date & Time: 03/03/2024 08:40 Sampled by Eurofins: No
--	--

RESULTS	LOQ	SPECIFICATIONS
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NW014	Biochemical Oxygen Demand				
	Biochemical oxygen demand (BOD)	4	mg/l	1	<30mg/L mg O2/l ✓ National Guideline
NW206	Suspended Solids	<6	mg/l	3	<30mg/L mg/l ✓ National Guideline

SAMPLE CODE	812-2024-00032469		
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Sampling Point code: POR_EFF_G_1D_AM Reception Date & Time: 04/04/2024 11:45 Analysis Started on: 04/03/2024 Product Type: Waste water Sampler(s): customer	Sampling Point name: Porirua Effluent Grab 1Day AM Analysis Ending Date: 05/03/2024 Sampled Date & Time: 04/03/2024 08:41 Sampled by Eurofins: No
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RESULTS	LOQ
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ZM0U1 Enumeration of Enterococci By Membrane Filtration

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Food & Water Testing ANALYTICAL REPORT

REPORT CODE	AR-24-NW-014693-01	REPORT DATE	12/03/2024
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Attention Veolia Water - Wellington
 [REDACTED]
 Wastewater Treatment Plant
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Phone (04) 388 0067
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Copy to: Robins (nico.robins@veolia.com), Vachova (petra.vachova@veolia.com), Lawlor (rik.lawlor@veolia.com), Mundwa

Contact for your orders: Deb Bottrill **Order code:** EUNZWE-00171209
Contract: Porirua Regular Testing **Purchase Order Number:** 7300341721

SAMPLE CODE 812-2024-00033080	
Sampling Point code: POR_INF_C_1D	Sampling Point name: Porirua Influent Composite 1Day
Reception Date & Time: 05/03/2024 11:01	Analysis Ending Date: 12/03/2024
Analysis Started on: 06/03/2024	Sampled Date & Time 04/03/2024 07:52
Product Type Waste water	Sampled by Eurofins No
Sampler(s) customer	

	RESULTS	LOQ	
NW014 Biochemical Oxygen Demand			
Biochemical oxygen demand (BOD)	107	mg/l	1
NW206 Suspended Solids			
Suspended Solids	242	mg/l	3

SAMPLE CODE 812-2024-00033081	
Sampling Point code: POR_EFF_C_1D	Sampling Point name: Porirua Effluent Composite 1Day
Reception Date & Time: 05/03/2024 11:02	Analysis Ending Date: 12/03/2024
Analysis Started on: 06/03/2024	Sampled Date & Time 04/03/2024 08:03
Product Type Waste water	Sampled by Eurofins No
Sampler(s) customer	

	RESULTS	LOQ	SPECIFICATIONS
NW014 Biochemical Oxygen Demand			
Biochemical oxygen demand (BOD)	14	mg/l	1 <30mg/L mg O2/l ✓ National Guideline
NW206 Suspended Solids			
Suspended Solids	548	mg/l	3 <30mg/L mg/l ✗ National Guideline

SAMPLE CODE 812-2024-00033082	
Sampling Point code: POR_EFF_G_1D_AM	Sampling Point name: Porirua Effluent Grab 1Day AM
Reception Date & Time: 05/03/2024 11:02	Analysis Ending Date: 06/03/2024
Analysis Started on: 05/03/2024	Sampled Date & Time 05/02/2024 07:55
Product Type Waste water	Sampled by Eurofins No
Sampler(s) customer	

	RESULTS	LOQ
ZM0U1 Enumeration of Enterococci By Membrane Filtration		

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 Lower Hutt
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 NEW ZEALAND

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Food & Water Testing ANALYTICAL REPORT

REPORT CODE	AR-24-NW-014859-01	REPORT DATE	12/03/2024
Attention	Veolia Water - Wellington [REDACTED] Wastewater Treatment Plant P.O. Box 14744 WELLINGTON 6041 Wellington NEW ZEALAND		
Phone	(04) 388 0067	Copy to: Robins (nico.robins@veolia.com), Vachova (petra.vachova@veolia.com), Lawlor (rik.lawlor@veolia.com), Mundwa	
Email	ann.shibu@veolia.com		

Contact for your orders:	Deb Bottrill	Order code:	EUNZWE-00171468
Contract:	Porirua Regular Testing	Purchase Order Number:	7300341721

SAMPLE CODE	812-2024-00034076		
Sampling Point code:	POR_INF_C_1D	Sampling Point name:	Porirua Influent Composite 1Day
Reception Date & Time:	06/03/2024 11:45	Analysis Ending Date:	12/03/2024
Analysis Started on:	07/03/2024	Sampled Date & Time	05/03/2024 07:50
Product Type	Waste water	Sampled by Eurofins	No
Sampler(s)	customer		

	RESULTS	LOQ	
NW014 Biochemical Oxygen Demand			
Biochemical oxygen demand (BOD)	206 mg/l	1	
NW206 Suspended Solids			
Suspended Solids	237 mg/l	3	

SAMPLE CODE	812-2024-00034081		
Sampling Point code:	POR_EFF_C_1D	Sampling Point name:	Porirua Effluent Composite 1Day
Reception Date & Time:	06/03/2024 11:45	Analysis Ending Date:	12/03/2024
Analysis Started on:	07/03/2024	Sampled Date & Time	05/03/2024 08:00
Product Type	Waste water	Sampled by Eurofins	No
Sampler(s)	customer		

	RESULTS	LOQ	SPECIFICATIONS
NW014 Biochemical Oxygen Demand			
Biochemical oxygen demand (BOD)	3 mg/l	1	<30mg/L mg O2/l ✓ National Guideline
NW206 Suspended Solids			
Suspended Solids	<6 mg/l	3	<30mg/L mg/l ✓ National Guideline

SAMPLE CODE	812-2024-00034082		
Sampling Point code:	POR_EFF_G_1D_AM	Sampling Point name:	Porirua Effluent Grab 1Day AM
Reception Date & Time:	06/03/2024 11:45	Analysis Ending Date:	07/03/2024
Analysis Started on:	06/03/2024	Sampled Date & Time	06/03/2024 08:03
Product Type	Waste water	Sampled by Eurofins	No
Sampler(s)	customer		

	RESULTS	LOQ
ZM0U1 Enumeration of Enterococci By Membrane Filtration		

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APPENDIX II

[Porirua WWTP Sludge Management \(Version 1\)](#)

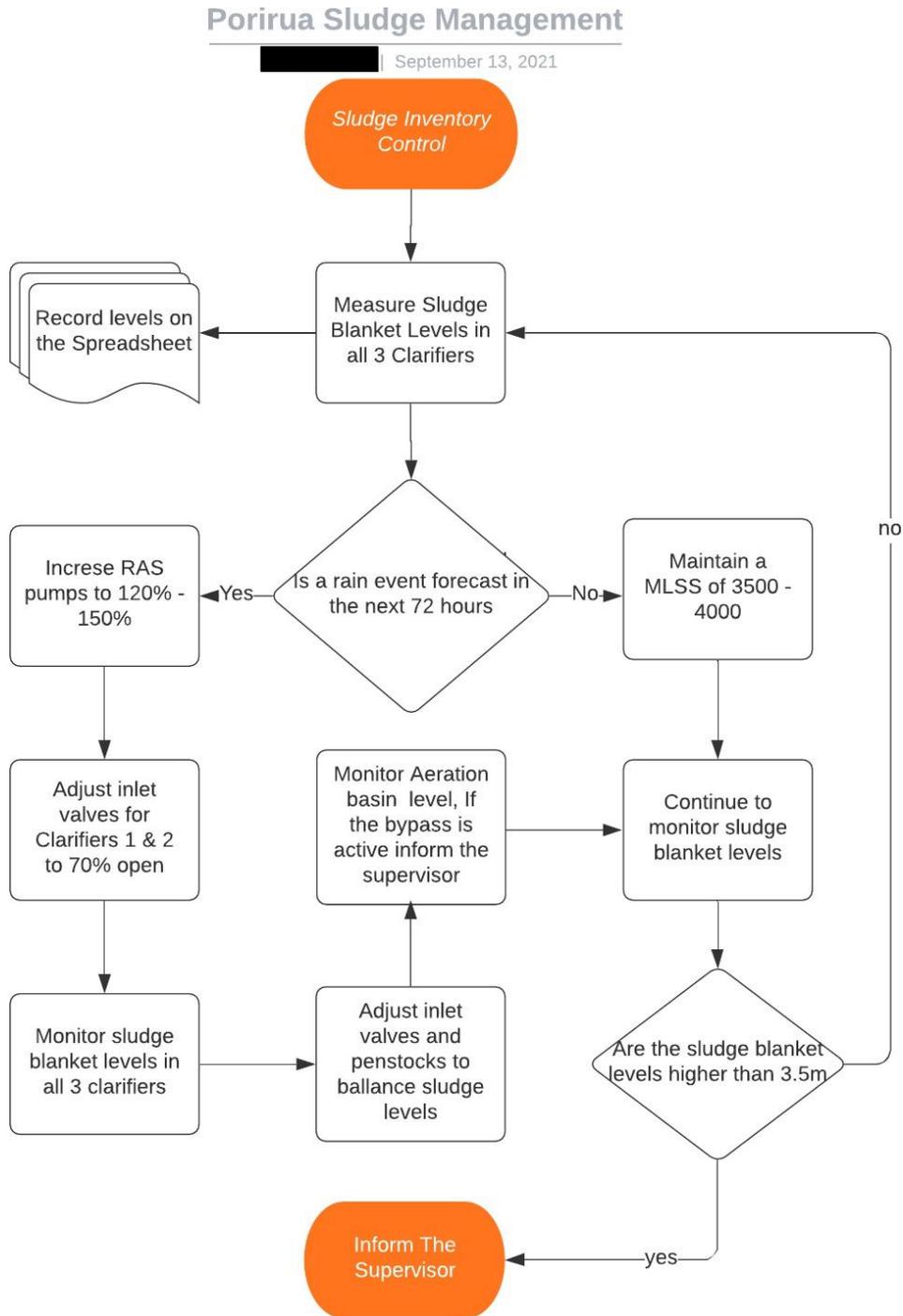
Sludge Carryover Management - Porirua

PURPOSE	This work instruction documents the actions to be taken by the operators at the Porirua Wastewater Treatment Plant to minimise the possibility of a sludge carryover from the clarifiers.
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Scope	This process applies to Porirua Wastewater Treatment Plant
Review Frequency	3 Yearly
Process SHEQ/Environment Risks/Needs	<p>Wastewater</p> <ul style="list-style-type: none"> • Ensure hepatitis A & B, and tetanus vaccinations are up to date. • Avoid direct contact with effluent and wear specified PPE where the contact is unavoidable. <p>Environmental</p> <ul style="list-style-type: none"> • Ensure the PPE is adequate for the weather conditions during dip sampling
Training Required	On-site training
Supporting Information	
Personal Protective Equipment Required for Task	<ul style="list-style-type: none"> • Long sleeve shirt • Long pants • Safety boots or shoes • Safety glasses • Gloves (fit for the task)

Process

Porirua Sludge Management - Flowchart



Prior to the Rain Event - Step Table

Step	Process	Notes
1.	Site staff monitor the weather forecast for heavy or long-term rain events during the next 72 hours.	
2.	If a significant rain event is forecast, the site operators will check the blanket level history on each clarifier for the past week.	
3.	The site operator will increase the RAS pump rate to 120% - 150% of the inflow as required to drop the Clarifier blanket levels to below 1m.	
4.	Approximately 12 hours before the rain event is forecast to start, the site operators will adjust the inlet valves on Clarifiers #1 & #2 to 70% open to help balance the flow between the 3 clarifiers.	

During the Rain Event - Step Table

Step	Process	Notes
1.	Site staff will regularly monitor the blanket levels in all 3 clarifiers. They will use the inlet valves and stopboards to balance the flow between the 3 clarifiers to maintain an even sludge blanket level.	
2.	Operators will visually monitor the level in the aeration basin. If the level starts to rapidly rise, they will remove all the flow restrictions to the clarifier with the lowest sludge blanket.	
3.	Once the flow exceeds 1,100 L/sec and the Aeration basin bypass is active, contact the Operations Coordinator during work hours or the Duty Manager after hours.	
4.	If after taking all precautions a Clarifier becomes overloaded with sludge and a carry over occurs, the operations team will inform the Northern Operations Coordinator during work hours or the Duty Manager after hours. If safe and possible to do, take photos of the Clarifier weir and outfall pipe.	
5.	All adjustments and events must be recorded into the daily log.	