Wellington Water

Moa Point Wastewater Treatment Plant

Annual Resource Consents Report 2022/2023

Our water, our future.

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Control Sheet

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0	Draft		First version of report for review
1	Final	31/07/2023	Approved, Head of Wastewater Contracts

Executive Summary

This report has been prepared on behalf of the Wellington City Council (WCC) for compliance with the following resource consents:

WGN080003 [31505]

This discharge permit allows WCC to continuously discharge up to 260,000 cubic meters per day of secondary treated and disinfected wastewater from the Moa Point Wastewater Treatment Plant into the coastal marine area via an existing submarine outfall. The coastal marine area is designated between map references NZMS 260: R27; 2660742.5982398 and NZMS 260: R27; 2660710.5982311.

WGN080003 [35047]

This coastal permit allows WCC to occasionally discharge up to 4500 litres per second of mixed disinfected secondary treated and milli-screened wastewater to the coastal marine area via an existing submarine outfall during and/or immediately after heavy rainfall, when the quantity of wastewater arriving at the Moa Point Wastewater Treatment Plant exceeds 3000 litres per second. The coastal marine area is designated between map references NZMS 260: R27; 2660742.5982398 and NZMS 260: R27; 2660710.5982311.

WGN080003 [26182]

This coastal permit allows WCC to occupy the foreshore and seabed of the coastal marine area with an existing submarine outfall pipeline. The coastal marine area is designated between map references NZMS 260: R27; 2660742.5982398 and NZMS 260: R27; 2660710.5982311.

WGN080003 [26183]

This discharge permit allows WCC to continuously discharge contaminants (including odour) to air from the Moa Point Wastewater Treatment Plan ventilation system. The Moa Point WWTP is located at map reference NZMS 260: R27; 2661614.5984078.

The report will cover the period from 1 July 2022 to 30 June 2023.

Table of Contents

Resource Consent

WGN080003 [31505]

Effluent discharge from the Moa Point WWTP is governed by the resource consent under the Greater Wellington Regional Council consent file number WGN8003 [31505]. In general, the consent allows the continuous discharge of up to 260,000 cubic metres per day of secondary treated and disinfected wastewater from Moa Point Wastewater Treatment Plant into coastal marine area via an existing submarine outfall.

The following outlines the conditions of this resource consent required for this report.

WGN980003 [35047]

In addition to the above resource consent, the discharge from the Moa Point WWTP is governed by another resource consent under the Greater Wellington Regional Council consent file number WGN8003 [35047]. In general, the consent allows the discharge up to 4500 litres per second of mixed disinfected secondary treated and milli-screened wastewater to the coastal marine area via an existing submarine outfall during and/or immediately after heavy rainfall, when the quantity of wastewater arriving at the Moa Point Wastewater Treatment Plant exceeds 3000 litres per second.

The following will also outline the conditions of this resource consent required for this report.

WGN980003 [26182]

The outfall pipeline from the Moa Point WWTP is governed by the resource consent under the Greater Wellington Regional Council consent file number WGN8003 [26182]. In general, the WCC is allowed to occupy the foreshore and seabed of the coastal marine area with an existing submarine outfall pipeline.

The following will also outline the conditions of this resource consent required for this report.

WGN980003 [26183]

Emissions from the Moa Point WWTP are governed by the resource consent under the Greater Wellington Regional Council consent file number WGN8003 [26183]. In general, the WCC is allowed to continuously discharge contaminants (including odour) to air from Moa Point Wastewater Treatment Plan ventilation system.

The following will also outline the conditions of this resource consent required for this report.

WGN080003 [31505]

Condition (5)

The permit holder shall continue to engage with the Moa Point Community Liaison Group (CLG) established and maintained under the Wellington City Council destination. A summary of each meeting that includes, but is not limited to, issues discussed, actions agreed upon and any follow-up on agreed actions from previous meetings shall be forwarded to the Manager, Environmental Regulation, Wellington Regional Council within 10 working days of each CLG meeting.

A CLG meeting was held on 22nd March 2023. The minutes of the meeting was sent to the group.

Condition (6)

The permit holder shall continuously monitor and record the flow rate and volume of treated wastewater entering the submarine outfall pipeline, to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council. A summary of the records listing the daily discharge volumes and average and maximum flow rates shall be forwarded to the Manager, Environmental Regulation, Wellington Regional Council at quarterly intervals, in accordance with condition 19 of this permit.

There were flow discrepancy records between the Influent and Effluent flow meter readings. It was later found out that there was an error in the flow calculation of the effluent discharge flow causing it to read higher than the influent flow meter. The issue has been resolved.

The influent flow records are shown below for better accuracy since effluent and influent records should be equivalent, see Figure 1: Moa Point WWTP Influent and Effluent Discharge Volume.

In February 2022, the full treatment capacity of the treatment plant was reduced to approximately 2,200 L/s from 3000 L/s that the consent requires. The reduction in full treatment capacity was due to the failure of one of the three clarifiers. The full treatment capacity in Moa Point was returned to 3000 L/s on 21st April 2023.

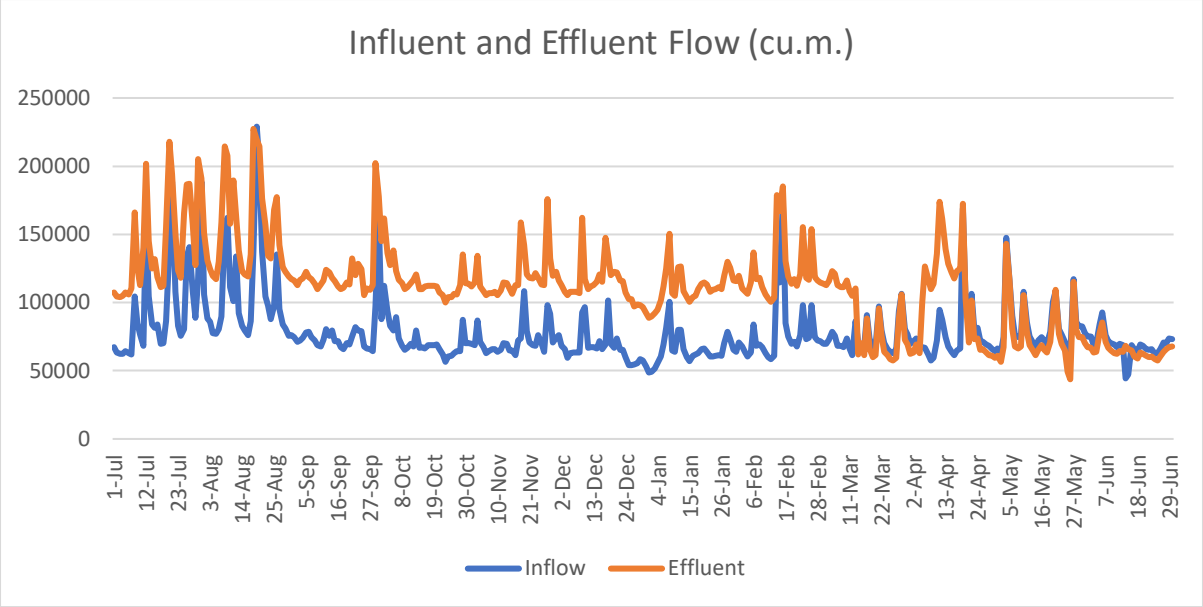

Figure 1: Moa Point WWTP Influent and Effluent Discharge Volume

Condition (10)

The wastewater discharged from the Moa Point Wastewater Treatment Plant to the coastal waters shall comply with the following effluent quality criteria:

(a) $cBOD_5$

The geometric mean of 90 consecutive daily sampling results shall not exceed 20g/m^3 and no more than 10% of 90 consecutive sample results shall exceed 45g/m^3.

(b) Suspended solids

The geometric mean of 90 consecutive daily sampling results shall not exceed 30g/m^3 and no more than 10% of 90 consecutive sample results shall exceed 68g/m^3.

(c) Faecal Coliforms

The geometric mean of 90 consecutive daily sampling results shall not exceed 200 colony forming units per 100mL and no more than 10% of 90 consecutive sample results shall exceed 950 colony forming units per 100mL.

Compliance with the effluent quality criteria shall be determined from the results of wastewater monitoring undertaken in accordance with conditions (9)(a) and (9) (b) of this permit, with running geometric mean and ninetieth percentile calculated following each sampling event using the preceding 90 consecutive sample results.

Section (a)

Below is a summary of the geometric mean and ninetieth percentile for the Carbonaceous Biological Oxygen Demand.

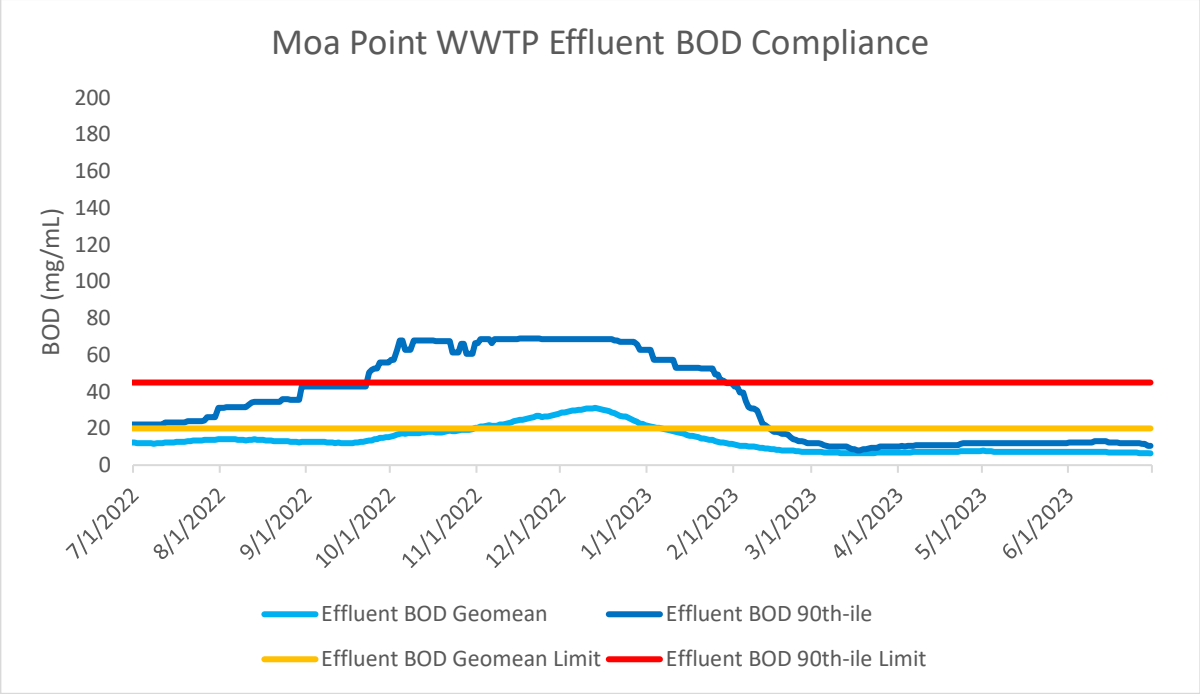

Figure 2: Effluent Carbonaceous Biological Oxygen Demand Results Geometric Mean and 90th Percentile

Section (b)

Below is a summary of the geometric mean and ninetieth percentile for the Suspended Solids.

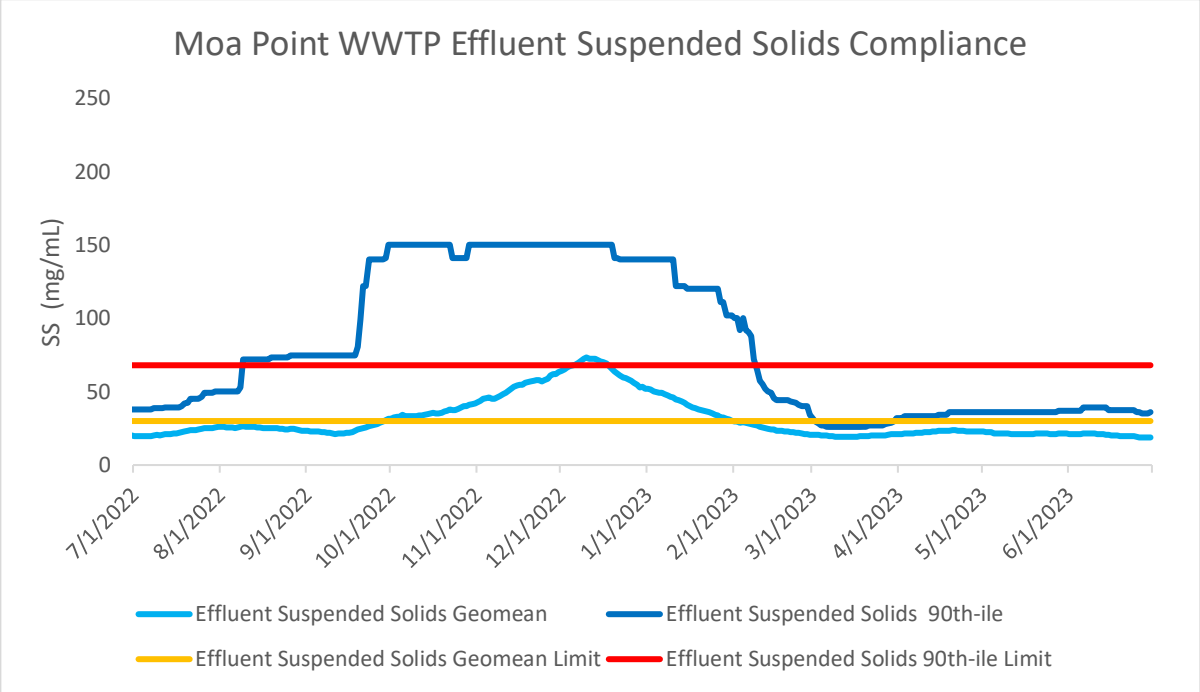

Figure 3: Effluent Suspended Solids Results Geometric Mean and 90th Percentile

Section (c)

Below is a summary of the geometric mean and ninetieth percentile for the Faecal Coliforms.

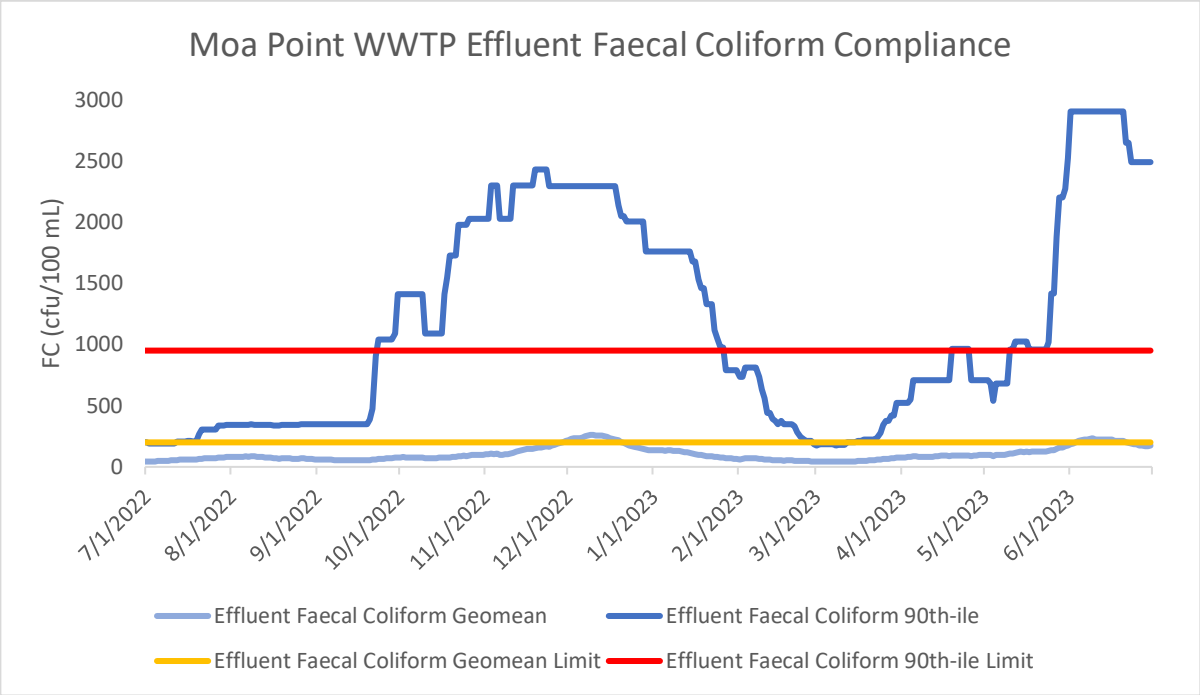

Figure 4: Effluent Faecal Coliform Geometric Mean, and 90th Percentile

A graphical representation of the daily effluent results from July 2022 to June 2023 can be found in Appendix I: Daily Effluent Results. The daily values can be found in quarterly reports and certificates of laboratory analysis can be provided upon request.

Condition (11)

The permit holder shall at least once every three months obtain a sample of the treated wastewater discharged from the treatment plant to the outfall. This sample shall be analyzed for and not exceed the following:

Total arsenic	0.26g/m^3
Total cadmium	0.08 g/m^3
Total chromium	0.48 g/m^3
Total copper	0.14 g/m^3
Total lead	0.48 g/m^3
Total mercury	0.01 g/m^3
Total nickel	0.77 g/m^3
Total zinc	1.65 g/m^3
Phenol	0.80 g/m^3
Cyanide as CN	0.10 g/m^3

The sample shall also be analysed for:

pH

Ammoniacal Nitrogen

Oil and Grease

Below is a summary of the analytical results for the quarterly effluent samples.

Compound	Unit	Limit	22/07/2022	17/10/2022	27/01/2023	28/04/2023
Total Arsenic	**g/m³**	**0.26**	0.00170	0.00100	0.00200	0.00200
Total Cadmium	**g/m³**	**0.08**	0.00010	0.00025	0.00100	0.00100
Total Chromium	**g/m³**	**0.48**	0.00100	0.00250	0.00100	0.00100
Total Copper	**g/m³**	**0.14**	0.00580	0.01400	0.00400	0.00300
Total Lead	**g/m³**	**0.48**	0.00042	0.00081	0.00100	0.00100
Total Mercury	**g/m³**	**0.01**	0.00010	0.00025	0.00100	0.00100
Total Nickel	**g/m³**	**0.77**	0.00110	0.00050	0.00100	0.00100
Total Zinc	**g/m³**	**1.65**	0.02900	0.03000	0.02900	0.02000
Phenol	**g/m³**	**0.80**	0.00400	0.02000	0.01000	0.01000
Cyanide as CN	**g/m³**	**0.10**	0.00500	0.00500	0.04300	0.02200
pH	**- -**	**--**	7	7	7	8
Ammoniacal Nitrogen	**g/m³**	**--**	9	14	13	10
Oil and Grease	**g/m³**	**--**	9	6	4	5

Table 1: Quarterly Effluent Sample Results

The analytical data sheet results can be viewed in the Moa Point WWTP quarterly reports. All analytical results for the quarterly effluent samples are well below the limits set in the resource consent. This is because of the lack of heavy industry in Wellington City.

All data for the 2022/2023 reporting year is compliant.

Condition (13)

The permit holder shall notify the Manager, Environmental Regulation, Wellington Regional Council immediately in the event that a running geometric mean and/or ninetieth percentile effluent quality value or other value calculated following each wastewater quality sampling event exceeds the criteria stipulated in conditions 10 and 11 of this permit for more than three consecutive sampling events. Such a notification shall include the likely reason for exceedance, and measures to be undertaken by the permit holder to remedy the situation.

The permit holder shall also immediately notify the Medical Officer of Health of any such event.

Notifications were sent to the regional council if the plant was not able to comply with conditions 10 and 11 of this consent. Furthermore, WWL, Veolia and Greater Wellington Regional Council have regular monthly review meetings to discuss the compliance concerns at Moa Point WWTP.

Condition (20)

The permit holder shall provide to the Manager, Environmental Regulation, Wellington Regional Council an Annual Assessment and Analysis Report for the period 1 July to 30 June by 31 July each year summarising compliance with the conditions of this permit. This report shall include, but not be limited to the following:

a) A summary of all monitoring undertaken in accordance with the conditions of this permit and a critical analysis of the information in terms of compliance and adverse environmental effects;
b) A comparison of data with previously collected data in order to identify any emerging trends;
c) Comments on compliance with the conditions of this permit;
d) Any reasons for non-compliance or difficulties in achieving compliance with the conditions of this permit;
e) Any measures that have been undertaken to improve the environmental performance of the wastewater treatment and disposal system;
f) A copy of any complaints recorded (in accordance with condition 18 of this permit) during the year;
g) Any other issues considered to be important;

A copy of the report shall be provided to Community Liaison Group, Te Atiawa, Te Runanganui O Taranaki Whanui kit e Upoko o te Ika a Maui, Ngati Toa Rangatira and the Wellington Tenths Trust, if requested.

Section (a)

a) A summary of all monitoring undertaken in accordance with the conditions of this permit and a critical analysis of the information in terms of compliance and adverse environmental effects;

Table 2 summarises all the treatment plant data monitored from July 2022 to June 2023. The median, minimum and maximum values are tabulated for each parameter.

Parameter	Minimum	Median	90th Percentile	Maximum
Inflow	44,396	70,594	102,236	228,989
Effluent BOD	3	9	47	190
Effluent SS	4	23	110	350
Effluent Faecal Coliform	2	100	1,692	140,000

Table 2: Summary of Monitoring Results

Effluent BOD5:

The Effluent 90-day rolling BOD5 Geometric Mean was non-compliant with the compliance limit of 20 g/m^3 from 29th October 2022 to 17th January 2023.

The Effluent 90-day rolling BOD5 90th percentile was non-compliant with the compliance limit of 45 g/m^3 from 28th September 2022 to 16th February 2023.

Effluent Total Suspended Solids (TSS):

The Effluent 90-day rolling TSS Geometric Mean was non-compliant with the compliance limit of 30 g/m^3 from 16th October 2022 to 21st February 2023.

The Effluent 90-day rolling TSS 90th percentile was non-compliant with the compliance limit of 68 g/m^3 from 21st September to 27th February 2023.

Effluent Faecal Coliform:

The Effluent 90-day rolling Faecal Coliform Geometric Mean was non-compliant with the compliance limit of 200 cfu/100 mL from:

- 29th November 2022 to 20th December 2022
- 3rd June 2023 to 21st June 2023

The Effluent 90-day rolling Faecal Coliform Percentile Limit was non-compliant with the compliance limit of 950 cfu/100 mL from:

- 23rd September 2022 to 26th January 2023
- 19th April to 25th April 2023
- 10th May to 30 June 2023

The reasons for non-compliance can be found in section (d).

Assessment of Environmental Effects:

In 2006, the Cawthron Institute was commissioned to predict the dilution and dispersal characteristics from Moa Point WWTP discharges. The most conservative predicted initial dilution that was 95:1 based on a peak flow of 4,000 L/s with a typical dilution of 196:1 that can be achieved within the 100-m mixing radius of the outfall based on predicted 2043 Average Dry Weather Flow of 980 L/s.

Using the dilution data, the predicted concentration on the receiving environment is summarised below:

Parameter	Unit	Wastewater concentration using 90th percentile Effluent Quality Value	Background seawater concentration (cfu/100ml)	Minimum dilution (x-fold)	Predicted concentration after initial dilution
BOD	g/m^3	47	5	95	5.49
				196	5.24
Total Suspended Solids (TSS)	g/m^3	110	5	95	6.15
				196	5.56
Faecal Coliform	cfu/100 mL	1,692	2	95	19.8
				196	10.63

Table 3: Effect of Dilution on the Receiving Environment

Note: The background seawater concentration data for TSS and faecal coliform was taken from Stantec's AEE Report for Moa Point WWTP March 2022. A background concentration of 5 g/m3 was assumed for BOD.

The predicted BOD, TSS and faecal coliform concentration in the receiving environment after initial dilution are low, it is expected that it will not result in any long-term adverse effect in the environment.

As shown in condition (11): Table 1, The heavy metal concentrations in the treated wastewater discharges are compliant as such the effect to the receiving environment is expected to minor.

As concluded in the Stantec's AEE Report for Moa Point WWTP March 2022, the long ocean outfall and multiport diffuser will play an important role in mitigating the adverse effects of the reduced treatment capacity and poorer effluent quality by separating the point of discharge from sensitive receptors and ensuring a high level of initial dilution.

The AEE will be updated using all the data for FY22/23 and will be provided to GWRC.

Section (b)

b) A comparison of data with previously collected data in order to identify any emerging trends;

A comparison of data was made between 2022/2023 reporting period and the previous four (4) years. The following section summarizes that comparison.

WWTP Effluent Discharge Volume:

WWTP effluent discharge volume is used to establish a trend. The effluent volumes have been plotted for the last 5 years. The discharge flow increases during winter season and decreases in summer.

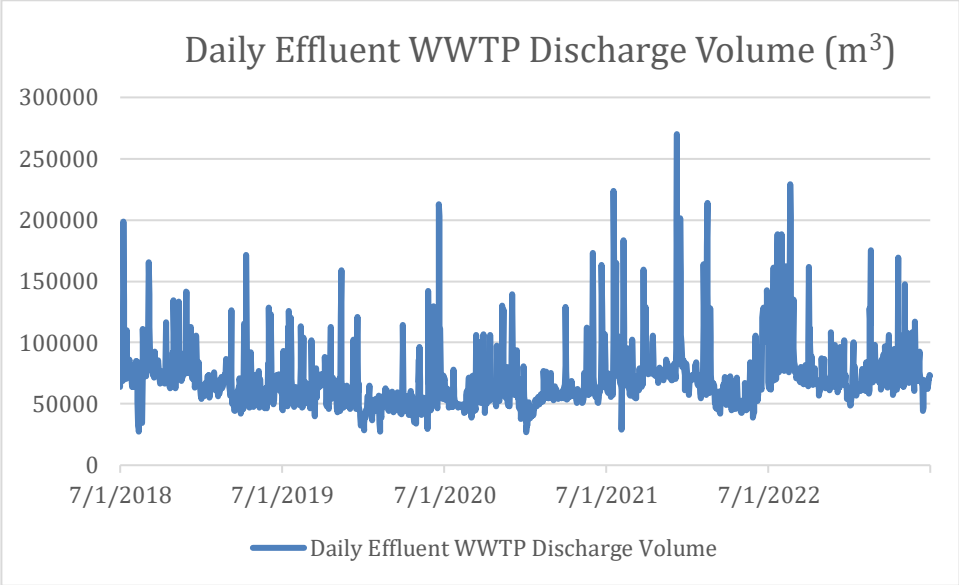

Figure 5: WWTP Effluent Discharge Volume

WWTP Effluent Quality:

To establish a trend, all daily effluent quality results in the last five years have been used.

From 2018 - 2019, the plant was able to consistently meet the effluent quality requirements.

There were exceedances in the effluent quality results since 2020 which can be attributed to the following:

- asset failures
- difficulty in controlling the treatment process in response to asset failures and change in season
- wet weather events

In the last quarter of 2022, process optimisation was initiated and participated in by Wellington Water, Veolia and Stantec. The aim of this activity is to return effluent from the treatment process back into compliance. As a result of this activity, the daily results trended towards compliance from December 2022.

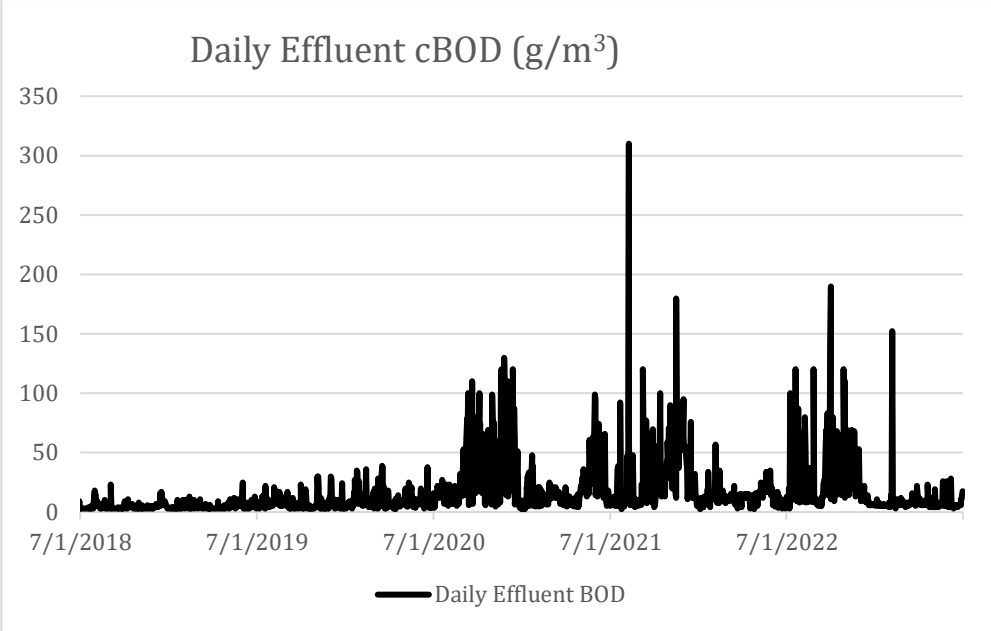

Figure 6: Daily Effluent BOD Results

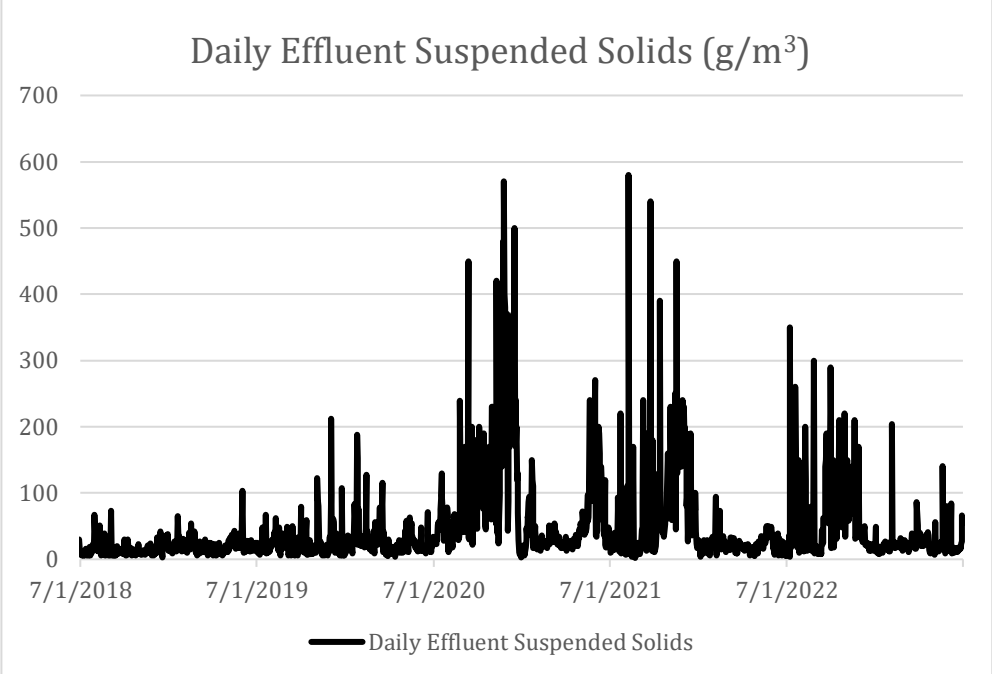

Figure 7: Daily Effluent Suspended Solids Results

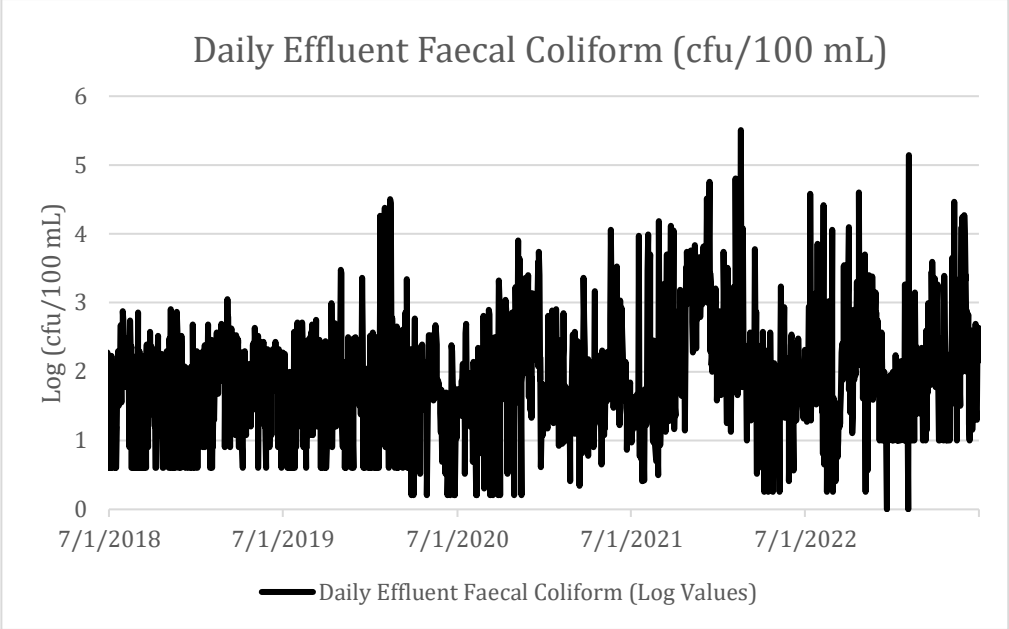

Figure 8: Daily Effluent Faecal Coliform Results

Section (c)

c) Comments on compliance with the conditions of this permit;

The plant was not able to consistently meet its effluent quality compliance requirements. Greater Wellington Regional Council issued infringement notices I873 and I874 in October 2022 due to effluent non-compliances.

Section (d)

d) Any reasons for non-compliance or difficulties in achieving compliance with the conditions of this permit;

Effluent TSS:

Effluent TSS became non-compliant in August 2022. The non-compliance can be attributed to the following:

- High solids inventory in the system
- Poor sludge settleability
- Denitrification in the clarifiers during summer which caused nitrogen gas to be released from the sludge causing solids to float and get carried over in the final effluent
- Asset failure, such as the failure of one of the three clarifiers, which caused the solids settlement capacity of the plant to be reduced by a third
- Wet weather events

The combinations of the factors caused some of the solids to be carried over in the final effluent which caused the non-compliance.

Effluent BOD:

The non-compliance in effluent BOD was an effect of the TSS non-compliance. As mentioned in Condition 20 section (a), the non-compliance period for effluent BOD occurred within the non-compliance period of the effluent TSS. The increase in solids content in the effluent will cause the organic content of the effluent to increase, which will eventually result in an increase in the biochemical oxygen demand (BOD) of the treated wastewater.

Effluent Faecal Coliform:

- 23rd September 2022 to 26th January 2023 non-compliance

  The non-compliance during this period was caused by elevated TSS content in the final effluent. High solids content in the wastewater renders the UV less effective by blocking the UV light.

- 19th April to 25th April 2023 non-compliance

  The non-compliance during this period was caused by high TSS level in the final effluent, which can be attributed to high solids inventory in the system and wet weather events.

- 10th May to 30th June 2023

  The non-compliance during this period was caused by high TSS level in the final effluent which can be attributed to high solids inventory in the system, wet weather events and inefficiency in the UV system caused by aging UV lamps.

Section (e)

e) Any measures that have been undertaken to improve the environmental performance of the wastewater treatment and disposal system;

The following activities were undertaken to improve the plant performance in Moa Point:

- **Asset Renewal** – the notable assets that were renewed to improve the performance of the plant are the following:
- Clarifier 3 Renewal: The completion of the clarifier 3 main bearing renewal enabled the plant to return to its normal full treatment capacity of 3000 L/s.
- Blower Refurbishment: Provision of a reliable oxygen supply to the sludge improves its settleability and biological treatment.
- Sludge Handling Assets Refurbishment: The refurbishment of these assets such as the centrifuges provides increases the reliability in removing and dewatering the sludge from the treatment plant. A reliable operation of the solids handling process prevents the solids to build up in the system which can cause solids carry-over in the effluent which will ultimately lead to non-compliance.
- Inlet Pump Station Renewal (IPS) – in progress. The aim of this project is to ultimately restore the pumping capacity of the treatment plant up to 4,500 L/s.
- UV Renewal – in progress. The aim of this project is to fully replace the obsolete UV system in the treatment plant.

The plant requires several asset renewals over several years to ensure a safe, reliable and compliant treatment performance. Wellington Water is working with Wellington City Council to plan and deliver the capital renewal projects.

- **Process Optimisation** – this activity aims to improve process control in the treatment plant to deliver a more reliable performance. This activity aims to reliably control the following parameters in the process: solids inventory, dissolved oxygen level and sludge age, based on their respective optimum set-points.

Section (f)

f) A copy of any complaints recorded (in accordance with condition 18 of this permit) during the year;

No complaints were recorded for the 2021/2022 reporting period.

Section (g)

g) Any other issues considered to be important;

Please note that effluent samples on 1st of February 2023 could not be collected due to a fire at the Moa Point WWTP. The building had to be evacuated.

WGN080003 [35047]

Condition (8)

The permit holder shall monitor and record the flow rate, total volume and duration of any bypass discharge from the Moa Point Wastewater Treatment Plant to the long outfall, and calculate and record a dilution ratio (secondary treated: screened effluent) for each bypass event based on average rates of flow during that event. The results of this monitoring shall be forwarded to the Manager, Environmental Regulation, Wellington Regional Council, within 10 working days of the bypass discharge occurring.

The following is a summary of the bypass events from the Moa Point WWTP for the 2022/2023 reporting period.

Date	Start	End	Duration	Average Discharge Flow Rate	Total Volume Treated Effluent During Overflow	Total Volume of Bypass	Dilution Ratio	Consented	Cause
dd/mm/yyyy			hrs/min	L/s	m^3	m^3	--	Y/N	
8/07/2022	8/07/2022 11:36	8/07/2022 13:45	2:09:00	1680	18419	124	148:1	N	Wet Weather + 1 Clarifier Offline
12/07/2022	12/07/2022 10:46	12/07/2022 21:14	10:28:00	2296	99273	823	121:1	N	Wet Weather + 1 Clarifier Offline
19/07/2022	19/07/2022 22:06	21/07/2022 18:19	44:13:00	1938	383549	13251	29:1	N	Wet Weather + 1 Clarifier Offline
26/07/2022	26/07/2022 00:56	26/07/2022 03:29	2:33:00	2040	24644	153	162:1	N	Wet Weather + 1 Clarifier Offline
27/07/2022	27/07/2022 09:42	27/07/2022 09:46	0:04:00	2428	856	65	13:1	N	Wet Weather + 1 Clarifier Offline
30/07/2022	30/07/2022 09:29	31/07/2022 23:37	38:08:00	2032	333397	15301	22:1	N	Wet Weather + 1 Clarifier Offline
8/08/2022	8/08/2022 08:56	9/08/2022 21:23	36:27:00	1923	336435	1067	315:1	N	Wet Weather + 1 Clarifier Offline
18/08/2022	18/08/2022 13:52	21/08/2022 01:02	59:10:00	2432	557086	27110	21:1	N	Wet Weather + 1 Clarifier Offline
26/08/2022	8/26/2022 13:14	8/26/2022 13:14	0:00:04	0.2	8	0.2	40:1	N	Wet Weather + 1 Clarifier Offline
30/09/2022	30/09/2022 01:27	30/09/2022 11:49	10:22:00	2197	106000	801	132:1	N	Wet Weather + 1 Clarifier Offline
19/11/2022	19/11/2022 03:06	19/11/2022 03:08	00:02:00	2248	369	64	6:1	N	Wet Weather + 1 Clarifier Offline
27/11/2022	27/11/2022 11:27	27/11/2022 11:27	00:00:03	1787	8	0.042	190:1	N	Wet Weather + 1 Clarifier Offline
9/12/2022	9/12/2022 22:23	10/12/2022 01:00	02:37:00	2474	22595	1917	12:1	N	Wet Weather + 1 Clarifier Offline

8/01/2023	8/01/2023 01:30	8/01/2023 01:33	1:07:00	2009.65	10748	80.84	133:1	N	Wet Weather + 1 Clarifier Offline
11/01/2023	11/01/2023 19:57	11/01/2023 23:11	03:14:00	1555	1675	38	44:1	N	Wet Weather + 1 Clarifier Offline
5/02/2023	5/02/2023 03:00	5/02/2023 03:45	00:45:00	486	2030	2030	1:1	N	Dry weather discharge due to UV Failure
14/02/2023	14/02/2023 13:07	16/02/2023 21:31	56:24:00	1717	429454	20679	21:11	N	Wet Weather + 1 Clarifier Offline
19 Apr 2023	19/04/2023 8:23	19/04/2023 21:13	12:50	609	112,732	28183	4:1	N	Wet Weather + 1 Clarifier Offline
19 Apr 2023	19/04/2023 09:30	19/04/2023 17:30	08:00:00	465	-	13430	N/A	N	Wet Weather,only 8 out of 10 pumps operating and a short outfall discharge
04 May 2023	4/05/2023 15:20	4/05/2023 18:43	03:23	170	32739	1110	29:1	Y	Wet weather

Table 4: Bypass Events from 2022/2023 Reporting Period

Condition (10)

During a bypass discharge (if during normal working hours) and on days one, two and three after the discharge, the permit holder shall take **a grab sample** of coastal water at each of the following locations, providing safe access is available:

- Dorrie Leslie Park at boat ramp
- Hue Te Taka Peninsula;
- Tarakena Bay Beach at boat ramp
- Tarakena Bay Beach, Western side
- Hue te Taka Peninsula, Western side;
- Moa Point Road, opposite number 49
- Lyall Bay Beach, Eastern side
- Dorrie Leslie Park, South side of boat ramp
- Dorrie Leslie Park, West of boat ramp
- Peninsula at Queens Drive and The Esplanade
- Houghton Bay, Western side
- Marine Centre, Island Bay, Eastern side
- Island Bay, Western side

Each sample shall be analysed for faecal coliforms and enterococci.
The permit holder shall identify and record the location of the sampling points (including map references) and supply this information to the Manager, Environmental Regulation, Wellington Regional Council, within three months of the commencement of this permit.

The details of the monitoring programme, as outlined in the Overflow Contingency Plan (required under condition 12 of this permit), shall be to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

Note: These sample locations have been selected to act as audit sites to determine if the results obtained from the modelling undertaken in regards to public health risks from bypass discharges are substantiated by sample results.

Resource consent WGN080003 [35047], Condition 10 was amended on 13 December 2017 to add another ten (10) shoreline monitoring sites. These additional shoreline monitoring sites are located near storm water discharges which may affect the monitoring results.

The following map displays the (13) sites for shoreline sampling:

Figure 1: Moa Point WWTP Shoreline Sampling Sites

The following is a summary of the shoreline samples taken for the bypass event(s) listed in Condition.

The shoreline sampling results can be found in Appendix II: Shoreline Sample Results

Condition (13)

The annual report required by condition 19 of this permit shall detail what steps have been taken in the reporting year and what steps are proposed to be undertaken in the future to reduce infiltration and stormwater ingress into the Wellington City sewerage network.

This information shall include, but not be limited to, the following information:

a) Details on the adoption of a policy to identify, and to repair or replace, defective private sewer drains in the Wellington City catchment. If such a policy is adopted, detail on its implementation made within the previous year
b) Details of additional works that have been undertaken and what these works are expected to achieve
c) An indication of when any on-going works will be completed
d) Details of any investigations undertaken with regard to inflow and infiltration in the Wellington City catchment
e) Details of any works or investigations planned for the next financial year

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

Condition (16)

The permit holder shall provide suitable wastewater sample locations for monitoring the quality of:

a) The bypass flows; and
b) Secondary treated wastewater (i.e. both wastewater streams prior to mixing) during bypass discharges.

The permit holder shall obtain grab samples of both wastewater streams within the first two hours of a bypass discharge occurring during normal working hours or as soon as practicable for those events occurring outside normal working hours. These Samples shall be analysed for:

- cBOD5
- suspended solids
- faecal coliform
- pH
- ammoniacal nitrogen
- oil and grease

And on at least one bypass event each year these samples shall also be analysed for the following indicator contaminants:

- Total cadmium
- Total chromium
- Total copper
- Total lead
- Total nickel
- Total zinc

The wastewater quality results, together with the results of wastewater flow monitoring shall be used to calculate, by mass balance, the quality of the wastewater discharge after both wastewater streams have mixed. The mass balance calculation for a contaminant (a) is:

$C_{mixed}(a) - (C_{tr}(a)*Q_{tr} - C_{by}(a)*Q_{by})/Q_{mixed}$

Where: **C** is contaminant concentration
Q is the flow rate (litres/sec)
tr subscript relates to parameter of the secondary treated wastewater stream
by subscript relates to parameter of the bypassed wastewater stream
mixed subscript relates to the parameter of the mixed secondary treated and bypassed waste streams.

The calculated mixed wastewater discharge quality results shall be reported to the Manager, Environmental Regulation, Wellington Regional Council, within 10 working days of the overflow event occurring.

The following is a summary of the discharge dilution calculation for all the discharges that were listed under WGN080003 [35047], Condition 8.

Table 5 below shows the summary of the screened wastewater sample results.

Date	$cBOD_5$	Suspended Solids	Fecal Coliform	pH	Ammoniacal Nitrogen	Oil and Grease	Total Cadmium	Total Chromium	Total Copper	Total Lead	Total Nickel	Total Zinc
dd/mm/yy	g/m^3	g/m^3	cfu/100mL	--	g/m^3	g/m^3	g/m^3	g/m^3	g/m^3	g/m^3	g/m^3	g/m^3
08/07/2022	160	150	4700000	7.0	17.8	19	0.00009	0.0035	0.058	0.0079	0.0030	0.12
12/07/2022	100	220	400000	7.2	15.3	18	0.00008	0.0035	0.050	0.0065	0.0026	0.11
19/07/2022	76.00	110	1400000	7.4	13.2	12.9	0.00006	0.0022	0.029	0.0055	0.0025	0.06
26/07/2022	52.00	88	1400000	7.2	8.3	13	0.0001	0.0023	0.022	0.0048	0.0014	0.07
27/07/2022	150	280	5600000	7	14.1	14.2	0.00008	0.0027	0.046	0.0047	0.0013	0.12
30/07/2022	150	240.0	5300000	7	19	18.8	0.00011	0.0039	0.045	0.014	0.0023	0.12
08/08/2022	120	100	1600000	7.2	8.01	22.4	0.000064	0.0042	0.026	0.0079	0.0019	0.11
18/08/2022	140	230	3700000	7.1	12.7	10.4	0.0000	0.0000	0.046	0.0000	0.0022	0.094
26/08/2022	140	180	1800000	7.2	14.5	17	0.00007	0.0025	0.043	0.008	0.0028	0.094
30/09/2022	59	110	1700000	7.1	8.15	13.8	0.000055	0.0033	0.027	0.0073	0.0024	0.073
19/11/2022	180	170	7200000	7	17.4	12	0.0001	0.0037	0.05	0.0077	0.0082	0.11
27/11/2022	200	290	3900000	7.2	18.9	25.2	0.00025	0.0031	0.057	0.0088	0.0028	0.13
10/12/2022	33	68	200000	7	12.8	8	0.001	0.002	0.02	0.002	0.001	0.04
8/01/2023	35	81	60000	7.7	6.65	5	0.001	0.003	0.025	0.004	0.001	0.066
11/01/2023	39	75	6000000	7.6	12.7	6	0.001	0.001	0.019	0.002	0.001	0.04
14/02/2023	332	332	3000000	6.4	12.1	55	0.001	0.004	0.078	0.009	0.006	0.21
19/04/2023	100	163	6000	6.5	13.5	16	0.001	0.005	0.043	0.012	0.04	0.15
04/05/2023	40	52	4000	7	11.2	8	0.001	0.001	0.022	0.003	0.002	0.048

Table 5: Screened Wastewater Sample Results

Table 6 below shows the summary of the Effluent Sample.

Date	$cBOD_5$	Suspended Solids	Fecal Coliform	pH	Ammoniacal Nitrogen	Oil and Grease	Total Cadmium	Total Chromium	Total Copper	Total Lead	Total Nickel	Total Zinc
dd/mm/yy	g/m^3	g/m^3	cfu/100mL	--	g/m^3	g/m^3	g/m^3	g/m^3	g/m^3	g/m^3	g/m^3	g/m^3
08/07/2022	160	620	160000	6.7	12.5	11	0.00035	0.0051	0.209	0.0100	0.0048	0.22
12/07/2022	26	320	28000	6.7	8.7	9.6	0.00016	0.0036	0.100	0.0066	0.0027	0.130

19/07/2022	14.0	41	1000	6.8	3.65	5.2	0.00005	0.0011	0.012	0.00073	0.001	0.025
26/07/2022	8.3	26	100	7.1	4.18	6.4	0.00005	0.0012	0.0072	0.0006	0.00082	0.022
27/07/2022	52	110	1800	6.8	10.7	10	0.0001	0.0021	0.03	0.0022	0.001	0.065
30/07/2022	7.7	22.0	200	7.2	9.80000	5.6	0.00005	0.00079	0.007	0.00056	0.001	0.023
08/08/2022	100	370	28000	6.7	3.97	10	0.0002	0.0049	0.11	0.01	0.003	0.18
18/08/2022	4.6	15	36	6.8	12.4	7	0.0000	0.0000	0.0053	0.0000	0.0000	0.02
26/08/2022	61	260	5900	6.9	10.5	7.8	0.00015	0.0044	0.089	0.009	0.0032	0.14
30/09/2022	13	40	20000	7.1	4.9	7.2	0.000055	0.0034	0.015	0.0056	0.0016	0.047
19/11/2022	32	83	2900	7.3	4.92	7	0.0001	0.002	0.04	0.0021	0.0019	0.056
27/11/2022	18	42	1700	6.90	6.85	5	0.00025	0.0025	0.014	0.0011	0.0019	0.033
10/12/2022	14	35	10	7	7.13	4	0.001	0.001	0.014	0.001	0.001	0.037
8/01/2023	4	6	400	7	2.17	5	0.001	0.001	0.005	0.001	0.001	0.03
11/01/2023	3	9	10	7	5.48	5	0.001	0.001	0.005	0.001	0.002	0.04
14/02/2023	22	35	1000	6.4	14.9	5	0.001	0.002	0.018	0.002	0.002	0.043
19/04/2023	37	126	7000	6.7	12.1	5	0.001	0.002	0.041	0.002	0.002	0.067
04/05/2023	6	6	100	6.9	7.58	8	0.001	0.001	0.006	0.001	0.002	0.011

Table 6: Fully Treated Effluent Sample Results during Bypass Discharge

Table 7 below shows the calculated mixed effluent results.

Date	$cBOD_5$	Suspended Solids	Fecal Coliform	pH	Ammoniacal Nitrogen	Oil and Grease	Total Cadmium	Total Chromium	Total Copper	Total Lead	Total Nickel	Total Zinc
dd/mm/yy y	g/m^3	g/m^3	cfu/100mL	--	g/m^3	g/m^3	g/m^3	g/m^3	g/m^3	g/m^3	g/m^3	g/m^3
08/07/2022	160	618	190391	7	13	11	0.0003	0.005	0.209	0.0100	0.005	0.219
12/07/2022	27	319	31059	7	9	10	0.0002	0.004	0.100	0.0066	0.003	0.130
19/07/2022	16	43	47719	7	4	5	0.0001	0.001	0.013	0.0009	0.001	0.026
26/07/2022	9	26	8711	7	4	6	0.0001	0.001	0.007	0.0006	0.001	0.022
27/07/2022	59	122	396896	7	11	10	0.0001	0.002	0.031	0.0024	0.001	0.069
30/07/2022	15	34	289,758	7.19	10.30	6.3	0.0001	0.0010	0.0091	0.0013	0.0011	0.0283
08/08/2022	100	369	35,774	6.7	4.0	10	0.0002	0.005	0.110	0.010	0.003	0.180
18/08/2022	19	38	394,249	6.8	12.4	7	0.0000	0.000	0.010	0.000	0.000	0.028
26/08/2022	63	258	49659	7	11	8	0.0001	0.004	0.088	0.0090	0.003	0.139
30/09/2022	13	41	35,274	7.10	4.93	7.3	0.0001	0.0034	0.0151	0.0056	0.0016	0.0472
19/11/2022	53.80	95.81	1062908.57	7	7	8	0.0001	0.002	0.041	0.0029	0.003	0.064
27/11/2022	18.95	43.30	22059.19	7	7	5	0.0003	0.003	0.014	0.0011	0.002	0.034
10/12/2022	16	38	19,377	7.00	7.68	4.4	0.0010	0.0011	0.0146	0.0011	0.0010	0.0373
8/01/2023	4.23	6.56	844.95	7	2	5	0.0010	0.001	0.005	0.0010	0.001	0.030

11/01/2023	3.80	10.46	133109.60	7	6	5	0.0010	0.001	0.005	0.0010	0.002	0.040
14/02/2023	36.242	48.644	138776.338	6.400	14.771	7.297	0.001	0.002	0.021	0.002	0.002	0.051
19/04/2023	50.980	134.210	6778.097	6.656	12.411	7.441	0.001	0.003	0.041	0.004	0.010	0.085
04/05/2023	7.115	7.508	227.853	6.903	7.699	8.000	0.001	0.001	0.007	0.001	0.002	0.012
Median	**18.975**	**43.15**	**41,746.50**	**7**	**7.6895**	**7.2985**	**0.0002**	**0.002**	**0.01485**	**0.00165**	**0.002**	**0.0436**
80th percentile	**56.92**	**208.484**	**250,011.20**	**7**	**11.84**	**9.2**	**0.001**	**0.00376**	**0.0692**	**0.0062**	**0.003**	**0.112**
90th percentile	**74.1**	**334**	**395,043.10**	**7.03**	**12.5877**	**10**	**0.001**	**0.0043**	**0.103**	**0.0093**	**0.0036**	**0.1513**

Table 7: Calculated Mixed Effluent Result

Condition (19)

The permit holder shall provide to the Manager, Environmental Regulation, Wellington Regional Council an Annual Assessment and Analysis Report for the period 1 July to 30 June by 31 July each year summarising compliance with the conditions of this permit. This report shall include, but not be limited to the following:

a) A summary of all monitoring undertaken in accordance with the conditions of this permit and a critical analysis of the information in terms of compliance and adverse environmental effects;
b) A comparison of data with previously collected data in order to identify any emerging trends;
c) Comments on compliance with the conditions of this permit;
d) Any reasons for non-compliance or difficulties in achieving compliance with the conditions of this permit;
e) Any measures that have been undertaken to improve the environmental performance of the wastewater treatment and disposal system;
f) A copy of any complaints recorded (in accordance with condition 18 of this permit) during the year;
g) Any other issues considered to be important;

Section (a)

a) A summary of all monitoring undertaken in accordance with the conditions of this permit and a critical analysis of the information in terms of compliance and adverse environmental effects;

A summary of all the monitoring data can be found in preceding parts of this consent report.

Wellington Water commissioned an independent expert to assess the adverse environmental effects of the reduction in Moa Point's treatment capacity. While the report was intended primarily to assess the effect of the reduction of plant's capacity to 1,500 – 1600 L/s in relation to UV replacement project, the adverse environmental effects for the reduced capacity during this financial year will be similar. The data used to predict the environmental effects were actual data gathered in 2022 where the treatment has a reduced full treatment capacity of 2,200 L/s.

A copy of the report can be found in Appendix IV Moa Point AEE of reduced hydraulic capacity.

Section (b)

b) A comparison of data with previously collected data in order to identify any emerging trends;

The number of discharges in the last 4 financial years has been shown in Figure 9.

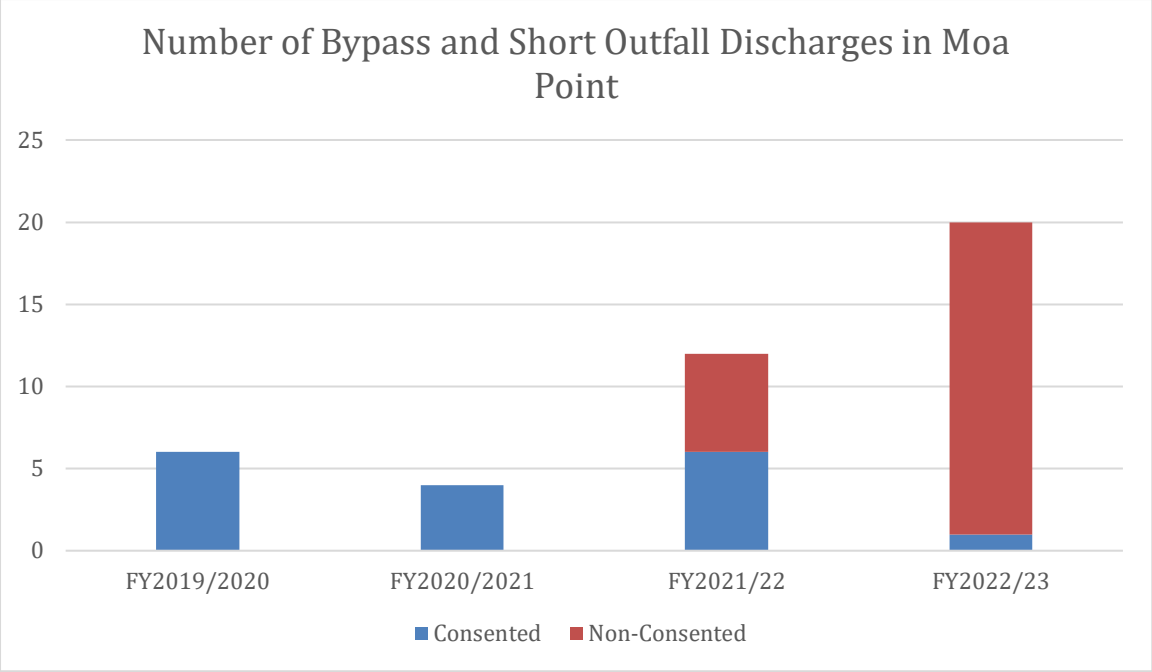

Figure 9: Comparison of Number of Discharges in Moa Point WWTP

This financial year, the plant recorded 19 unconsented discharges and one consented discharge. The sharp increase in the number of discharges is due to the reduction of full treatment capacity of Moa Point from 3009 L/s to 2,200 L/s due to the failure of clarifier #3.

The discharge quality when the plant was operating at full treatment capacity from February 2018 to February 2022 was compared to the discharge quality when the treatment plant had a reduced full treatment capacity. The details of the comparison can be found in Appendix IV report: Moa Point AEE of reduced hydraulic capacity, Section 3.

In summary, most notable differences between the discharge quality are that faecal indicator bacteria concentrations were far higher and TSS was somewhat higher, when the full treatment capacity of the plant was reduced, triggering more frequent bypass discharges.

Section (c & d)

c) Comments on compliance with the conditions of this permit;

d) Any reasons for non-compliance or difficulties in achieving compliance with the conditions of this permit;

The plant failed to comply to the flow threshold before a bypass discharge can occur due to the reduction in full treatment capacity due to the failure of one of the clarifiers. The plant had unconsented 18 bypass discharges and one consented bypass discharge for this reporting period.

The plant also had one short outfall discharge on 19th of April due partially to asset failure in the Inlet Pump Station. A please explain response has been submitted to the regional council regarding this incident.

Section (e)

e) Any measures that have been undertaken to improve the environmental performance of the wastewater treatment and disposal system;

The following measures were undertaken to improve the performance of the plant:

- Wellington Water and Veolia completed the repair of clarifier #3 in April 2023.
- Process optimisation activity to improve the fully treated effluent quality and improving the overall discharge quality. This has been discussed in the preceding parts of this report.
- Progressing with the IPS renewal project to restore its pumping capacity to up to 4,500 L/s. This will mitigate the probability of short outfall discharge during extreme wet weather events.

Greater Wellington Regional Council is updated with the measures that are being undertaken to improve the plant performance during regular WWL/Veolia/GWRC monthly review meetings.

Section (f)

f) A copy of any complaints recorded (in accordance with condition 18 of this permit) during the year;

The have been no complaints recorded for the 2022/2023 reporting period.

Section (g)

g) Any other issues considered to be important;

An electrical failure in the UV system caused an undisinfected discharge at Moa Point on 5th February 2023. It was believed that the electrical failure was associated with the fire incident at the plant on 1st February.

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Condition (3)

The permit holder shall undertake an annual physical assessment of the condition of the outfall pipeline. This assessment shall include, but not be limited to, the following:

a. An assessment of the structural condition of the pipeline;
b. An inspection of the diffuser ports;
c. An assessment of the erosion or scour around exposed sections of the pipeline; and
d. Recommend any maintenance that is required.

The results of the assessment shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council no later than three months after the assessment has been undertaken.

A survey of the outfall pipe was conducted in March 2023. A copy of the report can be found in Appendix V.

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Condition (7)

The permit holder shall monitor air quality in the vicinity of the plant to confirm the absence of faecal coliforms and salmonella originating from the plant. Sampling is to be carried out at least once every six months.

The sampling method and locations are to be agreed with the Manager, Environmental Regulation, Wellington Regional Council within three months of the granting of this permit. Tests are to be carried out at a minimum of three sites downwind and three sites upwind of the plant, with at least one in the vicinity of Air New Zealand kitchens and one at a level of Kekerenga Street. The other sites are to be located outside of/and within 100 metres of the site boundary.

The results shall be provided annually in the annual report required under condition 14 of this permit, or on request.

Ambient Microbe Monitoring was performed at Moa Point WWTP. The following table is a summary of the air quality monitoring in the vicinity of the WWTP:

The full report can be found in Appendix VI: Ambient Microbe Monitoring

	Faecal Coliforms		Salmonella	
Date	**Aug 2022**	**Feb 2023**	**Aug 2022**	**Feb 2023**
Site 1	Absent	Absent	Absent	Absent
Site 2	Absent	Absent	Absent	Absent
Site 3	Absent	Absent	Absent	Absent
Site 4	Absent	Absent	Absent	Absent
Site 5	Absent	Absent	Absent	Absent
Site 6	Absent	Absent	Absent	Absent

Table 9: Semi-Annual Air Quality Monitoring

Condition (8)

Hydrogen Sulphide (H_2S) and other reduced Sulphur compounds shall be monitored in the deodorized gas discharge. Monitoring shall be undertaken in the stack leading from the chemical scrubber system on a monthly basis.

The results shall be provided annually in the annual report required under condition 14 of this permit, or on request.

The monthly results from the Hydrogen Sulphide (H_2S) and Total Reduced Sulphur (TRS) are summarised in the in the following table:

Month	**WWTP**	
	H_2S	**TRS**
	ppm	**ppm**
Jul-22	0.001	0.004
Aug-22	0.001	0.003
Sep-22	0.001	0.003
Oct-22	<0.001	0.002
Nov-22	<0.001	0.002
Dec-22	<0.001	0.002
Jan-23	0.001	0.002
Feb-23	0.001	0.002
Mar-23	0.006	0.017
Apr-23	0.0002	0.2
May-23	0.0002	0.002
Jun-23	0.001	0.002
Limits	**0.01**	**0.05**

Table 10: Monthly H_2S and TRS Concentrations

In April 2023, the plant failed to comply with the Total Reduced Sulfur requirement for air discharge quality. The reason for non-compliance was that the chemical odour scrubbers were not operating efficiently. Programmed maintenance had been undertaken when due, however, Veolia undertook further maintenance on the scrubbers in May 2023 to restore odour treatment efficiency and the plant went back into compliance for odour.

The full reports can be found in the quarterly reports for the 2022/2023 reporting period.

Condition (9)

> The discharge to air from the chemical scrubber system shall contain no more than 0.01ppm hydrogen sulphide (H_2S) and no more than 0.05ppm total reduced Sulphur compounds (including H_2S).

These limits have been included in the summary under WGN080003[26813] Condition (8).

Condition (10)

The permit holder shall undertake smoke testing of the Moa Point wastewater treatment plant and ventilation system. The smoke tests are to be carried out on an annual basis between the months of August and November.

The results of the smoke test shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council within one month of the testing being carried out by the permit holder. A copy of the analysed results shall also be provided to Community Liaison Group, if requested.

A smoke test was performed on the WWTP in November 2022. The smoke test report can be found in Appendix VII: Smoke Test Report.

Condition (14)

The permit holder shall provide to the Manager, Environmental Regulation, Wellington Regional Council an annual monitoring report for the period 1 July to 30 June, by 31 July each year summarising compliance with the conditions of this permit. A copy of the report shall be provided to Community Liaison Group, if requested.

This report shall include, but not be limited to the following:

a) A summary of all monitoring undertaken in accordance with the conditions of this permit and a critical analysis of the information in terms of compliance and adverse environmental effects
b) A comparison of data with previously collected data in order to identify any emerging trends
c) Comments on compliance with the conditions of this permit
d) Any reasons for non-compliance or difficulties in achieving compliance with the conditions of this permit
e) Any measures that have been undertaken, to improve the environmental performance of the wastewater treatment and disposal system
f) A copy of any complaints recorded (in accordance with condition 13 of this permit) during the year
g) Outcomes from the implementation of the Odour Management Plan
h) Any other issues considered important by the permit holder.

Section (a)

A summary of all the monitoring data can be found in preceding parts of this consent report.

Section (b)

A comparison of data from the 2022/2023 reporting period was made to the previous five (5) years. The following section summarises that comparison.

The following tables are a comparison of the results from the air quality monitoring:

Location	Faecal Coliforms									
	Q1 - 2019	Q1 - 2020	Q1 - 2021	Q1 - 2022	Q1 - 2023	Q2 - 2019	Q2 - 2020	Q2 - 2021	Q2 - 2022	Q2 - 2023
Site 1	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
Site 2	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
Site 3	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
Site 4	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
Site 5	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
Site 6	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Table 11: Comparison of Faecal Coliforms in Air

Location	Salmonella									
	Q1 - 2019	Q1 - 2020	Q1 - 2021	Q1 - 2022	Q1 - 2023	Q2 - 2019	Q2 - 2020	Q2 - 2021	Q2 - 2022	Q2 - 2023
Site 1	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
Site 2	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
Site 3	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
Site 4	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
Site 5	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
Site 6	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Table 12: Comparison of Salmonella in Air

The following is a comparison of the monthly Hydrogen Sulphide and total reduced Sulphur results:

Month	Moa Point WWTP											
	H_2S (ppm)						TRS (ppm)					
	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2021/ 2022	2022/ 2023	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023
July	0.00602	0.00013	0.00013	0.001	0.004	0.001	0.006	0.011	0.002	0.002	0.002	0.004
August	0.0004	0.00915	0.00013	0.003	0.00018	0.001	0.004	0.002	0.002	0.002	0.002	0.003
September	0.00091	0.0047	0.00013	0.001	0.00018	0.001	0.022	0.004	0.002	0.002	0.002	0.003
October	0.00157	0.00422	0.0001	0.003	0.0011	<0.001	0.011	0.004	0.009	0.002	0.002	0.002
November	0.0033	0.00327	0.0057	0.003	0.0022	<0.001	0.035	0.007	0.002	0.002	0.002	0.002
December	0.02333	0.00499	0.0015	0.003	0.00018	<0.001	0.043	0.011	0.002	0.002	0.037	0.002
January	0.01005	0.00464	0.0001	0.00015	0.00018	0.001	0.045	0.007	0.002	0.002	0.002	0.002
February	0.01754	0.00453	0.003	0.0002	0.00020	0.001	0.017	0.013	0.003	0.002	0.002	0.002
March	0.02367	0.00073	0.002	0.00018	0.0011	0.006	0.011	0.002	0.002	0.002	0.002	0.017
April	0.01374	0.00017	0.00011	0.002	0.00018	0.0002	0.019	0.002	0.002	0.002	0.002	0.2
May	0.00102	0.00219	0.0001	0.01	0.00018	0.0002	0.004	0.004	0.002	0.002	0.002	0.002

June	0.00028	0.00013	0.001	0.001	0.00015	0.001	0.004	0.002	0.002	0.002	0.002	0.002
Limit	0.01						0.05					

Table 13: Monthly Moa Point WWTP H_2S and TRS Comparison

The H_2S were comparable over the 5-year period.

The TRS failure in April 2023 was due to the chemical scrubber system requiring maintenance. After the issue had been resolved, results were consistent with previous observations.

Section (c)

As noted in WGN080003[26813] Condition (14) Section (a) only failed to meet compliance in April 2023.

Section (d)

The difficulty in meeting compliance for TRS in April was due to the inefficient performance of the chemical scrubber system. Both external and internal stakeholders were notified regarding the maintenance required to the scrubber system.

Section (e)

Additional maintenance was performed on the scrubber system in May 2023 and the plant went back into compliance for odour after that.

Section (f)

A copy of the complaints for this reporting period can be found in Appendix VIII.

Section (g)

The outcomes for the implementation of the Odour Management Plan are satisfactory. The plan needs to be reviewed to make sure that odour response across all the WWTPs is standardised.

Section (h)

The are no other issues regarding this consent.

WGN9600094 [1471]

Condition (8)

The pumping station and the chemical scrubber shall be operated in accordance with the manual provided for condition 7.

The pumping station is operated under the O&M manual of the plant.

Condition (11)

The following monitoring shall be carried out and the results shall be forwarded to the Wellington Regional Council:

(a) The pumping station stack shall be tested for hydrogen sulphide and total reduced sulphur compounds. The concentrations shall not exceed 0.01ppm and 0.05ppm respectively. This testing shall be carried out monthly for the first six months of operation of the pumping station. The Regional Council shall then review the frequency. The method of testing shall be agreed to with the Wellington Regional Council.

(b) Records of the pH and the Oxidation Reduction potential of the scrubber solutions shall be kept by the consent holder and made available to the Wellington Regional Council. The form of these records shall be agreed to with the Wellington Regional Council prior to commissioning of the pumping station.

A summary of the hydrogen sulfide and TRS monitoring can be found in Table 14.

Month	IPS	
	H_2S	TRS
	ppm	ppm
Jul-22	0.001	0.003
Aug-22	0.001	0.003
Sep-22	0.001	0.003
Oct-22	<0.001	0.002
Nov-22	<0.001	0.002
Dec-22	<0.001	0.002
Jan-23	0.001	0.002
Feb-23	0.003	0.002
Mar-23	0.003	0.002
Apr-23	0.00001	0.002
May-23	0.00001	0.002
Jun-23	0.00001	0.002

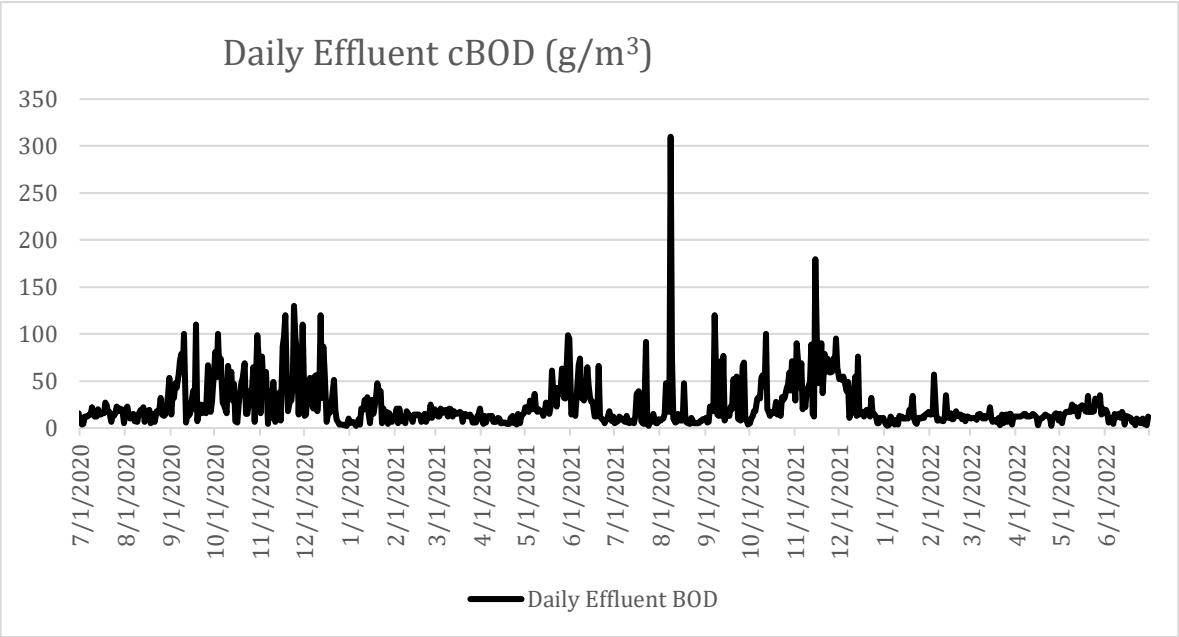
Limits	**0.01**	**0.05**

Table 14: Monthly Moa Point IPS H_2S and TRS Comparison

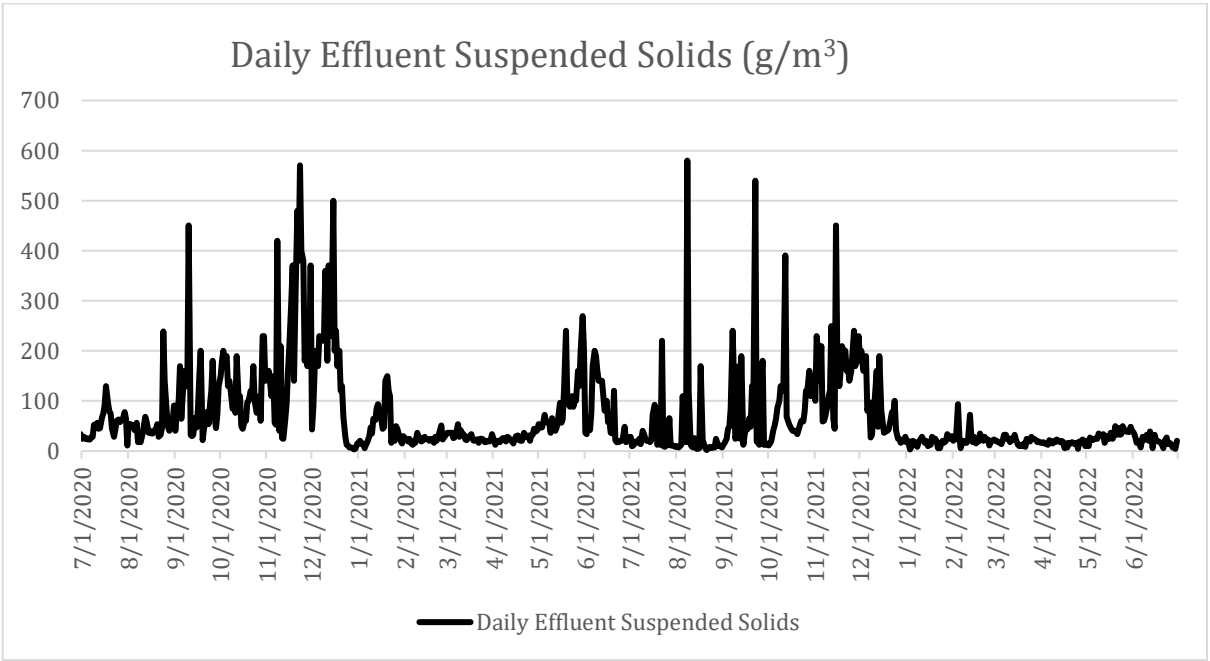
The pH and Oxidation Reduction records can be made available upon request.

Appendix I: Daily Effluent Results

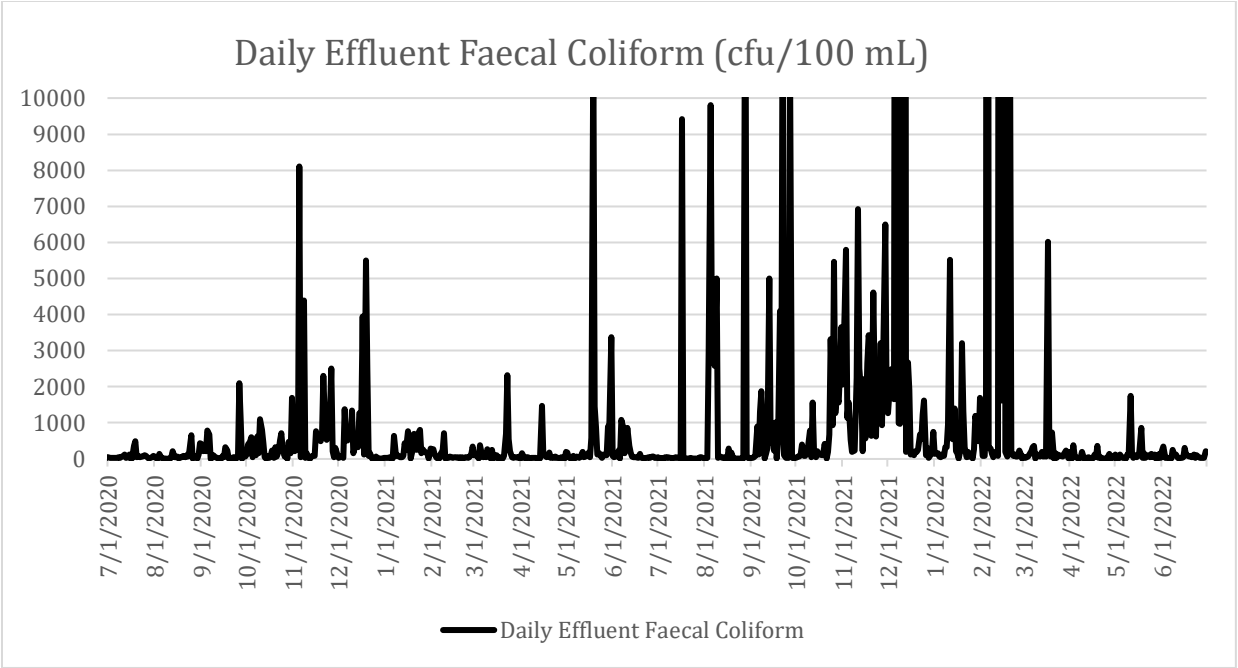
Daily Effluent Carbonaceous Biological Oxygen Demand Results



Daily Effluent Suspended Solids Results



Daily Effluent Faecal Coliforms Results



Appendix II: Shoreline Sample Results

Description	Dorrie Leslie Park at boat ramp - Enterococci		Dorrie Leslie Park at boat ramp - faecal coliforms
Date	CFU/100mL	Date	CFU/100mL
09-Jul-22 08:15:00	22	09-Jul-22 08:15:00	16
09-Jul-22 16:10:00	36	09-Jul-22 16:10:00	46
10-Jul-22 08:26:00	6	10-Jul-22 08:26:00	2
12-Jul-22 15:21:00	96	12-Jul-22 15:21:00	78
13-Jul-22 08:20:00	46	13-Jul-22 08:20:00	54
14-Jul-22 08:29:00	68	14-Jul-22 08:29:00	16
20-Jul-22 16:07:00	64	20-Jul-22 16:07:00	130
21-Jul-22 08:23:00	120	21-Jul-22 08:23:00	86
22-Jul-22 08:12:00	58	22-Jul-22 08:12:00	110
23-Jul-22 08:30:00	4	23-Jul-22 08:30:00	10
24-Jul-22 08:30:00	4	24-Jul-22 08:30:00	2
26-Jul-22 08:26:00	42	26-Jul-22 08:26:00	31
27-Jul-22 08:05:00	2	27-Jul-22 08:05:00	2
28-Jul-22 08:21:00	8	28-Jul-22 08:21:00	14
29-Jul-22 08:22:00	2	29-Jul-22 08:22:00	2
30-Jul-22 08:40:00	2	30-Jul-22 08:40:00	2
31-Jul-22 08:00:00	900	31-Jul-22 08:00:00	700
01-Aug-22 08:20:00	31	01-Aug-22 08:20:00	90
02-Aug-22 08:25:00	6	02-Aug-22 08:25:00	46
08-Aug-22 08:56:00	1400	08-Aug-22 08:56:00	80
09-Aug-22 08:21:00	62	09-Aug-22 08:21:00	44
10-Aug-22 08:26:00	14	10-Aug-22 08:26:00	22
11-Aug-22 08:13:00	2	11-Aug-22 08:13:00	4
12-Aug-22 08:20:00	2	12-Aug-22 08:20:00	2
13-Aug-22 08:40:00	38	13-Aug-22 08:40:00	2
14-Aug-22 08:37:00	2	14-Aug-22 08:37:00	2
15-Aug-22 08:30:00	2	15-Aug-22 08:30:00	14
18-Aug-22 17:14:00	7.300000191	18-Aug-22 17:14:00	3.599999905
19-Aug-22 14:30:00	54	19-Aug-22 14:30:00	28
20-Aug-22 08:21:00	270	20-Aug-22 08:21:00	1100
21-Aug-22 08:41:00	1100	21-Aug-22 08:41:00	10
22-Aug-22 08:13:00	2	22-Aug-22 08:13:00	24
23-Aug-22 08:21:00	2	23-Aug-22 08:21:00	2
26-Aug-22 17:08:00	1.799999952	26-Aug-22 17:08:00	1.799999952
27-Aug-22 08:37:00	4	27-Aug-22 08:37:00	2
27-Aug-22 08:41:00	2	27-Aug-22 08:41:00	14
30-Sep-22 09:01:00	33	30-Sep-22 09:01:00	13
01-Oct-22 09:36:00	18	01-Oct-22 09:36:00	44
01-Oct-22 09:47:00	4	01-Oct-22 09:47:00	4
19-Nov-22 08:24:00	1100	19-Nov-22 08:24:00	80
20-Nov-22 08:13:00	62	20-Nov-22 08:13:00	68
21-Nov-22 08:23:00	14	21-Nov-22 08:23:00	4
27-Nov-22 15:07:00	760	27-Nov-22 15:07:00	440
28-Nov-22 08:06:00	52	28-Nov-22 08:06:00	16
29-Nov-22 08:01:00	60	29-Nov-22 08:01:00	36
11-Dec-22 08:16:00	64	10-Dec-22 07:53:00	20
12-Dec-22 08:15:00	10	11-Dec-22 08:16:00	410
08-Jan-23 08:01:00	2100	12-Dec-22 08:15:00	100
09-Jan-23 08:06:00	27	08-Jan-23 08:01:00	5800
10-Jan-23 08:10:00	45	09-Jan-23 08:06:00	120
12-Jan-23 07:57:00	10	10-Jan-23 08:10:00	530
13-Jan-23 08:01:00	10	12-Jan-23 07:57:00	20
14-Jan-23 02:00:00	10	13-Jan-23 08:01:00	10
05-Feb-23 15:22:00	140	14-Jan-23 02:00:00	10
06-Feb-23 08:16:00	140	05-Feb-23 15:22:00	120
07-Feb-23 08:03:00	220	06-Feb-23 08:16:00	220
14-Feb-23 15:11:00	120	07-Feb-23 08:03:00	40
15-Feb-23 08:01:00	140	14-Feb-23 15:11:00	20
16-Feb-23 07:41:00	160	15-Feb-23 08:01:00	10
17-Feb-23 08:07:00	50	16-Feb-23 07:41:00	40
18-Feb-23 12:15:00	30	17-Feb-23 08:07:00	70
19-Feb-23 08:30:00	20	18-Feb-23 12:15:00	10
19-Apr-23 16:30:00	30	19-Feb-23 08:30:00	20
20-Apr-23 10:55:00	210	19-Apr-23 16:30:00	70
21-Apr-23 08:11:00	20	20-Apr-23 10:55:00	60
22-Apr-23 08:30:00	30	21-Apr-23 08:11:00	10
04-May-23 18:55:00	120	22-Apr-23 08:30:00	40
05-May-23 11:14:00	110	04-May-23 18:55:00	80
06-May-23 08:01:00	130	05-May-23 11:14:00	1200
28-May-23 10:12:00	20	06-May-23 08:01:00	60
29-May-23 10:08:00	10	28-May-23 10:12:00	20
30-May-23 10:02:00	20	29-May-23 10:08:00	10
		30-May-23 10:02:00	10

	Hue Te Taka Peninsula - Enterococci		Hue Te Taka Peninsula - faecal coliforms
Date	CFU/100mL	Date	CFU/100mL
08-Jul-22 19:02:00	52	08-Jul-22 19:02:00	27
09-Jul-22 07:33:00	9.100000381	09-Jul-22 07:33:00	3.599999905
10-Jul-22 07:50:00	28	10-Jul-22 07:50:00	20
12-Jul-22 14:34:00	9.100000381	12-Jul-22 14:34:00	18
13-Jul-22 07:40:00	8	13-Jul-22 07:40:00	38
14-Jul-22 07:51:00	4	14-Jul-22 07:51:00	4
20-Jul-22 15:24:00	7.300000191	20-Jul-22 15:24:00	1.799999952
21-Jul-22 07:43:00	16	21-Jul-22 07:43:00	2
22-Jul-22 07:34:00	28	22-Jul-22 07:34:00	2
23-Jul-22 07:52:00	34	23-Jul-22 07:52:00	12
24-Jul-22 07:50:00	6	24-Jul-22 07:50:00	8
26-Jul-22 07:51:00	16	26-Jul-22 07:51:00	15
27-Jul-22 07:31:00	10	27-Jul-22 07:31:00	2
28-Jul-22 07:46:00	60	28-Jul-22 07:46:00	230
29-Jul-22 07:43:00	10	29-Jul-22 07:43:00	120
30-Jul-22 08:01:00	2	30-Jul-22 08:01:00	2
31-Jul-22 07:22:00	68	31-Jul-22 07:22:00	72
01-Aug-22 07:47:00	76	01-Aug-22 07:47:00	270
02-Aug-22 07:46:00	14	02-Aug-22 07:46:00	16
08-Aug-22 08:19:00	36	08-Aug-22 08:19:00	100
09-Aug-22 07:43:00	10	09-Aug-22 07:43:00	24
10-Aug-22 07:52:00	16	10-Aug-22 07:52:00	30
11-Aug-22 07:31:00	2	11-Aug-22 07:31:00	28
12-Aug-22 07:37:00	4	12-Aug-22 07:37:00	4
13-Aug-22 08:03:00	4	13-Aug-22 08:03:00	4
14-Aug-22 08:02:00	4	14-Aug-22 08:02:00	4
15-Aug-22 07:55:00	2	15-Aug-22 07:55:00	4
18-Aug-22 16:36:00	36	18-Aug-22 16:36:00	40
19-Aug-22 13:50:00	44	19-Aug-22 13:50:00	44
20-Aug-22 07:44:00	80	20-Aug-22 07:44:00	140
21-Aug-22 08:05:00	10	21-Aug-22 08:05:00	18
22-Aug-22 07:31:00	4	22-Aug-22 07:31:00	34
23-Aug-22 07:44:00	2	23-Aug-22 07:44:00	6
26-Aug-22 16:31:00	9.100000381	26-Aug-22 16:31:00	31
27-Aug-22 08:03:00	2	27-Aug-22 08:03:00	2
27-Aug-22 08:07:00	2	27-Aug-22 08:07:00	2
30-Sep-22 08:30:00	9.100000381	30-Sep-22 08:30:00	9.100000381
01-Oct-22 09:01:00	38	01-Oct-22 09:01:00	80
01-Oct-22 09:11:00	6	01-Oct-22 09:11:00	4
19-Nov-22 07:47:00	1100	19-Nov-22 07:47:00	80
20-Nov-22 07:37:00	40	20-Nov-22 07:37:00	16
21-Nov-22 07:36:00	2	21-Nov-22 07:36:00	2
27-Nov-22 14:31:00	3.599999905	27-Nov-22 14:31:00	5.5
28-Nov-22 07:26:00	160	28-Nov-22 07:26:00	84
29-Nov-22 07:26:00	20	29-Nov-22 07:26:00	10
11-Dec-22 07:41:00	10	10-Dec-22 07:17:00	20
12-Dec-22 07:36:00	1400	11-Dec-22 07:41:00	10
08-Jan-23 07:26:00	270	12-Dec-22 07:36:00	1000
09-Jan-23 07:26:00	10	08-Jan-23 07:26:00	40
10-Jan-23 07:31:00	10	09-Jan-23 07:26:00	40
12-Jan-23 07:17:00	10	10-Jan-23 07:31:00	10
13-Jan-23 07:22:00	10	12-Jan-23 07:17:00	10
14-Jan-23 02:00:00	10	13-Jan-23 07:22:00	10
05-Feb-23 14:46:00	130	14-Jan-23 02:00:00	10
06-Feb-23 07:36:00	100	05-Feb-23 14:46:00	120
07-Feb-23 07:27:00	45	06-Feb-23 07:36:00	70
14-Feb-23 14:32:00	55	07-Feb-23 07:27:00	10
15-Feb-23 07:23:00	320	14-Feb-23 14:32:00	20
16-Feb-23 06:55:00	70	15-Feb-23 07:23:00	120
17-Feb-23 07:30:00	30	16-Feb-23 06:55:00	20
18-Feb-23 12:15:00	20	17-Feb-23 07:30:00	50
19-Feb-23 07:53:00	10	18-Feb-23 12:15:00	10
19-Apr-23 15:22:00	2200	19-Feb-23 07:53:00	20
20-Apr-23 10:27:00	300	19-Apr-23 15:22:00	5900
21-Apr-23 07:32:00	20	20-Apr-23 10:27:00	500
22-Apr-23 07:52:00	150	21-Apr-23 07:32:00	10
04-May-23 18:17:00	30	22-Apr-23 07:52:00	540
05-May-23 10:50:00	10	04-May-23 18:17:00	30
06-May-23 07:21:00	10	05-May-23 10:50:00	40
28-May-23 10:40:00	50	06-May-23 07:21:00	10
29-May-23 10:52:00	10	28-May-23 10:40:00	30
30-May-23 10:30:00	10	29-May-23 10:52:00	10
		30-May-23 10:30:00	10

	Tarakena Bay Beach at boat ramp - Enterococci		Tarakena Bay Beach at boat ramp - faecal coliforms
Date	CFU/100mL	Date	CFU/100mL
08-Jul-22 18:50:00	1.799999952	08-Jul-22 18:50:00	11
09-Jul-22 07:20:00	1300	09-Jul-22 07:20:00	29
10-Jul-22 07:37:00	2	10-Jul-22 07:37:00	40
12-Jul-22 14:20:00	9100	12-Jul-22 14:20:00	18
13-Jul-22 07:25:00	4	13-Jul-22 07:25:00	14
14-Jul-22 07:40:00	4	14-Jul-22 07:40:00	6
20-Jul-22 15:10:00	1.799999952	20-Jul-22 15:10:00	7.300000191
21-Jul-22 07:25:00	310	21-Jul-22 07:25:00	440
22-Jul-22 07:20:00	29	22-Jul-22 07:20:00	54
23-Jul-22 07:39:00	6	23-Jul-22 07:39:00	4
24-Jul-22 07:35:00	6	24-Jul-22 07:35:00	8
26-Jul-22 07:40:00	56	26-Jul-22 07:40:00	46
27-Jul-22 07:20:00	740	27-Jul-22 07:20:00	370
28-Jul-22 07:35:00	2	28-Jul-22 07:35:00	2
29-Jul-22 07:30:00	14	29-Jul-22 07:30:00	24
30-Jul-22 07:50:00	2	30-Jul-22 07:50:00	2
31-Jul-22 07:10:00	76	31-Jul-22 07:10:00	76
01-Aug-22 07:35:00	16	01-Aug-22 07:35:00	26
02-Aug-22 07:35:00	18	02-Aug-22 07:35:00	20
08-Aug-22 08:05:00	82	08-Aug-22 08:05:00	5.5
09-Aug-22 07:30:00	16	09-Aug-22 07:30:00	6
10-Aug-22 07:39:00	6	10-Aug-22 07:39:00	36
11-Aug-22 07:20:00	2	11-Aug-22 07:20:00	2
12-Aug-22 07:25:00	2	12-Aug-22 07:25:00	6
13-Aug-22 07:50:00	8	13-Aug-22 07:50:00	10
14-Aug-22 07:50:00	2	14-Aug-22 07:50:00	2
15-Aug-22 07:42:00	2	15-Aug-22 07:42:00	2
18-Aug-22 16:25:00	1.799999952	18-Aug-22 16:25:00	150
19-Aug-22 13:35:00	1600	19-Aug-22 13:35:00	320
20-Aug-22 07:30:00	4	20-Aug-22 07:30:00	2
21-Aug-22 07:50:00	28	21-Aug-22 07:50:00	4
22-Aug-22 07:20:00	2	22-Aug-22 07:20:00	20
23-Aug-22 07:32:00	14	23-Aug-22 07:32:00	6
26-Aug-22 16:20:00	20	26-Aug-22 16:20:00	29
27-Aug-22 07:50:00	6	27-Aug-22 07:50:00	12
27-Aug-22 07:55:00	4	27-Aug-22 07:55:00	22
30-Sep-22 08:15:00	580	30-Sep-22 08:15:00	210
01-Oct-22 08:50:00	30	01-Oct-22 08:50:00	66
01-Oct-22 09:00:00	1200	01-Oct-22 09:00:00	330
19-Nov-22 07:35:00	820	19-Nov-22 07:35:00	920
20-Nov-22 07:25:00	7.300000191	20-Nov-22 07:25:00	9.100000381
21-Nov-22 07:25:00	26	21-Nov-22 07:25:00	12
27-Nov-22 14:20:00	42	27-Nov-22 14:20:00	7.300000191
28-Nov-22 07:15:00	100	28-Nov-22 07:15:00	48
29-Nov-22 07:15:00	20	29-Nov-22 07:15:00	22
11-Dec-22 07:30:00	10	10-Dec-22 07:05:00	10
12-Dec-22 07:25:00	10	11-Dec-22 07:30:00	40
08-Jan-23 07:15:00	390	12-Dec-22 07:25:00	10
09-Jan-23 07:15:00	10	08-Jan-23 07:15:00	110
10-Jan-23 07:20:00	10	09-Jan-23 07:15:00	90
12-Jan-23 07:05:00	10	10-Jan-23 07:20:00	10
13-Jan-23 07:10:00	10	12-Jan-23 07:05:00	20
14-Jan-23 02:00:00	10	13-Jan-23 07:10:00	10
05-Feb-23 14:35:00	73	14-Jan-23 02:00:00	10
06-Feb-23 07:25:00	36	05-Feb-23 14:35:00	60
07-Feb-23 07:15:00	45	06-Feb-23 07:25:00	40
14-Feb-23 14:20:00	150	07-Feb-23 07:15:00	30
15-Feb-23 07:10:00	1800	14-Feb-23 14:20:00	20
16-Feb-23 06:40:00	50	15-Feb-23 07:10:00	1200
17-Feb-23 07:15:00	90	16-Feb-23 06:40:00	70
18-Feb-23 12:15:00	20	17-Feb-23 07:15:00	40
19-Feb-23 07:40:00	10	18-Feb-23 12:15:00	30
19-Apr-23 15:10:00	2400	19-Feb-23 07:40:00	10
20-Apr-23 10:17:00	490	19-Apr-23 15:10:00	370
21-Apr-23 07:20:00	10	20-Apr-23 10:17:00	360
22-Apr-23 07:40:00	90	21-Apr-23 07:20:00	20
04-May-23 18:05:00	80	22-Apr-23 07:40:00	40
05-May-23 10:40:00	80	04-May-23 18:05:00	80
06-May-23 07:10:00	10	05-May-23 10:40:00	20
28-May-23 10:31:00	10	06-May-23 07:10:00	60
29-May-23 10:45:00	10	28-May-23 10:31:00	70
30-May-23 10:20:00	50	29-May-23 10:45:00	10
		30-May-23 10:20:00	70

	Tarakena Bay Beach, Western side - Enterococci		Tarakena Bay Beach, Western side - faecal coliforms
Date	CFU/100mL	Date	CFU/100mL
08-Jul-22 18:56:00	16	08-Jul-22 18:56:00	11
09-Jul-22 07:26:00	18	09-Jul-22 07:26:00	1.799999952
10-Jul-22 07:43:00	34	10-Jul-22 07:43:00	16
12-Jul-22 14:26:00	9.100000381	12-Jul-22 14:26:00	15
13-Jul-22 07:32:00	32	13-Jul-22 07:32:00	32
14-Jul-22 07:46:00	8	14-Jul-22 07:46:00	8
20-Jul-22 15:16:00	1.799999952	20-Jul-22 15:16:00	7.300000191
21-Jul-22 07:33:00	12	21-Jul-22 07:33:00	10
22-Jul-22 07:27:00	2	22-Jul-22 07:27:00	2
23-Jul-22 07:45:00	6	23-Jul-22 07:45:00	18
24-Jul-22 07:41:00	2	24-Jul-22 07:41:00	10
26-Jul-22 07:46:00	20	26-Jul-22 07:46:00	3.599999905
27-Jul-22 07:26:00	44	27-Jul-22 07:26:00	40
28-Jul-22 07:41:00	68	28-Jul-22 07:41:00	6
29-Jul-22 07:37:00	16	29-Jul-22 07:37:00	100
30-Jul-22 07:55:00	2	30-Jul-22 07:55:00	2
31-Jul-22 07:16:00	74	31-Jul-22 07:16:00	72
01-Aug-22 07:41:00	14	01-Aug-22 07:41:00	44
02-Aug-22 07:41:00	6	02-Aug-22 07:41:00	16
08-Aug-22 08:12:00	5.5	08-Aug-22 08:12:00	5.5
09-Aug-22 07:37:00	24	09-Aug-22 07:37:00	16
10-Aug-22 07:45:00	20	10-Aug-22 07:45:00	50
11-Aug-22 07:26:00	30	11-Aug-22 07:26:00	34
12-Aug-22 07:31:00	8	12-Aug-22 07:31:00	10
13-Aug-22 07:57:00	2	13-Aug-22 07:57:00	10
14-Aug-22 07:56:00	2	14-Aug-22 07:56:00	2
15-Aug-22 07:50:00	4	15-Aug-22 07:50:00	8
18-Aug-22 16:31:00	1.799999952	18-Aug-22 16:31:00	150
19-Aug-22 13:41:00	22	19-Aug-22 13:41:00	30
20-Aug-22 07:37:00	4	20-Aug-22 07:37:00	2
21-Aug-22 07:57:00	150	21-Aug-22 07:57:00	4
22-Aug-22 07:25:00	52	22-Aug-22 07:25:00	22
23-Aug-22 07:38:00	2	23-Aug-22 07:38:00	8
26-Aug-22 16:26:00	11	26-Aug-22 16:26:00	36
27-Aug-22 07:56:00	16	27-Aug-22 07:56:00	24
27-Aug-22 08:01:00	6	27-Aug-22 08:01:00	12
30-Sep-22 08:22:00	16	30-Sep-22 08:22:00	3.599999905
01-Oct-22 08:55:00	28	01-Oct-22 08:55:00	58
01-Oct-22 09:06:00	2	01-Oct-22 09:06:00	2
19-Nov-22 07:41:00	860	19-Nov-22 07:41:00	96
20-Nov-22 07:31:00	40	20-Nov-22 07:31:00	13
21-Nov-22 07:31:00	2	21-Nov-22 07:31:00	8
27-Nov-22 14:25:00	3.599999905	27-Nov-22 14:25:00	5.5
28-Nov-22 07:21:00	98	28-Nov-22 07:21:00	26
29-Nov-22 07:21:00	8	29-Nov-22 07:21:00	2
11-Dec-22 07:35:00	10	10-Dec-22 07:11:00	300
12-Dec-22 07:30:00	18	11-Dec-22 07:35:00	50
08-Jan-23 07:21:00	530	12-Dec-22 07:30:00	10
09-Jan-23 07:31:00	10	08-Jan-23 07:21:00	520
10-Jan-23 07:26:00	10	09-Jan-23 07:31:00	10
12-Jan-23 07:11:00	10	10-Jan-23 07:26:00	10
13-Jan-23 07:16:00	10	12-Jan-23 07:11:00	10
14-Jan-23 02:00:00	10	13-Jan-23 07:16:00	10
05-Feb-23 14:40:00	150	14-Jan-23 02:00:00	10
06-Feb-23 07:31:00	160	05-Feb-23 14:40:00	100
07-Feb-23 07:21:00	36	06-Feb-23 07:31:00	100
14-Feb-23 14:26:00	130	07-Feb-23 07:21:00	30
15-Feb-23 07:16:00	330	14-Feb-23 14:26:00	60
16-Feb-23 06:47:00	10	15-Feb-23 07:16:00	110
17-Feb-23 07:22:00	60	16-Feb-23 06:47:00	20
18-Feb-23 12:15:00	10	17-Feb-23 07:22:00	60
19-Feb-23 07:46:00	20	18-Feb-23 12:15:00	10
19-Apr-23 15:16:00	3300	19-Feb-23 07:46:00	10
20-Apr-23 10:20:00	400	19-Apr-23 15:16:00	800
21-Apr-23 07:26:00	10	20-Apr-23 10:20:00	700
22-Apr-23 07:46:00	40	21-Apr-23 07:26:00	10
04-May-23 18:10:00	30	22-Apr-23 07:46:00	180
05-May-23 10:43:00	60	04-May-23 18:10:00	10
06-May-23 07:15:00	10	05-May-23 10:43:00	80
28-May-23 10:34:00	90	06-May-23 07:15:00	10
29-May-23 10:48:00	30	28-May-23 10:34:00	10
30-May-23 10:25:00	40	29-May-23 10:48:00	10
		30-May-23 10:25:00	10

	Hue te Taka Peninsula, Western side - Enterococci		Hue te Taka Peninsula, Western side - faecal coliforms
Date	CFU/100mL	Date	CFU/100mL
08-Jul-22 19:04:00	50	08-Jul-22 19:04:00	18
09-Jul-22 07:38:00	13	09-Jul-22 07:38:00	5.5
10-Jul-22 07:56:00	2	10-Jul-22 07:56:00	4
12-Jul-22 14:41:00	11	12-Jul-22 14:41:00	24
13-Jul-22 07:46:00	10	13-Jul-22 07:46:00	34
14-Jul-22 07:57:00	4	14-Jul-22 07:57:00	2
20-Jul-22 15:31:00	16	20-Jul-22 15:31:00	3.599999905
21-Jul-22 07:50:00	18	21-Jul-22 07:50:00	8
22-Jul-22 07:40:00	8	22-Jul-22 07:40:00	2
23-Jul-22 08:00:00	4	23-Jul-22 08:00:00	6
24-Jul-22 07:56:00	2	24-Jul-22 07:56:00	8
26-Jul-22 07:57:00	20	26-Jul-22 07:57:00	11
27-Jul-22 07:36:00	10	27-Jul-22 07:36:00	8
28-Jul-22 07:52:00	76	28-Jul-22 07:52:00	8
29-Jul-22 07:50:00	2	29-Jul-22 07:50:00	2
30-Jul-22 08:07:00	2	30-Jul-22 08:07:00	4
31-Jul-22 07:30:00	62	31-Jul-22 07:30:00	70
01-Aug-22 07:51:00	16	01-Aug-22 07:51:00	22
02-Aug-22 07:53:00	12	02-Aug-22 07:53:00	30
08-Aug-22 08:25:00	50	08-Aug-22 08:25:00	72
09-Aug-22 07:50:00	12	09-Aug-22 07:50:00	4
10-Aug-22 07:58:00	14	10-Aug-22 07:58:00	32
11-Aug-22 07:39:00	18	11-Aug-22 07:39:00	20
12-Aug-22 07:45:00	6	12-Aug-22 07:45:00	10
13-Aug-22 08:10:00	4	13-Aug-22 08:10:00	16
14-Aug-22 08:08:00	2	14-Aug-22 08:08:00	2
15-Aug-22 08:02:00	14	15-Aug-22 08:02:00	44
18-Aug-22 16:42:00	60	18-Aug-22 16:42:00	35
19-Aug-22 13:56:00	26	19-Aug-22 13:56:00	28
20-Aug-22 07:50:00	78	20-Aug-22 07:50:00	120
21-Aug-22 08:11:00	4	21-Aug-22 08:11:00	6
22-Aug-22 07:37:00	4	22-Aug-22 07:37:00	10
23-Aug-22 07:50:00	10	23-Aug-22 07:50:00	8
26-Aug-22 16:37:00	9.100000381	26-Aug-22 16:37:00	24
27-Aug-22 08:10:00	12	27-Aug-22 08:10:00	22
27-Aug-22 08:12:00	2	27-Aug-22 08:12:00	2
30-Sep-22 08:36:00	7.300000191	30-Sep-22 08:36:00	15
01-Oct-22 09:06:00	50	01-Oct-22 09:06:00	56
01-Oct-22 09:16:00	14	01-Oct-22 09:16:00	4
19-Nov-22 07:53:00	960	19-Nov-22 07:53:00	84
20-Nov-22 07:44:00	36	20-Nov-22 07:44:00	7.300000191
21-Nov-22 07:42:00	2	21-Nov-22 07:42:00	6
27-Nov-22 14:37:00	3.599999905	27-Nov-22 14:37:00	3.599999905
28-Nov-22 07:33:00	120	28-Nov-22 07:33:00	60
29-Nov-22 07:32:00	6	29-Nov-22 07:32:00	2
11-Dec-22 07:46:00	300	10-Dec-22 07:22:00	40
12-Dec-22 07:42:00	300	11-Dec-22 07:46:00	10
08-Jan-23 07:32:00	150	12-Dec-22 07:42:00	500
09-Jan-23 07:20:00	10	08-Jan-23 07:32:00	180
10-Jan-23 07:37:00	10	09-Jan-23 07:20:00	10
12-Jan-23 07:25:00	10	10-Jan-23 07:37:00	30
13-Jan-23 07:29:00	10	12-Jan-23 07:25:00	20
14-Jan-23 02:00:00	10	13-Jan-23 07:29:00	10
05-Feb-23 14:51:00	100	14-Jan-23 02:00:00	10
06-Feb-23 07:42:00	73	05-Feb-23 14:51:00	50
07-Feb-23 07:33:00	10	06-Feb-23 07:42:00	80
14-Feb-23 14:38:00	10	07-Feb-23 07:33:00	10
15-Feb-23 07:30:00	120	14-Feb-23 14:38:00	10
16-Feb-23 07:03:00	50	15-Feb-23 07:30:00	10
17-Feb-23 07:36:00	20	16-Feb-23 07:03:00	60
18-Feb-23 12:15:00	10	17-Feb-23 07:36:00	50
19-Feb-23 08:00:00	20	18-Feb-23 12:15:00	10
19-Apr-23 15:28:00	600	19-Feb-23 08:00:00	10
20-Apr-23 10:34:00	300	19-Apr-23 15:28:00	1400
21-Apr-23 07:37:00	40	20-Apr-23 10:34:00	300
22-Apr-23 07:57:00	240	21-Apr-23 07:37:00	30
04-May-23 18:25:00	110	22-Apr-23 07:57:00	900
05-May-23 10:53:00	100	04-May-23 18:25:00	70
06-May-23 07:26:00	10	05-May-23 10:53:00	60
28-May-23 10:44:00	10	06-May-23 07:26:00	10
29-May-23 10:57:00	10	28-May-23 10:44:00	10
30-May-23 10:34:00	10	29-May-23 10:57:00	10
		30-May-23 10:34:00	10

	Moa Point Road, opposite number 49 - Enterococci		Moa Point Road, opposite number 49 - faecal coliforms
Date	CFU/100mL	Date	CFU/100mL
08-Jul-22 19:15:00	68	08-Jul-22 19:15:00	18
09-Jul-22 07:45:00	11	09-Jul-22 07:45:00	5.5
10-Jul-22 08:01:00	2	10-Jul-22 08:01:00	26
12-Jul-22 14:50:00	80	12-Jul-22 14:50:00	27
13-Jul-22 07:51:00	10	13-Jul-22 07:51:00	22
14-Jul-22 08:02:00	14	14-Jul-22 08:02:00	10
20-Jul-22 15:40:00	9.100000381	20-Jul-22 15:40:00	1.799999952
21-Jul-22 07:57:00	26	21-Jul-22 07:57:00	4
22-Jul-22 07:47:00	14	22-Jul-22 07:47:00	2
23-Jul-22 08:06:00	14	23-Jul-22 08:06:00	20
24-Jul-22 08:01:00	18	24-Jul-22 08:01:00	6
26-Jul-22 08:04:00	1.799999952	26-Jul-22 08:04:00	7.300000191
27-Jul-22 07:40:00	8	27-Jul-22 07:40:00	12
28-Jul-22 07:57:00	64	28-Jul-22 07:57:00	260
29-Jul-22 07:56:00	6	29-Jul-22 07:56:00	150
30-Jul-22 08:12:00	2	30-Jul-22 08:12:00	8
31-Jul-22 07:36:00	70	31-Jul-22 07:36:00	38
01-Aug-22 08:00:00	80	01-Aug-22 08:00:00	350
02-Aug-22 08:00:00	12	02-Aug-22 08:00:00	18
08-Aug-22 08:31:00	40	08-Aug-22 08:31:00	110
09-Aug-22 07:56:00	30	09-Aug-22 07:56:00	8
10-Aug-22 08:03:00	20	10-Aug-22 08:03:00	32
11-Aug-22 07:45:00	6	11-Aug-22 07:45:00	16
12-Aug-22 07:52:00	8	12-Aug-22 07:52:00	14
13-Aug-22 08:16:00	10	13-Aug-22 08:16:00	6
14-Aug-22 08:13:00	12	14-Aug-22 08:13:00	2
15-Aug-22 08:07:00	24	15-Aug-22 08:07:00	42
18-Aug-22 16:50:00	58	18-Aug-22 16:50:00	38
19-Aug-22 14:03:00	2	19-Aug-22 14:03:00	10
20-Aug-22 07:56:00	120	20-Aug-22 07:56:00	190
21-Aug-22 08:17:00	18	21-Aug-22 08:17:00	4
22-Aug-22 07:43:00	8	22-Aug-22 07:43:00	14
23-Aug-22 07:56:00	4	23-Aug-22 07:56:00	8
26-Aug-22 16:42:00	7.300000191	26-Aug-22 16:42:00	18
27-Aug-22 08:16:00	6	27-Aug-22 08:16:00	2
30-Sep-22 08:41:00	120	30-Sep-22 08:41:00	29
01-Oct-22 09:11:00	36	01-Oct-22 09:11:00	42
01-Oct-22 09:21:00	10	01-Oct-22 09:21:00	2
19-Nov-22 08:00:00	300	19-Nov-22 08:00:00	100
20-Nov-22 07:50:00	72	20-Nov-22 07:50:00	42
21-Nov-22 07:49:00	2	21-Nov-22 07:49:00	2
27-Nov-22 14:42:00	13	27-Nov-22 14:42:00	3.599999905
28-Nov-22 07:38:00	150	28-Nov-22 07:38:00	54
29-Nov-22 07:38:00	8	29-Nov-22 07:38:00	2
11-Dec-22 07:51:00	340	10-Dec-22 07:30:00	600
12-Dec-22 07:47:00	91	11-Dec-22 07:51:00	10
08-Jan-23 07:37:00	240	12-Dec-22 07:47:00	500
09-Jan-23 07:37:00	18	08-Jan-23 07:37:00	330
10-Jan-23 07:44:00	10	09-Jan-23 07:37:00	20
12-Jan-23 07:31:00	10	10-Jan-23 07:44:00	10
13-Jan-23 07:35:00	10	12-Jan-23 07:31:00	10
14-Jan-23 02:00:00	10	13-Jan-23 07:35:00	10
05-Feb-23 14:57:00	64	14-Jan-23 02:00:00	10
06-Feb-23 07:50:00	110	05-Feb-23 14:57:00	80
07-Feb-23 07:38:00	10	06-Feb-23 07:50:00	60
14-Feb-23 14:46:00	10	07-Feb-23 07:38:00	6000
15-Feb-23 07:36:00	500	14-Feb-23 14:46:00	10
16-Feb-23 07:13:00	50	15-Feb-23 07:36:00	150
17-Feb-23 07:41:00	190	16-Feb-23 07:13:00	10
18-Feb-23 12:15:00	20	17-Feb-23 07:41:00	80
19-Feb-23 08:06:00	10	18-Feb-23 12:15:00	10
19-Apr-23 15:32:00	50	19-Feb-23 08:06:00	10
20-Apr-23 10:38:00	40	19-Apr-23 15:32:00	10
21-Apr-23 07:44:00	30	20-Apr-23 10:38:00	50
22-Apr-23 08:02:00	50	21-Apr-23 07:44:00	20
04-May-23 18:30:00	20	22-Apr-23 08:02:00	90
05-May-23 10:56:00	10	04-May-23 18:30:00	70
06-May-23 07:32:00	10	05-May-23 10:56:00	10
28-May-23 10:48:00	10	06-May-23 07:32:00	10
29-May-23 11:00:00	10	28-May-23 10:48:00	10
30-May-23 10:37:00	10	29-May-23 11:00:00	130
		30-May-23 10:37:00	10

	Lyall Bay Beach, Eastern side - Enterococci		Lyall Bay Beach, Eastern side - faecal coliforms
Date	CFU/100mL	Date	CFU/100mL
08-Jul-22 19:21:00	7.300000191	08-Jul-22 19:21:00	1.799999952
09-Jul-22 07:51:00	1000	09-Jul-22 07:51:00	40
10-Jul-22 08:07:00	4	10-Jul-22 08:07:00	4
12-Jul-22 14:56:00	100	12-Jul-22 14:56:00	56
13-Jul-22 07:58:00	6300	13-Jul-22 07:58:00	90
14-Jul-22 08:05:00	2	14-Jul-22 08:05:00	8
20-Jul-22 15:46:00	3.599999905	20-Jul-22 15:46:00	3.599999905
21-Jul-22 08:05:00	20	21-Jul-22 08:05:00	12
22-Jul-22 07:53:00	16	22-Jul-22 07:53:00	52
23-Jul-22 08:11:00	18	23-Jul-22 08:11:00	14
24-Jul-22 08:10:00	2	24-Jul-22 08:10:00	6
26-Jul-22 08:10:00	29	26-Jul-22 08:10:00	33
27-Jul-22 07:46:00	6	27-Jul-22 07:46:00	2
28-Jul-22 08:04:00	2	28-Jul-22 08:04:00	2
29-Jul-22 08:01:00	6	29-Jul-22 08:01:00	10
30-Jul-22 08:18:00	2	30-Jul-22 08:18:00	2
31-Jul-22 07:42:00	74	31-Jul-22 07:42:00	78
01-Aug-22 08:06:00	16	01-Aug-22 08:06:00	52
02-Aug-22 08:07:00	18	02-Aug-22 08:07:00	66
08-Aug-22 08:36:00	580	08-Aug-22 08:36:00	600
09-Aug-22 08:01:00	8	09-Aug-22 08:01:00	6
10-Aug-22 08:10:00	6	10-Aug-22 08:10:00	26
11-Aug-22 07:52:00	12	11-Aug-22 07:52:00	250
12-Aug-22 08:00:00	290	12-Aug-22 08:00:00	300
13-Aug-22 08:21:00	15	13-Aug-22 08:21:00	6.699999809
14-Aug-22 08:20:00	12	14-Aug-22 08:20:00	2
15-Aug-22 08:13:00	2	15-Aug-22 08:13:00	4
18-Aug-22 16:56:00	52	18-Aug-22 16:56:00	88
19-Aug-22 14:10:00	74	19-Aug-22 14:10:00	16
20-Aug-22 08:01:00	54	20-Aug-22 08:01:00	300
21-Aug-22 08:23:00	110	21-Aug-22 08:23:00	16
22-Aug-22 07:50:00	6	22-Aug-22 07:50:00	12
23-Aug-22 08:01:00	92	23-Aug-22 08:01:00	240
26-Aug-22 16:50:00	9.100000381	26-Aug-22 16:50:00	1.799999952
27-Aug-22 08:21:00	52	27-Aug-22 08:21:00	88
30-Sep-22 08:47:00	1200	30-Sep-22 08:47:00	840
01-Oct-22 09:16:00	42	01-Oct-22 09:16:00	120
01-Oct-22 09:30:00	6	01-Oct-22 09:30:00	4
19-Nov-22 08:06:00	1800	19-Nov-22 08:06:00	700
20-Nov-22 07:56:00	120	20-Nov-22 07:56:00	22
21-Nov-22 08:06:00	24	21-Nov-22 08:06:00	4
27-Nov-22 14:47:00	48	27-Nov-22 14:47:00	15
28-Nov-22 07:45:00	280	28-Nov-22 07:45:00	510
29-Nov-22 07:43:00	18	29-Nov-22 07:43:00	52
11-Dec-22 07:57:00	10	10-Dec-22 07:36:00	10
12-Dec-22 07:55:00	150	11-Dec-22 07:57:00	10
08-Jan-23 07:45:00	300	12-Dec-22 07:55:00	10
09-Jan-23 07:44:00	36	08-Jan-23 07:45:00	440
10-Jan-23 07:50:00	10	09-Jan-23 07:44:00	90
12-Jan-23 07:36:00	18	10-Jan-23 07:50:00	480
13-Jan-23 07:41:00	10	12-Jan-23 07:36:00	10
14-Jan-23 02:00:00	10	13-Jan-23 07:41:00	10
05-Feb-23 15:03:00	55	14-Jan-23 02:00:00	10
07-Feb-23 07:43:00	160	05-Feb-23 15:03:00	120
14-Feb-23 14:51:00	150	07-Feb-23 07:43:00	10
15-Feb-23 07:41:00	110	14-Feb-23 14:51:00	10
16-Feb-23 07:22:00	210	15-Feb-23 07:41:00	10
17-Feb-23 07:47:00	420	16-Feb-23 07:22:00	50
18-Feb-23 12:15:00	10	17-Feb-23 07:47:00	350
19-Feb-23 08:11:00	10	18-Feb-23 12:15:00	10
19-Apr-23 15:37:00	2100	19-Feb-23 08:11:00	60
20-Apr-23 10:42:00	30	19-Apr-23 15:37:00	360
21-Apr-23 07:51:00	10	20-Apr-23 10:42:00	10
22-Apr-23 08:08:00	130	21-Apr-23 07:51:00	10
04-May-23 18:36:00	10	22-Apr-23 08:08:00	600
05-May-23 11:02:00	110	04-May-23 18:36:00	30
06-May-23 07:40:00	100	05-May-23 11:02:00	10
28-May-23 10:25:00	10	06-May-23 07:40:00	20
29-May-23 10:19:00	80	28-May-23 10:25:00	10
30-May-23 10:13:00	200	29-May-23 10:19:00	30
		30-May-23 10:13:00	20

	Dorrie Leslie Park, South side of boat ramp - Enterococci		Dorrie Leslie Park, South side of boat ramp - faecal coliforms
Date	CFU/100mL	Date	CFU/100mL
08-Jul-22 19:50:00	100	08-Jul-22 19:50:00	120
09-Jul-22 08:21:00	9.100000381	09-Jul-22 08:21:00	5.5
10-Jul-22 08:30:00	2	10-Jul-22 08:30:00	6
12-Jul-22 15:26:00	3000	12-Jul-22 15:26:00	22
13-Jul-22 08:26:00	8	13-Jul-22 08:26:00	20
14-Jul-22 08:36:00	4	14-Jul-22 08:36:00	8
20-Jul-22 16:13:00	1.799999952	20-Jul-22 16:13:00	1.799999952
21-Jul-22 08:30:00	4	21-Jul-22 08:30:00	6
22-Jul-22 08:18:00	34	22-Jul-22 08:18:00	44
23-Jul-22 08:35:00	22	23-Jul-22 08:35:00	20
24-Jul-22 08:36:00	2	24-Jul-22 08:36:00	12
26-Jul-22 08:32:00	9.100000381	26-Jul-22 08:32:00	1.799999952
27-Jul-22 08:11:00	36	27-Jul-22 08:11:00	36
28-Jul-22 08:27:00	80	28-Jul-22 08:27:00	220
29-Jul-22 08:27:00	2	29-Jul-22 08:27:00	2
30-Jul-22 08:46:00	4	30-Jul-22 08:46:00	8
31-Jul-22 08:10:00	78	31-Jul-22 08:10:00	62
01-Aug-22 08:25:00	14	01-Aug-22 08:25:00	62
02-Aug-22 08:31:00	6	02-Aug-22 08:31:00	32
08-Aug-22 09:01:00	50	08-Aug-22 09:01:00	120
09-Aug-22 08:26:00	130	09-Aug-22 08:26:00	88
10-Aug-22 08:30:00	8	10-Aug-22 08:30:00	16
11-Aug-22 08:18:00	18	11-Aug-22 08:18:00	28
12-Aug-22 08:25:00	2	12-Aug-22 08:25:00	4
13-Aug-22 08:46:00	2	13-Aug-22 08:46:00	2
14-Aug-22 08:13:00	2	14-Aug-22 08:13:00	2
15-Aug-22 08:36:00	20	15-Aug-22 08:36:00	80
18-Aug-22 17:21:00	1.799999952	18-Aug-22 17:21:00	120
19-Aug-22 14:36:00	120	19-Aug-22 14:36:00	150
20-Aug-22 08:27:00	48	20-Aug-22 08:27:00	210
21-Aug-22 08:45:00	82	21-Aug-22 08:45:00	170
22-Aug-22 08:20:00	2	22-Aug-22 08:20:00	22
23-Aug-22 08:25:00	4	23-Aug-22 08:25:00	18
26-Aug-22 17:12:00	1.799999952	26-Aug-22 17:12:00	1.799999952
27-Aug-22 08:44:00	2	27-Aug-22 08:44:00	2
27-Aug-22 08:45:00	8	27-Aug-22 08:45:00	40
30-Sep-22 09:07:00	150	30-Sep-22 09:07:00	29
01-Oct-22 09:39:00	22	01-Oct-22 09:39:00	46
01-Oct-22 09:52:00	1100	01-Oct-22 09:52:00	390
19-Nov-22 08:31:00	520	19-Nov-22 08:31:00	800
20-Nov-22 08:18:00	74	20-Nov-22 08:18:00	66
21-Nov-22 08:30:00	14	21-Nov-22 08:30:00	26
27-Nov-22 15:13:00	46	27-Nov-22 15:13:00	16
28-Nov-22 08:11:00	100	28-Nov-22 08:11:00	64
29-Nov-22 08:06:00	8	29-Nov-22 08:06:00	22
11-Dec-22 08:20:00	10	10-Dec-22 07:55:00	40
12-Dec-22 08:21:00	5000	11-Dec-22 08:20:00	10
08-Jan-23 08:07:00	310	12-Dec-22 08:21:00	600
09-Jan-23 08:11:00	10	08-Jan-23 08:07:00	700
10-Jan-23 08:15:00	10	09-Jan-23 08:11:00	240
12-Jan-23 08:03:00	10	10-Jan-23 08:15:00	10
13-Jan-23 08:06:00	10	12-Jan-23 08:03:00	10
14-Jan-23 02:00:00	10	13-Jan-23 08:06:00	10
05-Feb-23 15:30:00	100	14-Jan-23 02:00:00	10
06-Feb-23 08:25:00	55	05-Feb-23 15:30:00	120
07-Feb-23 08:10:00	64	06-Feb-23 08:25:00	70
14-Feb-23 15:16:00	140	07-Feb-23 08:10:00	10
15-Feb-23 08:07:00	500	14-Feb-23 15:16:00	40
16-Feb-23 07:50:00	280	15-Feb-23 08:07:00	120
17-Feb-23 08:13:00	160	16-Feb-23 07:50:00	110
18-Feb-23 12:15:00	10	17-Feb-23 08:13:00	50
19-Feb-23 08:36:00	20	18-Feb-23 12:15:00	10
19-Apr-23 15:57:00	330	19-Feb-23 08:36:00	10
20-Apr-23 11:22:00	40	19-Apr-23 15:57:00	40
21-Apr-23 08:17:00	30	20-Apr-23 11:22:00	30
22-Apr-23 08:36:00	60	21-Apr-23 08:17:00	20
04-May-23 19:02:00	70	22-Apr-23 08:36:00	140
05-May-23 11:20:00	40	04-May-23 19:02:00	60
06-May-23 08:05:00	20	05-May-23 11:20:00	30
28-May-23 10:18:00	10	06-May-23 08:05:00	40
29-May-23 10:10:00	30	28-May-23 10:18:00	10
30-May-23 10:04:00	30	29-May-23 10:10:00	10
		30-May-23 10:04:00	30

	Dorrie Leslie Park, West of boat ramp - Enterococci		Dorrie Leslie Park, West of boat ramp - faecal coliforms
Date	CFU/100mL	Date	CFU/100mL
08-Jul-22 19:36:00	11	08-Jul-22 19:36:00	5.5
09-Jul-22 08:09:00	1.799999952	09-Jul-22 08:09:00	9.100000381
10-Jul-22 08:20:00	2	10-Jul-22 08:20:00	4
12-Jul-22 15:14:00	54	12-Jul-22 15:14:00	25
13-Jul-22 08:13:00	28	13-Jul-22 08:13:00	26
14-Jul-22 08:23:00	4	14-Jul-22 08:23:00	2
20-Jul-22 16:00:00	5.5	20-Jul-22 16:00:00	9.100000381
21-Jul-22 08:17:00	2	21-Jul-22 08:17:00	16
22-Jul-22 08:06:00	16	22-Jul-22 08:06:00	18
23-Jul-22 08:23:00	8	23-Jul-22 08:23:00	6
24-Jul-22 08:22:00	2	24-Jul-22 08:22:00	2
26-Jul-22 08:21:00	3.599999905	26-Jul-22 08:21:00	1.799999952
27-Jul-22 07:59:00	44	27-Jul-22 07:59:00	46
28-Jul-22 08:16:00	350	28-Jul-22 08:16:00	70
29-Jul-22 08:16:00	2	29-Jul-22 08:16:00	2
30-Jul-22 08:32:00	2	30-Jul-22 08:32:00	2
31-Jul-22 07:55:00	68	31-Jul-22 07:55:00	66
01-Aug-22 08:16:00	32	01-Aug-22 08:16:00	94
02-Aug-22 08:20:00	4	02-Aug-22 08:20:00	2
08-Aug-22 08:50:00	22	08-Aug-22 08:50:00	1.799999952
09-Aug-22 08:16:00	150	09-Aug-22 08:16:00	86
10-Aug-22 08:21:00	16	10-Aug-22 08:21:00	26
11-Aug-22 08:07:00	2	11-Aug-22 08:07:00	6
12-Aug-22 08:14:00	4	12-Aug-22 08:14:00	2
13-Aug-22 08:33:00	2	13-Aug-22 08:33:00	4
14-Aug-22 08:32:00	6	14-Aug-22 08:32:00	4
15-Aug-22 08:26:00	2	15-Aug-22 08:26:00	2
18-Aug-22 17:05:00	68	18-Aug-22 17:05:00	80
19-Aug-22 14:22:00	54	19-Aug-22 14:22:00	30
20-Aug-22 08:16:00	190	20-Aug-22 08:16:00	170
21-Aug-22 08:36:00	6	21-Aug-22 08:36:00	18
22-Aug-22 08:03:00	2	22-Aug-22 08:03:00	18
23-Aug-22 08:16:00	8	23-Aug-22 08:16:00	16
26-Aug-22 17:02:00	7.300000191	26-Aug-22 17:02:00	1.799999952
27-Aug-22 08:32:00	14	27-Aug-22 08:32:00	16
27-Aug-22 08:36:00	12	27-Aug-22 08:36:00	6
30-Sep-22 09:11:00	1000	30-Sep-22 09:11:00	720
01-Oct-22 09:30:00	35	01-Oct-22 09:30:00	56
01-Oct-22 09:41:00	6	01-Oct-22 09:41:00	12
19-Nov-22 08:19:00	2900	19-Nov-22 08:19:00	980
20-Nov-22 08:07:00	7.300000191	20-Nov-22 08:07:00	5.5
21-Nov-22 08:18:00	18	21-Nov-22 08:18:00	54
28-Nov-22 07:58:00	94	28-Nov-22 07:58:00	46
29-Nov-22 07:56:00	64	29-Nov-22 07:56:00	8
11-Dec-22 08:11:00	18	10-Dec-22 07:48:00	10
12-Dec-22 08:10:00	10	11-Dec-22 08:11:00	50
08-Jan-23 07:56:00	280	12-Dec-22 08:10:00	10
09-Jan-23 08:00:00	10	08-Jan-23 07:56:00	360
10-Jan-23 08:03:00	10	09-Jan-23 08:00:00	10
12-Jan-23 07:51:00	10	10-Jan-23 08:03:00	10
13-Jan-23 07:56:00	10	12-Jan-23 07:51:00	10
14-Jan-23 02:00:00	10	13-Jan-23 07:56:00	10
05-Feb-23 15:16:00	150	14-Jan-23 02:00:00	10
06-Feb-23 08:10:00	36	05-Feb-23 15:16:00	140
07-Feb-23 07:57:00	260	06-Feb-23 08:10:00	30
14-Feb-23 15:06:00	10	07-Feb-23 07:57:00	10
15-Feb-23 07:55:00	27	14-Feb-23 15:06:00	10
16-Feb-23 07:36:00	20	15-Feb-23 07:55:00	10
17-Feb-23 08:01:00	40	16-Feb-23 07:36:00	10
18-Feb-23 12:15:00	10	17-Feb-23 08:01:00	10
19-Feb-23 08:24:00	10	18-Feb-23 12:15:00	10
19-Apr-23 15:52:00	540	19-Feb-23 08:24:00	10
20-Apr-23 10:57:00	430	19-Apr-23 15:52:00	110
21-Apr-23 08:06:00	10	20-Apr-23 10:57:00	110
22-Apr-23 08:22:00	90	21-Apr-23 08:06:00	10
04-May-23 18:50:00	20	22-Apr-23 08:22:00	120
05-May-23 11:16:00	10	04-May-23 18:50:00	10
06-May-23 07:56:00	10	05-May-23 11:16:00	10
28-May-23 10:14:00	240	06-May-23 07:56:00	10
29-May-23 10:03:00	10	28-May-23 10:14:00	20
30-May-23 09:59:00	10	29-May-23 10:03:00	10
		30-May-23 09:59:00	20

	Peninsula at Queens Drive and The Esplanade - Enterococci		Peninsula at Queens Drive and The Esplanade - faecal coliforms
Date	CFU/100mL	Date	CFU/100mL
08-Jul-22 19:27:00	18	08-Jul-22 19:27:00	3.599999905
09-Jul-22 08:02:00	7.300000191	09-Jul-22 08:02:00	3.599999905
10-Jul-22 08:13:00	66	10-Jul-22 08:13:00	52
13-Jul-22 08:06:00	34	13-Jul-22 08:06:00	34
14-Jul-22 08:16:00	4	14-Jul-22 08:16:00	8
20-Jul-22 15:53:00	15	20-Jul-22 15:53:00	38
21-Jul-22 08:11:00	140	21-Jul-22 08:11:00	58
22-Jul-22 07:59:00	38	22-Jul-22 07:59:00	78
23-Jul-22 08:17:00	6	23-Jul-22 08:17:00	12
24-Jul-22 08:16:00	6	24-Jul-22 08:16:00	210
26-Jul-22 08:16:00	27	26-Jul-22 08:16:00	62
27-Jul-22 07:52:00	2	27-Jul-22 07:52:00	6
28-Jul-22 08:11:00	24	28-Jul-22 08:11:00	20
29-Jul-22 08:10:00	2	29-Jul-22 08:10:00	2
30-Jul-22 08:26:00	2	30-Jul-22 08:26:00	2
31-Jul-22 07:50:00	90	31-Jul-22 07:50:00	60
01-Aug-22 08:11:00	44	01-Aug-22 08:11:00	48
02-Aug-22 08:13:00	8	02-Aug-22 08:13:00	26
08-Aug-22 08:43:00	400	08-Aug-22 08:43:00	290
09-Aug-22 08:10:00	12	09-Aug-22 08:10:00	10
10-Aug-22 08:16:00	4	10-Aug-22 08:16:00	14
11-Aug-22 08:00:00	22	11-Aug-22 08:00:00	250
12-Aug-22 08:05:00	4	12-Aug-22 08:05:00	2
13-Aug-22 08:27:00	16	13-Aug-22 08:27:00	2
14-Aug-22 08:27:00	14	14-Aug-22 08:27:00	6
15-Aug-22 08:21:00	2	15-Aug-22 08:21:00	4
19-Aug-22 14:17:00	1600	19-Aug-22 14:17:00	720
20-Aug-22 08:10:00	6	20-Aug-22 08:10:00	4
21-Aug-22 08:30:00	230	21-Aug-22 08:30:00	20
22-Aug-22 07:57:00	12	22-Aug-22 07:57:00	16
23-Aug-22 08:11:00	4	23-Aug-22 08:11:00	6
26-Aug-22 16:57:00	1.799999952	26-Aug-22 16:57:00	1.799999952
27-Aug-22 08:27:00	2	27-Aug-22 08:27:00	2
27-Aug-22 08:30:00	10	27-Aug-22 08:30:00	10
30-Sep-22 08:56:00	120	30-Sep-22 08:56:00	68
01-Oct-22 09:23:00	8	01-Oct-22 09:23:00	32
01-Oct-22 09:36:00	2	01-Oct-22 09:36:00	4
19-Nov-22 08:12:00	1600	19-Nov-22 08:12:00	740
20-Nov-22 08:01:00	86	20-Nov-22 08:01:00	38
21-Nov-22 08:12:00	78	21-Nov-22 08:12:00	18
27-Nov-22 14:55:00	38	27-Nov-22 14:55:00	66
28-Nov-22 07:52:00	70	28-Nov-22 07:52:00	38
29-Nov-22 07:50:00	20	29-Nov-22 07:50:00	4
11-Dec-22 08:05:00	100	10-Dec-22 07:42:00	30
12-Dec-22 08:03:00	18	11-Dec-22 08:05:00	510
08-Jan-23 07:50:00	360	12-Dec-22 08:03:00	10
09-Jan-23 07:52:00	18	08-Jan-23 07:50:00	460
10-Jan-23 07:57:00	10	09-Jan-23 07:52:00	100
12-Jan-23 07:44:00	200	10-Jan-23 07:57:00	170
13-Jan-23 07:50:00	10	12-Jan-23 07:44:00	200
14-Jan-23 02:00:00	10	13-Jan-23 07:50:00	10
05-Feb-23 15:10:00	82	14-Jan-23 02:00:00	10
06-Feb-23 08:02:00	150	05-Feb-23 15:10:00	80
07-Feb-23 07:56:00	120	06-Feb-23 08:02:00	90
14-Feb-23 15:00:00	73	07-Feb-23 07:56:00	10
15-Feb-23 07:49:00	2400	14-Feb-23 15:00:00	20
16-Feb-23 07:30:00	20	15-Feb-23 07:49:00	1800
17-Feb-23 07:55:00	10	16-Feb-23 07:30:00	10
18-Feb-23 12:15:00	10	17-Feb-23 07:55:00	40
19-Feb-23 08:18:00	20	18-Feb-23 12:15:00	10
19-Apr-23 15:45:00	2900	19-Feb-23 08:18:00	30
20-Apr-23 10:50:00	570	19-Apr-23 15:45:00	400
21-Apr-23 08:00:00	40	20-Apr-23 10:50:00	360
22-Apr-23 08:15:00	90	21-Apr-23 08:00:00	110
04-May-23 18:42:00	100	22-Apr-23 08:15:00	40
05-May-23 11:09:00	150	04-May-23 18:42:00	30
06-May-23 07:47:00	90	05-May-23 11:09:00	230
28-May-23 10:08:00	460	06-May-23 07:47:00	80
29-May-23 10:14:00	70	28-May-23 10:08:00	160
30-May-23 10:08:00	60	29-May-23 10:14:00	60
		30-May-23 10:08:00	150

	Houghton Bay, Western side - Enterococci		Houghton Bay, Western side - faecal coliforms
Date	CFU/100mL	Date	CFU/100mL
08-Jul-22 20:03:00	13	08-Jul-22 20:03:00	9.100000381
09-Jul-22 08:36:00	16	09-Jul-22 08:36:00	5.5
10-Jul-22 08:38:00	2	10-Jul-22 08:38:00	2
12-Jul-22 15:34:00	84	12-Jul-22 15:34:00	54
13-Jul-22 08:39:00	8	13-Jul-22 08:39:00	32
14-Jul-22 08:43:00	2	14-Jul-22 08:43:00	2
20-Jul-22 16:25:00	60	20-Jul-22 16:25:00	150
21-Jul-22 08:35:00	16	21-Jul-22 08:35:00	4
22-Jul-22 08:30:00	40	22-Jul-22 08:30:00	88
23-Jul-22 08:47:00	10	23-Jul-22 08:47:00	6
24-Jul-22 08:48:00	16	24-Jul-22 08:48:00	68
26-Jul-22 08:41:00	13	26-Jul-22 08:41:00	11
27-Jul-22 08:23:00	30	27-Jul-22 08:23:00	44
28-Jul-22 08:39:00	74	28-Jul-22 08:39:00	10
29-Jul-22 08:35:00	4	29-Jul-22 08:35:00	2
30-Jul-22 08:57:00	2	30-Jul-22 08:57:00	2
31-Jul-22 08:20:00	40	31-Jul-22 08:20:00	48
01-Aug-22 08:37:00	96	01-Aug-22 08:37:00	720
02-Aug-22 08:42:00	14	02-Aug-22 08:42:00	86
08-Aug-22 09:14:00	420	08-Aug-22 09:14:00	230
09-Aug-22 08:36:00	10	09-Aug-22 08:36:00	10
10-Aug-22 08:38:00	94	10-Aug-22 08:38:00	180
11-Aug-22 08:25:00	2	11-Aug-22 08:25:00	14
12-Aug-22 08:37:00	2	12-Aug-22 08:37:00	2
13-Aug-22 08:57:00	8	13-Aug-22 08:57:00	8
14-Aug-22 08:52:00	2	14-Aug-22 08:52:00	2
15-Aug-22 08:47:00	2	15-Aug-22 08:47:00	8
18-Aug-22 17:31:00	90	18-Aug-22 17:31:00	86
19-Aug-22 14:45:00	130	19-Aug-22 14:45:00	130
20-Aug-22 08:37:00	190	20-Aug-22 08:37:00	150
21-Aug-22 08:55:00	70	21-Aug-22 08:55:00	150
22-Aug-22 08:31:00	8	22-Aug-22 08:31:00	30
23-Aug-22 08:35:00	8	23-Aug-22 08:35:00	4
26-Aug-22 17:21:00	5.5	26-Aug-22 17:21:00	3.599999905
27-Aug-22 08:54:00	4	27-Aug-22 08:54:00	2
30-Sep-22 09:23:00	340	30-Sep-22 09:23:00	210
01-Oct-22 09:47:00	36	01-Oct-22 09:47:00	68
01-Oct-22 10:02:00	8	01-Oct-22 10:02:00	8
19-Nov-22 08:39:00	3100	19-Nov-22 08:39:00	880
20-Nov-22 08:27:00	36	20-Nov-22 08:27:00	7.300000191
21-Nov-22 08:39:00	6	21-Nov-22 08:39:00	30
27-Nov-22 15:20:00	25	27-Nov-22 15:20:00	60
28-Nov-22 08:20:00	120	28-Nov-22 08:20:00	34
29-Nov-22 08:16:00	6	29-Nov-22 08:16:00	18
11-Dec-22 08:25:00	10	10-Dec-22 08:09:00	140
12-Dec-22 08:30:00	10	11-Dec-22 08:25:00	50
08-Jan-23 08:20:00	220	12-Dec-22 08:30:00	10
09-Jan-23 08:20:00	10	08-Jan-23 08:20:00	190
10-Jan-23 08:24:00	18	09-Jan-23 08:20:00	10
12-Jan-23 08:20:00	10	10-Jan-23 08:24:00	50
13-Jan-23 08:15:00	10	12-Jan-23 08:20:00	10
14-Jan-23 02:00:00	10	13-Jan-23 08:15:00	10
05-Feb-23 15:41:00	55	14-Jan-23 02:00:00	10
06-Feb-23 08:35:00	160	05-Feb-23 15:41:00	30
07-Feb-23 08:18:00	10	06-Feb-23 08:35:00	140
14-Feb-23 15:21:00	36	07-Feb-23 08:18:00	10
15-Feb-23 08:16:00	1300	14-Feb-23 15:21:00	20
16-Feb-23 08:03:00	190	15-Feb-23 08:16:00	1700
17-Feb-23 08:22:00	230	16-Feb-23 08:03:00	120
18-Feb-23 12:15:00	10	17-Feb-23 08:22:00	80
19-Feb-23 08:44:00	10	18-Feb-23 12:15:00	20
19-Apr-23 16:06:00	290	19-Feb-23 08:44:00	10
20-Apr-23 11:16:00	30	19-Apr-23 16:06:00	70
21-Apr-23 08:25:00	10	20-Apr-23 11:16:00	10
22-Apr-23 08:44:00	80	21-Apr-23 08:25:00	20
04-May-23 19:11:00	50	22-Apr-23 08:44:00	330
05-May-23 11:26:00	10	04-May-23 19:11:00	60
06-May-23 08:15:00	10	05-May-23 11:26:00	10
28-May-23 09:59:00	10	06-May-23 08:15:00	10
29-May-23 09:57:00	10	28-May-23 09:59:00	10
30-May-23 09:53:00	10	29-May-23 09:57:00	10
		30-May-23 09:53:00	10

	Marine Centre, Island Bay, Eastern side - Enterococci		Marine Centre, Island Bay, Eastern side - faecal coliforms
Date	CFU/100mL	Date	CFU/100mL
08-Jul-22 20:10:00	90	08-Jul-22 20:10:00	96
09-Jul-22 08:43:00	9.100000381	09-Jul-22 08:43:00	5.5
10-Jul-22 08:46:00	54	10-Jul-22 08:46:00	40
12-Jul-22 15:42:00	180	12-Jul-22 15:42:00	100
13-Jul-22 08:52:00	220	13-Jul-22 08:52:00	140
14-Jul-22 08:56:00	14	14-Jul-22 08:56:00	10
20-Jul-22 16:31:00	70	20-Jul-22 16:31:00	160
21-Jul-22 08:46:00	32	21-Jul-22 08:46:00	24
22-Jul-22 08:36:00	8	22-Jul-22 08:36:00	18
23-Jul-22 08:53:00	4	23-Jul-22 08:53:00	8
24-Jul-22 08:55:00	8	24-Jul-22 08:55:00	190
26-Jul-22 08:47:00	48	26-Jul-22 08:47:00	35
27-Jul-22 08:30:00	360	27-Jul-22 08:30:00	390
28-Jul-22 08:46:00	2	28-Jul-22 08:46:00	2
29-Jul-22 08:45:00	4	29-Jul-22 08:45:00	22
30-Jul-22 09:09:00	8	30-Jul-22 09:09:00	16
31-Jul-22 08:25:00	820	31-Jul-22 08:25:00	700
01-Aug-22 08:43:00	42	01-Aug-22 08:43:00	50
02-Aug-22 08:47:00	4	02-Aug-22 08:47:00	2
08-Aug-22 09:21:00	440	08-Aug-22 09:21:00	320
09-Aug-22 08:42:00	58	09-Aug-22 08:42:00	28
10-Aug-22 08:43:00	100	10-Aug-22 08:43:00	200
11-Aug-22 08:31:00	6	11-Aug-22 08:31:00	2
12-Aug-22 08:50:00	320	12-Aug-22 08:50:00	250
13-Aug-22 09:02:00	8.300000191	13-Aug-22 09:02:00	27
14-Aug-22 09:00:00	8	14-Aug-22 09:00:00	10
15-Aug-22 08:53:00	6	15-Aug-22 08:53:00	36
18-Aug-22 17:37:00	640	18-Aug-22 17:37:00	640
19-Aug-22 14:50:00	1600	19-Aug-22 14:50:00	500
20-Aug-22 08:43:00	2100	20-Aug-22 08:43:00	3300
21-Aug-22 09:01:00	80	21-Aug-22 09:01:00	240
22-Aug-22 08:36:00	36	22-Aug-22 08:36:00	52
23-Aug-22 08:41:00	88	23-Aug-22 08:41:00	240
26-Aug-22 17:30:00	5.5	26-Aug-22 17:30:00	15
27-Aug-22 09:01:00	50	27-Aug-22 09:01:00	150
30-Sep-22 09:36:00	1000	30-Sep-22 09:36:00	800
01-Oct-22 10:00:00	54	01-Oct-22 10:00:00	110
01-Oct-22 10:04:00	12	01-Oct-22 10:04:00	16
19-Nov-22 08:46:00	2600	19-Nov-22 08:46:00	800
20-Nov-22 08:32:00	20	20-Nov-22 08:32:00	16
21-Nov-22 08:44:00	24	21-Nov-22 08:44:00	42
27-Nov-22 15:26:00	340	27-Nov-22 15:26:00	300
28-Nov-22 08:26:00	110	28-Nov-22 08:26:00	46
29-Nov-22 08:23:00	16	29-Nov-22 08:23:00	6
11-Dec-22 08:35:00	10	10-Dec-22 08:14:00	30
12-Dec-22 08:36:00	10	11-Dec-22 08:35:00	70
08-Jan-23 08:26:00	550	12-Dec-22 08:36:00	40
09-Jan-23 08:25:00	18	08-Jan-23 08:26:00	300
10-Jan-23 08:30:00	36	09-Jan-23 08:25:00	10
12-Jan-23 08:26:00	280	10-Jan-23 08:30:00	70
13-Jan-23 08:21:00	1800	12-Jan-23 08:26:00	300
14-Jan-23 02:00:00	10	13-Jan-23 08:21:00	4000
05-Feb-23 15:47:00	64	14-Jan-23 02:00:00	10
06-Feb-23 08:41:00	45	05-Feb-23 15:47:00	120
07-Feb-23 08:24:00	170	06-Feb-23 08:41:00	260
14-Feb-23 15:37:00	2700	07-Feb-23 08:24:00	6000
15-Feb-23 08:22:00	1900	14-Feb-23 15:37:00	1200
16-Feb-23 08:10:00	1700	15-Feb-23 08:22:00	1600
17-Feb-23 08:27:00	70	16-Feb-23 08:10:00	1000
18-Feb-23 12:15:00	10	17-Feb-23 08:27:00	10
19-Feb-23 08:51:00	20	18-Feb-23 12:15:00	10
19-Apr-23 16:11:00	5900	19-Feb-23 08:51:00	40
20-Apr-23 11:05:00	60	19-Apr-23 16:11:00	1000
21-Apr-23 08:31:00	50	20-Apr-23 11:05:00	50
22-Apr-23 08:51:00	150	21-Apr-23 08:31:00	30
04-May-23 19:16:00	80	22-Apr-23 08:51:00	580
05-May-23 11:34:00	10	04-May-23 19:16:00	20
06-May-23 08:21:00	330	05-May-23 11:34:00	60
28-May-23 09:50:00	10	06-May-23 08:21:00	300
29-May-23 09:53:00	60	28-May-23 09:50:00	30
30-May-23 09:49:00	40	29-May-23 09:53:00	30
		30-May-23 09:49:00	10

	Island Bay, Western side - Enterococci		Island Bay, Western side - faecal coliforms
Date	CFU/100mL	Date	CFU/100mL
08-Jul-22 20:16:00	13	08-Jul-22 20:16:00	3.599999905
09-Jul-22 08:50:00	7.300000191	09-Jul-22 08:50:00	7.300000191
10-Jul-22 08:51:00	2	10-Jul-22 08:51:00	2
12-Jul-22 15:50:00	62	12-Jul-22 15:50:00	33
13-Jul-22 08:46:00	92	13-Jul-22 08:46:00	76
14-Jul-22 08:50:00	62	14-Jul-22 08:50:00	350
20-Jul-22 16:37:00	66	20-Jul-22 16:37:00	150
21-Jul-22 08:52:00	270	21-Jul-22 08:52:00	540
22-Jul-22 08:42:00	29	22-Jul-22 08:42:00	42
23-Jul-22 09:00:00	16	23-Jul-22 09:00:00	20
24-Jul-22 09:01:00	28	24-Jul-22 09:01:00	58
26-Jul-22 08:52:00	1.799999952	26-Jul-22 08:52:00	1.799999952
27-Jul-22 08:36:00	660	27-Jul-22 08:36:00	350
28-Jul-22 08:51:00	370	28-Jul-22 08:51:00	64
29-Jul-22 08:51:00	2	29-Jul-22 08:51:00	4
30-Jul-22 09:04:00	18	30-Jul-22 09:04:00	22
01-Aug-22 08:50:00	74	01-Aug-22 08:50:00	180
02-Aug-22 08:51:00	18	02-Aug-22 08:51:00	66
08-Aug-22 09:26:00	29	08-Aug-22 09:26:00	15
09-Aug-22 08:46:00	46	09-Aug-22 08:46:00	34
10-Aug-22 08:50:00	80	10-Aug-22 08:50:00	210
11-Aug-22 08:37:00	2	11-Aug-22 08:37:00	8
12-Aug-22 08:43:00	320	12-Aug-22 08:43:00	300
13-Aug-22 09:07:00	3.299999952	13-Aug-22 09:07:00	1.700000048
14-Aug-22 09:06:00	2	14-Aug-22 09:06:00	2
15-Aug-22 08:58:00	8	15-Aug-22 08:58:00	12
18-Aug-22 17:41:00	2100	18-Aug-22 17:41:00	1200
19-Aug-22 14:56:00	2500	19-Aug-22 14:56:00	1000
20-Aug-22 08:50:00	230	20-Aug-22 08:50:00	130
21-Aug-22 09:07:00	680	21-Aug-22 09:07:00	340
22-Aug-22 08:41:00	1000	22-Aug-22 08:41:00	1200
23-Aug-22 08:46:00	190	23-Aug-22 08:46:00	880
26-Aug-22 17:36:00	1.799999952	26-Aug-22 17:36:00	1.799999952
27-Aug-22 09:07:00	48	27-Aug-22 09:07:00	88
30-Sep-22 09:30:00	460	30-Sep-22 09:30:00	200
01-Oct-22 10:04:00	34	01-Oct-22 10:04:00	54
01-Oct-22 10:14:00	2	01-Oct-22 10:14:00	2
19-Nov-22 08:51:00	640	19-Nov-22 08:51:00	620
20-Nov-22 08:37:00	7.300000191	20-Nov-22 08:37:00	7.300000191
21-Nov-22 08:49:00	34	21-Nov-22 08:49:00	52
27-Nov-22 15:33:00	300	27-Nov-22 15:33:00	420
28-Nov-22 08:31:00	350	28-Nov-22 08:31:00	850
29-Nov-22 08:30:00	66	29-Nov-22 08:30:00	10
11-Dec-22 08:41:00	10	10-Dec-22 08:22:00	300
12-Dec-22 08:41:00	10	11-Dec-22 08:41:00	10
08-Jan-23 08:32:00	220	12-Dec-22 08:41:00	10
09-Jan-23 08:31:00	10	08-Jan-23 08:32:00	160
10-Jan-23 08:35:00	18	09-Jan-23 08:31:00	10
12-Jan-23 08:31:00	10	10-Jan-23 08:35:00	160
13-Jan-23 08:27:00	1500	12-Jan-23 08:31:00	10
14-Jan-23 02:00:00	630	13-Jan-23 08:27:00	6000
05-Feb-23 15:53:00	150	14-Jan-23 02:00:00	2800
06-Feb-23 08:46:00	110	05-Feb-23 15:53:00	60
07-Feb-23 08:30:00	100	06-Feb-23 08:46:00	110
14-Feb-23 15:30:00	2000	07-Feb-23 08:30:00	30
15-Feb-23 08:28:00	3700	14-Feb-23 15:30:00	1200
16-Feb-23 08:16:00	1500	15-Feb-23 08:28:00	1600
17-Feb-23 08:32:00	310	16-Feb-23 08:16:00	500
18-Feb-23 12:15:00	30	17-Feb-23 08:32:00	450
19-Feb-23 08:57:00	20	18-Feb-23 12:15:00	10
19-Apr-23 16:17:00	6000	19-Feb-23 08:57:00	10
20-Apr-23 11:11:00	180	19-Apr-23 16:17:00	3200
21-Apr-23 08:37:00	230	20-Apr-23 11:11:00	200
22-Apr-23 08:56:00	290	21-Apr-23 08:37:00	510
04-May-23 19:25:00	500	22-Apr-23 08:56:00	340
05-May-23 11:31:00	150	04-May-23 19:25:00	2800
06-May-23 08:26:00	10	05-May-23 11:31:00	440
28-May-23 09:54:00	120	06-May-23 08:26:00	10
29-May-23 09:48:00	10	28-May-23 09:54:00	190
30-May-23 09:45:00	20	29-May-23 09:48:00	20
		30-May-23 09:45:00	10

Appendix III: Inflow and Infiltration Report

Condition (13)

The annual report required by condition 19 of this permit shall detail what steps have been taken in the reporting year and what steps are proposed to be undertaken in the future to reduce infiltration and stormwater ingress into the Wellington City sewerage network.

This information shall include, but not be limited to, the following information:

a) Details on the adoption of a policy to identify, and to repair or replace, defective private sewer drains in the Wellington City catchment. If such a policy is adopted, detail on its implementation made within the previous year
b) Details of additional works that have been undertaken and what these works are expected to achieve
c) An indication of when any on-going works will be completed
d) Details of any investigations undertaken with regard to inflow and infiltration in the Wellington City catchment
e) Details of any works or investigations planned for the next financial year

Inflow and Infiltration Report

A variety of mitigation measures have been undertaken to reduce Inflow and Infiltration (I&I) and to contain wastewater within the reticulated wastewater network. This work aims to reduce the wet weather flows at Moa Point Wastewater Treatment Plant (WWTP) and to also improve the health of waterways. Sections (a), (b), (c), (d) and (e) of Condition 13 are addressed below through the various activities and work programs that contribute to reducing I&I.

Section (a)

Wellington City Council (WCC) have updated the ownership arrangement for wastewater laterals, which came into effect on 1 July 2021. The section of wastewater lateral located in the legal road was previously a private asset and is now council owned.

Detection of faulty laterals contributing to infiltration and inflow from stormwater to wastewater cross connections continue to be identified through ongoing operations and maintenance work and targeted inspections. Property owners are advised to repair faults within

their property and faults within the legal road from 1 July are repaired or replaced by Wellington Water.

Section (b), (c), (d) and (e)

The following work programs and activities described below provide information relating to Condition 13, sections (b) to (e).

Inflow Surveys

No inflow surveys have been undertaken in 2022-2023 financial year in the Moa Point WWTP Catchment. The map showing the status of recent inflow surveys projects is provided in Figure 1 below. Kingsbridge and Northland/Karori inflow surveys were recently completed and are shown below in green. The final inspections for the Kingsbridge Inflow Survey were completed in December 2020. This catchment was selected for an inflow survey due to significant peak wet weather flows.

Two properties in this catchment were found to have their stormwater and wastewater pipes cross- connected which were resolved. Post-rehabilitation flow monitoring has not been undertaken, however an affected customer advised since the inflow survey works were completed, there has been no recent wastewater surcharges in wet weather at their affected property.

The Brooklyn sub-catchment shown in green is historical and was completed more than 5 years ago. Hataitai and Trelissick Park catchments were inflow survey projects that commenced in 2017-2018 and were only partially completed, which are shown in red in Figure 1. Both sub-catchments require re-inspection and are both currently delayed.

Figure 1 - Inflow Survey Project Locations for Moa Point WWTP catchment

The Wellington Water Drainage Investigation Team is working on a range of projects, which includes smoke testing, dye testing and CCTV inspections for both wastewater and stormwater assets. The investigations are able to identify private and public faults. The areas inspected within the Moa Point WWTP Catchment boundary in 2022-2023 are listed below:

- Waitohi Stream Johnsonville
- Human health mitigation survey in Newlands
- Harris Street storm water siphon monitoring
- Koromiko Stream NgaioFox Street renewal Ngaio
- Pump station 7 in Mt Victoria

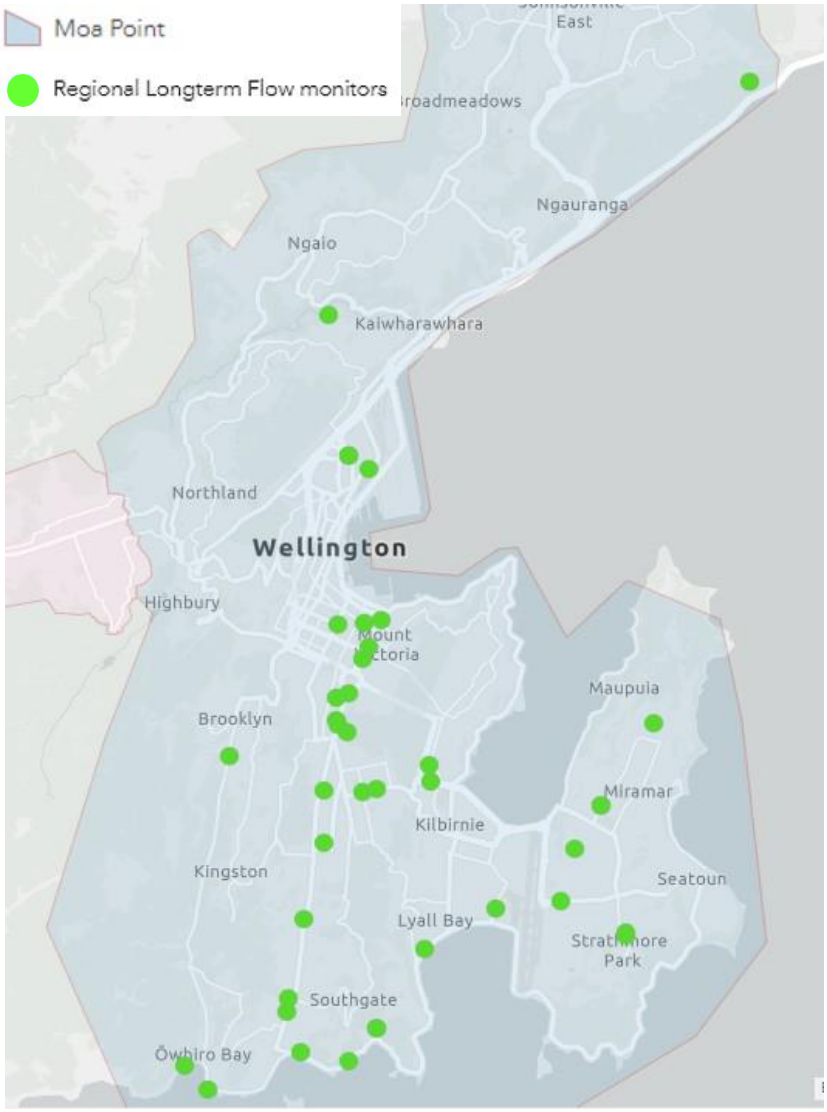
These projects are ongoing. It is expected that Waitohi and Newlands projects will be completed this year, in the 2023-2024 financial year.

Flow Monitoring and Rain Gauge Monitoring

These active long-term flow monitoring sites within the Moa Point WWTP Catchment are shown within the blue polygon in Figure 2 below. There are three flow and four Operational Level Monitoring sites measuring level only. There are also 32 overflow monitoring sites currently installed within the Moa Point WWTP catchment. Two sites monitor both wastewater flow and overflow.

These monitoring sites are part of the long-term monitoring contract. The latest regional contract commenced in July 2022 and some updates to the monitoring locations were undertaken. This data is used to understand network performance and the extent of inflow and infiltration in various catchments. This data also enables investigation of network issues and maintenance of hydraulic models. Wastewater monitoring is also undertaken at most Wastewater Pump Station sites.

Figure 2 - Map of Active Wastewater Flow and Overflow Monitoring Sites within Moa Pt WWTP Catchment



There are currently 10 rain gauges monitoring stations in the Moa Point catchment. This data is used in conjunction with flow monitoring data to understand the extent of I&I for catchments. The rain gauges sites are listed below:

- Miramar at Miramar Bowling Club
- Miramar at Miramar North Road
- Berhampore at Nusery
- Newtown at Mansfield Street
- Newtown at Carmichael Reserve
- Hataitai at Hataitai Park
- Wellington at Te Papa
- Wellington at Regional Council Centre
- Khandallah at Library
- Kaiwharawhara Stream at Ngaio Reserve

Condition Assessments

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

The Very High Critical Assets (VHCA) condition assessments completed as of June 2023 are shown in Figure 3 below. The primary inspection techniques were CCTV and Drone inspection for wastewater pipes and CCTV for Stormwater. For the inspections represented in the below map, approximately 1.1 and 4.0 km stormwater and wastewater respectively were completed in 2022-2023 financial year.

CCTV inspections are also underway in the Owhiro Bay, Newlands and Haitaitai were the main catchments and planned for completion in June 2023. The data from these condition assessment programs will be analysed and used to inform the repair and renewal programs in upcoming financial years.

Figure 3 - Very High Critical Assets (VHCA) CCTV and laser profiling inspections completed as of June 2023.

Wastewater Modelling

The Moa Point WWTP Catchment has four wastewater network models including Evans Bay, Island Bay, CBD Model and Western hills model. Recently work has been carried out to integrate all models into the one model to reflect the entire Moa Point WWTP Catchment.

Stormwater and Wastewater Capital Projects

Table 1 below provides a summary of planned capital projects for wastewater and stormwater assets that were undertaken in 2022-20232 as well as works scheduled for 2023-2024. The projects are proposed and subject to approval by council. Ongoing operational work such as investigations, reactive maintenance and renewals are also carried out in addition to the planned work listed below. Some projects in the table below are noted in both columns as the project is delivered over multiple years or ongoing programmes of work.

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

Activity	2022-2023	2023-2024

Wastewater	Pitt Street (40-55) Wastewater Renewal Maida Vale Road Wastewater Pipe Renewals Whitmore Street (17) - Bowen Street (38) Rising Main Renewal Torrens Terrace(2-48), Arlington Street (6-14, 24-31) and Hopper Street (20-70) Wastewater Renewal Tirangi Road Pump Station (PS34) Mechanical and Electrical Refit with Magflow Installation Ross and Yule WW Renewals Hania Street (3-18) - 60 Kent Terrace Wastewater Renewal Elphinstone Ave (5-22) - Tannadyce St (5) Wastewater Renewal 75 Rhine Street and 24A Freeling Street Development	Yule Stoke Tainui and Broomhedge Wastewater Renewals Wilton Road (127-151) Wastewater Renewal Wellington Road (43) to Vallance Sreet (16) Trunk Wastewater Renewal Wakefield St new Rising Main Taranaki Street WW PS and Rising Main Stratford Way (5) - Wilton Road (89) Wastewater Renewal Portsmouth Road (Southampton Rd, Hobart St, Wexford Rd) Wastewater Renewal Pitt Street (40-55) Wastewater Renewal Maida Vale Road Wastewater Pipe Renewals Hawkestone Street (6-27) and Molesworth Street (79-83) Wastewater Renewal (with SW) Golden Mile WW Renewals Featherston St (Whitmore St to Waring Taylor St) Rising Main Renewal Chaytor Street (Raroa Cr - Waiapu Rd) Wastewater Renewal Buller Street (27) - Vivian Sreet (175) Wastewater Renewal Aro Valley Wastewater Renewals (Adams Aro Holloway Maarama Fairlie Landcross Streets)
Stormwater	Stirling Street (10-14) Adelaide Road	Agra Crescent Stormwater Renewal

	(493) Stormwater Renewal	
	Ross and Yule SW Renewals	Golden Mile SW Renewals

Appendix IV: Moa Point WWTP Assessment of Effects of Reduced Hydraulic Capacity

Appendix V: Outfall Pipeline Assessment

Appendix VI: Ambient Microbe Monitoring

Appendix VII: Smoke Test Report

Appendix VIII: Complaints Record

Date	Complaints	Details	Actions Taken
10/02/2023	Odour complaint	Strong odour from Moa Point Wastewater Plant	

10/02/2023	Odour complaint	Caller reports noxious smell coming from moa Pint Treatment Plant. Has been going on for 3 days but particularly worse today (Friday)	Due to the fire at the Moa Point WWTP on 1 Feb, the lids above the Blower gallery were opened for ventilation and, unfortunately, one of the lids was dropped and damaged. Currently, there's a plastic cover while a new lid is delivered.
11/02/2023	Odour complaint	Caller has phoned wanting to find out if there are any issues with the wastewater treatment plant as there is a very bad odor at their property and this has been an issue in the past. They are not able to open their windows at the moment as the smell is very bad. Please investigate and contact the customer.	
22/03/2023	Odour complaint	There are really strong odours coming from the Moa Point Wastewater plant again. I complained on the 10/2/23 [#SR-587052]. My complaint was forwarded to Wellington Water who provided no response. It was then forwarded to GWRC. Apart from being appointed a case officer on the 12/2/23 no other response has been provided. The odour has been bad on several days since then but it is particularly strong today (22/2/23).	Veolia performed an odour assessment by Stewart Duff Dr, around the Miramar Golf club, No odour was detected. Then drove by Bunker way in Strathmore Park and could not detect any odour. Checking on SCADA, it was noticed that the H2S levels at the INLET of the Scrubber at the WWTP were particularly high on the dates when the complaints were raised (10 Feb and 22 Feb). The inlet H2S is contained within the building, however, due to the fire at the WWTP on 1 Feb, the lids above the Blower gallery were opened for ventilation and, unfortunately, one of the lids was dropped and damaged. Currently, there's a plastic cover while a new lid is delivered, however, the H2S contained within the building could presumably leak out of the building when the H2S levels were high.
23/02/2023	Odour complaint	Stench coming from the Moa Point WWTP.	Due to the fire at the WWTP on 1 Feb, the lids above the Blower gallery were opened for ventilation and, unfortunately, one of the lids was dropped and damaged. Currently, there's a plastic cover while a new lid is delivered
27/03/2023	Odour complaint	This afternoon the sewage plant in Moa Point is giving a bad smell that can be smelt outside my door.	
16/04/2023	Odour complaint	Bad smell. Every time there is a southerly. Would like a call back about this issue.	Unfortunately, the main scrubber is failing. On 28/04/2023, we had STNZ testing the monthly TRS. The scrubber is usually <2 ppb. However, a sample collected on 21/04 was 199 ppb. After this, Veolia fixed the spray nozzles as they were blocked, but the sample tested on 28/04 was 112 ppb which is still a non-compliant result (limit is 50 ppb). Fixing the blocked nozzles helped but it did not solve the issue. Veolia is currently looking into an acid wash of the scrubber as recommended by STNZ, and will prepare a method statement for the job.
28/04/2023	Odour complaint	The smell from the Wellington Sewer at Moa point is repulsive and has been for the last few Southerlies. I think you should have a serious word with them it is not on to be subjected to this smell and we have visitors from out of town and that's all they notice.	
2/05/2023	Odour complaint	Over the past few weeks there has frequently been a strong sewage smell in the Eastern/Southern Suburbs, including Houghton & Lyall Bays, Rongotai, Kilbirnie & Miramar. Whilst a frequent occurrence in the Eastern Suburbs, especially in a light southerly wind, more recently it has been noticeable when there has been no wind or even a light northerly Today it is especially strong (a light southerly blowing) and this evening we have had to shut the house windows to keep the odour out. I would be grateful if you would have this matter investigated urgently and keep me informed of progress.	