South Taranaki District Council

Hāwera Municipal Oxidation Ponds

Monitoring Programme

Annual Report

2022-2023

Technical Report 2023-70

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Taranaki Regional Council

Taranaki Regional Council
Private Bag 713
Stratford

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Executive summary

The South Taranaki District Council (STDC) operates seven municipal oxidation pond systems within the district of South Taranaki.

This report for the period July 2022 to June 2023, focusses on the oxidation ponds system located in Hawera, which comprises an anaerobic lagoon, two primary/facultative ponds in parallel, and a maturation pond. The report describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess STDC's environmental and consent compliance performance during the period under review. The report also details the results of the monitoring undertaken and assesses the environmental effects of STDC's activities in relation to the Hawera Wastewater Treatment Plant (HWWTP).

During the monitoring period, STDC demonstrated a good level of environmental performance and high level of administrative performance.

STDC holds three resource consents for the site which include a total of 39 conditions setting out the requirements that STDC must satisfy. STDC holds consent 5079-2 for operation of the HWWTP, consent 7520-1 to discharge to an unnamed stream in the event of high rainfall, and consent 10810-1 to discharge emissions into the air from desludging and dewatering related activities at the HWWTP.

The Council's monitoring programme for the year under review included six inspections, during which effluent samples were collected from the aerobic ponds and maturation pond. Shellfish and seawater samples were also collected during the year, and one marine ecological survey was undertaken. The Council also reviewed monitoring data provided by STDC.

The monitoring found that there were no odour issues beyond the plant boundary during the year. Sampling results found that the quality of the final effluent was comparable with previous years. The dissolved oxygen concentrations in the two aerobic ponds remained compliant with the resource consent. The volume of discharge remained compliant during the 2022-2023 monitoring year, with the majority of discharges within the normal operating consent limit.

Norovirus was detected in green-lipped mussel samples on both sampling occasions during the year (one site in August 2022 and two sites in February 2023). Occasional high levels of faecal indicator bacteria were found in mussel and seawater samples. Concentrations of metals in mussel tissue were mostly below the level of detection.

For reference, in the 2022-2023 year, consent holders were found to achieve a high level of environmental performance and compliance for 878 (87%) of a total of 1007 consents monitored through the Taranaki tailored monitoring programmes, while for another 96 (10%) of the consents a good level of environmental performance and compliance was achieved. A further 27 (3%) of consents monitored required improvement in their performance, while the remaining one (<1%) achieved a rating of poor.

In terms of overall environmental and compliance performance by the consent holder over the last several years, this report shows that the consent holder's performance remained at a high level in the year under review.

This report includes recommendations for the 2023-2024 year.

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1 Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is for the period July 2022 to June 2023 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by South Taranaki District Council (STDC). STDC operates the Hawera Wastewater Treatment Plant (HWWTP) situated on Beach Road in Hawera.

The report includes the results and findings of the monitoring programme implemented by the Council in respect of the consents held by STDC that relate to the discharge of wastewater from the HWWTP into the Tasman Sea via the Whareroa outfall (the Outfall). This report is the 30th annual report to be prepared by the Council to cover STDC's discharge of municipal wastewater from the HWWTP and its effects.

1.1.2 Structure of this report

Section 1 of this report is a background section. It sets out general information about:

- consent compliance monitoring under the RMA *Resource Management Act 1991* (RMA) and the Council's obligations;
- the Council's approach to monitoring sites though annual programmes;
- the resource consents held by STDC;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted at the HWWTP.

Section 2 presents the results of monitoring during the period under review, including scientific and technical data.

Section 3 discusses the results, their interpretations, and their significance for the environment.

Section 4 presents recommendations to be implemented in the 2023-2024 monitoring year.

A glossary of common abbreviations and scientific terms, and a bibliography, are presented at the end of the report.

1.1.3 The Resource Management Act 1991 and monitoring

The RMA primarily addresses environmental 'effects' which are defined as positive or adverse, temporary or permanent, past, present or future, or cumulative. Effects may arise in relation to:

a. the neighbourhood or the wider community around an activity, and may include cultural and social-economic effects;
b. physical effects on the locality, including landscape, amenity and visual effects;
c. ecosystems, including effects on plants, animals, or habitats, whether aquatic or terrestrial;
d. natural and physical resources having special significance (for example recreational, cultural, or aesthetic); and
e. risks to the neighbourhood or environment.

In drafting and reviewing conditions on discharge permits, and in implementing monitoring programmes, the Council is recognising the comprehensive meaning of 'effects' in as much as is appropriate for each activity. Monitoring programmes are not only based on existing permit conditions, but also on the

obligations of the RMA to assess the effects of the exercise of consents. In accordance with Section 35 of the RMA, the Council undertakes compliance monitoring for consents and rules in regional plans, and maintains an overview of the performance of resource users and consent holders. Compliance monitoring, including both activity and impact monitoring, enables the Council to continually re-evaluate its approach and that of consent holders to resource management and, ultimately, through the refinement of methods and considered responsible resource utilisation, to move closer to achieving sustainable development of the region's resources.

1.1.4 Evaluation of environmental performance

Besides discussing the various details of the performance and extent of compliance by the consent holders, this report also assigns a rating as to each Company's environmental and administrative performance during the period under review. The rating categories are high, good, improvement required and poor for both environmental and administrative performance. The interpretations for these ratings are found in Appendix II.

For reference, in the 2022-2023 year, consent holders were found to achieve a high level of environmental performance and compliance for 878 (87%) of a total of 1007 consents monitored through the Taranaki tailored monitoring programmes, while for another 96 (10%) of the consents a good level of environmental performance and compliance was achieved. A further 27 (3%) of consents monitored required improvement in their performance, while the remaining one (<1%) achieved a rating of poor. [1]

1.2 Treatment plant description

Up until February 2001, effluent from the HWWTP was discharged into a small unnamed coastal stream and across the foreshore before entering the Tasman Sea. Consent 1335-3 authorised the discharge of up to 10,000 m^3/day of treated wastewater from the municipal ponds system. That consent lapsed during the 2000-2001 monitoring period. Consent 5079-1 was granted in February 2001, for the discharge of the same volume of wastewater from the refurbished ponds system into the Tasman Sea via the Outfall, located approximately 3 km to the southeast of the plant.

Currently, the oxidation pond system at the HWWTP treats both industrial and domestic wastes from Hawera and Eltham. Partially treated (screened) wastewater from meat processors Silver Fern Farms Ltd (SFF) and Graeme Lowe Protein Ltd are treated in an anaerobic lagoon before discharging into the oxidation pond system (Figure 1).

Since 2000, the ponds have been reconfigured several times. Prior to November 2000, the two primary ponds (Ponds 1 and 2) operated in parallel. After November 2000, the two ponds were operated in series to increase treatment efficiency, with the treated wastewater from Pond 2 discharging to a pipeline that transferred the final effluent to the Outfall. However, since 2010, the ponds changed back to operate in parallel, with effluent from these two ponds now passing into a tertiary/maturation pond (divided into 4 cells) which is the final pond system (Figure 1).

Since June 2010, primary treated wastewater from the single oxidation pond at Eltham has discharged intermittently to the HWWTP, at approximately 90 m^3/hour. Raw domestic wastewater from Hawera and primary wastewater from Eltham combine on site at the HWWTP with the anaerobic lagoon effluent and are then split 60:40 to enter the two primary ponds (Figure 1). Both Ponds 1 and 2 have surface aerators. The hydraulic residence time (HRT) for Pond 1 is approximately 20 days (NIWA, 2012).

[1] The Council has used these compliance grading criteria for more than 19 years. They align closely with the 4 compliance grades in the MfE Best Practice Guidelines for Compliance, Monitoring and Enforcement, 2018

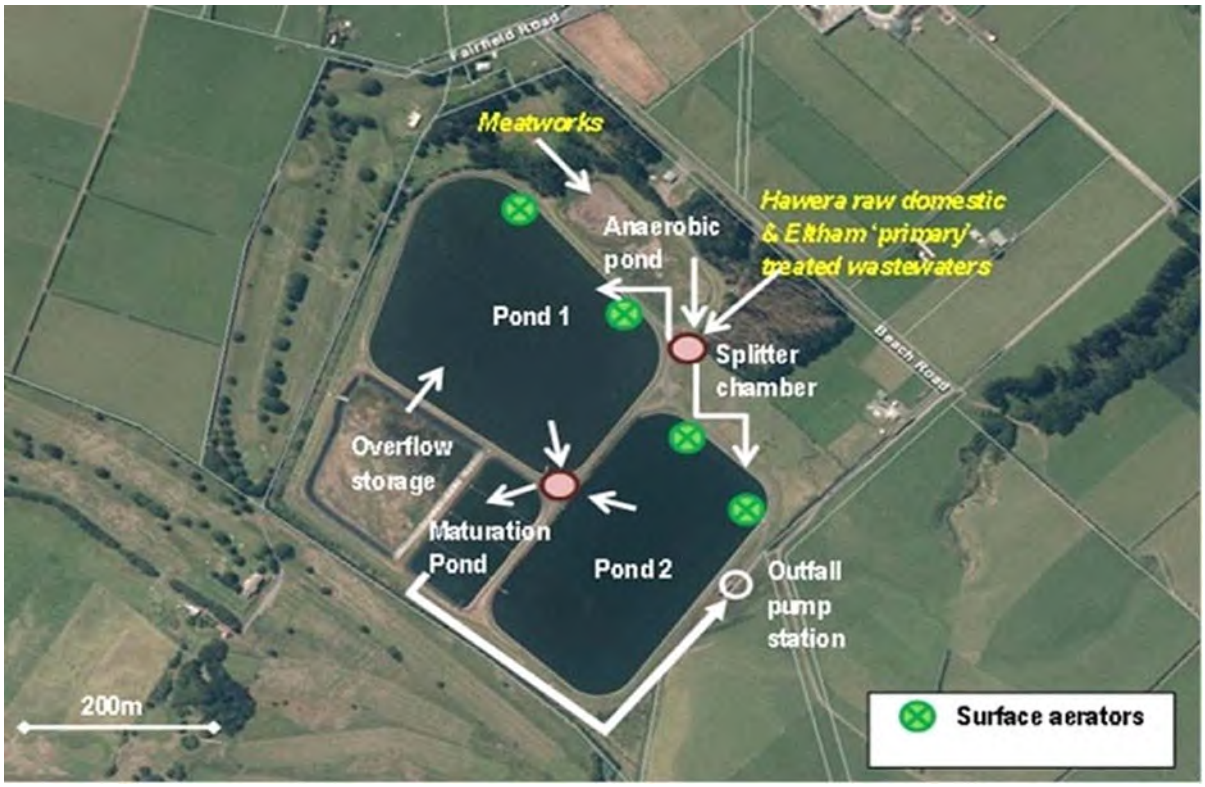

Figure 1 Configuration of the HWWTP (adapted from NIWA, 2012)

The effluent from both Ponds 1 and 2 combines at the outlet points from each pond and flows through to the new maturation pond, constructed in 2009 (Photo 1). The maturation pond has three baffles dividing the pond into four cells to increase the residence time within the pond. The total HRT for the ponds is estimated to be approximately 60 days (NIWA, 2012). Final treated effluent from the maturation pond is gravity-fed to the pump station, from where it is pumped (preferentially at night) via a 2.8 km pipeline, to the mixing chamber on the cliff top and combines with wastewater from the Whareroa dairy factory for discharge via the 1,845 m long outfall.

Photo 1 Aerial photograph of the Hawera pond system, 8 March 2016

STDC's wastewater treatment staff undertake frequent, regular maintenance and operational surveillance surveys of the HWWTP system.

During high rainfall events, the maturation pond can overflow into the neighbouring emergency overflow/storage detention pond (capacity approximately 65,000 m^3, NIWA, 2012) with wastewater then being passed back into Pond 1. Consent 7520-1 has been granted to allow overflow from the detention area into the local stream that borders the HWWTP. This consent has been exercised once since it was granted in 2009, during the 2021-2022 monitoring year. It was not exercised during the current monitoring year.

1.3 Resource consents

STDC holds three resource consents the details of which are summarised in the table below. Summaries of the conditions attached to each permit are set out in Section 3 of this report.

A summary of the various consent types issued by the Council is included in Appendix I, as are copies of all permits held by STDC for the HWWTP during the period under review.

Table 1 Resource consents held by STDC for the HWWTP

Consent number	Purpose	Granted	Review	Expires
Water discharge permits				
5079-2	To discharge treated wastewater through a combined marine outfall to the Tasman Sea	Jun 2018	Jun 2025	Jun 2052
7520-1	To discharge, as a consequence of high rainfall, partially treated wastewater into Unnamed Stream 22	Nov 2009	-	Jun 2027
Air discharge permit				
10810-1	To discharge emissions into the air from desludging and dewatering related activities at the Hawera Wastewater Treatment Plant	Feb 2020	Jun 2025	Jun 2052

1.4 Monitoring programme

1.4.1 Introduction

Section 35 of the RMA sets obligations upon the Council to gather information, monitor and conduct research on the exercise of resource consents within the Taranaki region. The Council is also required to assess the effects arising from the exercising of these consents and report upon them.

The Council may therefore make and record measurements of physical and chemical parameters, take samples for analysis, carry out surveys and inspections, conduct investigations and seek information from consent holders.

The monitoring programme for the HWWTP consisted of six primary components.

1.4.2 Programme liaison and management

There is generally a significant investment of time and resources by the Council in:

- ongoing liaison with resource consent holders over consent conditions and their interpretation and application;
- discussion over monitoring requirements;
- preparation for any consent reviews, renewals or new consent applications;

- advice on the Council's environmental management strategies and content of regional plans; and
- consultation on associated matters.

1.4.3 Site inspections

The HWWTP was visited six times during the monitoring period. With regard to consents for the discharge to water, the main points of interest were plant processes with potential or actual discharges to receiving watercourses. Air inspections focused on plant processes with associated actual and potential emission sources and characteristics, including potential odour, dust, noxious or offensive emissions. Sources of data being collected by STDC were identified and accessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council. The neighbourhood was surveyed for environmental effects.

1.4.4 HWWTP monitoring

Physical and chemical properties of wastewater in the HWWTP were measured in order to ascertain plant performance during the 2022-2023 monitoring period. The monitoring was undertaken by the Council and STDC.

The Council collected samples from Ponds 1 and 2 on six occasions during the year. These samples were analysed for temperature, dissolved oxygen (DO) and chlorophyll *a*. In order to satisfy Conditions 5 and 6 of consent 5079-2, STDC also recorded continual DO measurements over the year in Ponds 1 and 2.

The Council collected samples of combined effluent (from the maturation cells) on six occasions during the year. These samples were analysed for pH, conductivity, uninhibited biochemical oxygen demand (BOD; total, carbonaceous and dissolved), oil and grease, suspended solids, ammonia, nitrogen, phosphorus, turbidity, *E. coli* and enterococci bacteria. The combined effluent is also tested for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) twice each year.

The volume of wastewater discharged from the plant was continuously monitoring by STDC, as required by Conditions 2, 3 and 8 of consent 5079-2.

1.4.5 Receiving environment monitoring

During the monitoring period, the Council conducted one intertidal survey at four sites to assess the effect of discharges from the Outfall on intertidal communities. The survey was undertaken in the post-peak period of the dairy season, from 19 January to 22 February 2023.

Between 2002 and 2015, shellfish and seawater sampling in the vicinity of the outfall occurred at seven sites, six times each year (approximately every two months). However, following heavy rainfall in June 2015, large sections of the coastal cliffs north and south of the outfall became unstable, leading to increased erosion. There were a number of subsequent slips which buried vast expanses of reef as far as the low water mark. For safety reasons, it has not been possible to continue this component of the monitoring programme with consistent frequency and effort since.

Mussels and seawater samples were collected from three sites (350 m NW of outfall, Pukeroa Reef and Koutu Reef), on two occasions during 2022-2023. Mussels were tested for norovirus and *E. coli,* and the seawater was tested for *E. coli*, enterococci, conductivity and temperature.

Trace metal analysis was also carried out on mussels from two sites on one occasion.

As part of cultural health monitoring a kaimoana survey was trialled on Pukeroa Reef on one occasion during the monitoring period. Pāua and kina were surveyed using the ‘timed-count’ method.

1.4.6 Monitoring and management plans

STDC are required to provide, or be involved in the development of, various management and monitoring plans.

1.4.7 Additional reporting requirements

The Council reviewed all reports that were provided by STDC in fulfilment of consent conditions during the monitoring period.

2 Results

2.1 Treatment plant monitoring

2.1.1 Inspections

Six scheduled inspections were undertaken during the 2022-2023 monitoring year; on 13 July, 21 September and 20 December 2022, and 8 February, 3 April and 6 June 2023.

Odours were detected in the vicinity of the anaerobic lagoon during each inspection, these were generally noted as 'slight', while on two occasions odour was described as 'noticeable'. No odours were detected beyond the plant boundary.

The step screen was operating during each inspection and was containing all influent. The influent grit removal system did not operate at any time during the 2022-2023 period.

In the aerobic ponds, the aerators were observed to be operating during all inspections. The ponds were noted to be turbid and dark green/brown in colour. There were no floatables noted on either pond, with the exception of 21 September 2022, where a pocket of fatty scum had accumulated at the pond outlet. Large numbers of birds (mallard and paradise ducks, black swans, and Canadian geese) were observed during all inspections.

The wastewater level in the maturation cells was high during all of the inspections. The effluent generally appeared turbid dark green.

The overflow retention pond contained overflow during five of the six inspections in 2022-2023, this was being pumped back to Pond 1.

No issues were noted with the old coastal outfall or perimeter drain during any of the inspections.

2.1.2 Dissolved oxygen

The photosynthetic activity of the microalgae within the ponds is a major factor affecting variation in pond dissolved oxygen (DO) concentrations. However, fluctuating industrial loadings, operation of the mechanical aeration system and weather conditions can also influence DO concentrations in pond systems.

Condition 5 of consent 5079-2 requires DO concentrations in the aerobic ponds to be maintained above 0 g/m^3 for a minimum of three hours over a 24 hour period ending at 6:00 am New Zealand Standard Time (NZST). Condition 6 also requires that STDC monitors the DO concentrations on a continuous basis and supplies the results to the Council. The results of this monitoring are presented in Figure 2.

The DO concentration in both ponds complied with the consent condition (DO to exceed 0 g/m^3 for a minimum of three hours per 24-hours) throughout the monitoring period (Figure 2).

DO measurements were verified by Council staff taking field measurements during routine inspections. The results are presented in Table 2. The DO saturation from these field measurements ranged from 47 to 239% in Pond 1, and from 51 to 148% in Pond 2. The lowest DO concentration was recorded in Pond 1 in July 2022 (4.67 g/m^3).

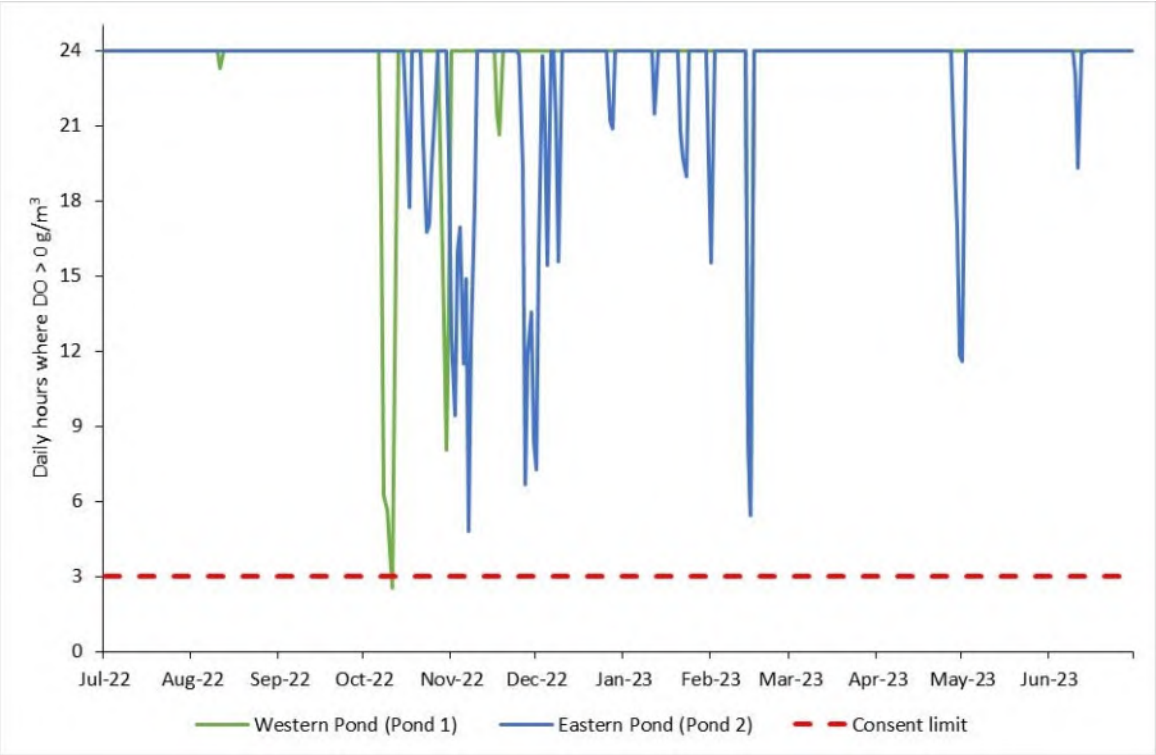

Figure 2 Daily hours where DO is greater than 0 g/m^3 in Pond 1 and 2

Table 2 Council DO measurements from Pond 1 and 2 for the 2022-2023 monitoring year

Date	Pond 1				Pond 2			
	Time (NZST)	Temp (°C)	Dissolved oxygen		Time (NZST)	Temp (°C)	Dissolved oxygen	
			Concentration (g/m^3)	Saturation (%)			Concentration (g/m^3)	Saturation (%)
13 Jul 2022	11:30	13.0	4.67	47	11:45	11.8	7.99	84
21 Sep 2022	10:55	15.4	15.4	155	11:15	14.2	5.29	51
20 Dec 2022	10:15	22.7	13.8	163	10:00	23.0	12.4	148
8 Feb 2023	10:25	21.6	20.6	239	10:50	21.8	6.90	80
3 Apr 2023	10:45	17.1	4.70	49	11:05	16.7	6.04	63
6 Jun 2023	11:30	10.9	5.50	50	11:50	10.9	10.2	92

2.1.3 Chlorophyll *a*

To maintain facultative conditions in a pond system, the presence of an algal community is required in the surface layer. The principal function of algae in an oxidation pond is the production of oxygen, which maintains aerobic conditions while the main nutrients are reduced by biomass consumption. Elevated pH levels, due to algal photosynthetic activity, and solar radiation combine to significantly reduce faecal bacteria numbers.

Effluent samples from Ponds 1 and 2 were collected during inspections of the HWWTP for semi-quantitative microalgal assessment prior to curtailment of this component of the programme in July 2013. The microalgal taxa present in both ponds has been summarised and discussed in previous annual reports.

During the 2022-2023 inspections, samples were collected from Ponds 1 and 2 for chlorophyll *a* analysis. Chlorophyll *a* concentration can be used as an approximation of algal biomass in the system. Pearson (1996) recommends that a minimum in-pond chlorophyll *a* concentration of 300 mg/m^3 is necessary to maintain stable facultative conditions. Seasonal fluctuations in algal populations, as well as periodic dilutions by

stormwater infiltration, are expected to occur in wastewater treatment systems. These factors, together with waste loading fluxes, can result in chlorophyll *a* variability.

The results of Pond 1 and 2 effluent chlorophyll *a* analyses are provided in Table 3. The median chlorophyll *a* concentration in Pond 1 during the 2022-2023 monitoring period was of 535 mg/m^3, much higher than the historical median, with very high levels recorded in July, September and December 2022. In contrast, the median level of chlorophyll *a* in Pond 2 was much lower than the historical median for the pond, despite a couple of very high results during the year (Table 3).

Table 3 Chlorophyll *a* (Chl-*a*) concentrations in Ponds 1 and 2 during the 2022-2023 period

Date	Pond 1		Pond 2	
	Time (NZST)	Chl-*a* (mg/m^3)	Time (NZST)	Chl-*a* (mg/m^3)
13 Jul 2022	11:30	770	11:45	590
21 Sep 2022	10:55	1,010	11:15	51
20 Dec 2022	10:15	670	10:00	191
8 Feb 2023	10:25	400	10:50	850
3 Apr 2023	10:45	170	11:05	5.5
6 Jun 2023	11:30	210	11:50	70
Median		535	Median	131
Summary statistics (2013-2022)				
No. of samples		58	No. of samples	57
Minimum		1	Minimum	3
Maximum		2,500	Maximum	1,840
Median		370	Median	240

2.1.4 Final effluent quality

During the 2022-2023 period, samples of combined effluent were collected from the maturation cells. These samples provide an indication of the degree of treatment that the wastewater has received. The samples also provide insight into the source of the influent waste.

The results from the physicochemical effluent analyses are presented in Table 4 and are discussed below. A summary of previous sampling results is also included for comparison. The complete sampling record for these parameters, since July 2010, has been included in Appendix III for reference.

Table 4 Physical and chemical parameters in the final effluent sampled from the maturation cells

Parameter	Sample date and time (2022-2023)							Summary statistics (2010-2022)			
	13 Jul 2022	21 Sep 2022	20 Dec 2022	8 Feb 2023	3 Apr 2023	6 Jun 2023	Median	Number	Min	Max	Median
	12:05	11:45	10:30	11:05	11:30	12:15					
Total BOD (gO_2/m^3)	18	15	38	63	34	44	36	70	< 6	330	38
Total carbonaceous BOD (g O_2/m^3)	20	15	19	62	28	15	20	73	9	86	22

Parameter	Sample date and time (2022-2023)							Summary statistics (2010-2022)			
	13 Jul 2022	21 Sep 2022	20 Dec 2022	8 Feb 2023	3 Apr 2023	6 Jun 2023	Median	Number	Min	Max	Median
	12:05	11:45	10:30	11:05	11:30	12:15					
Dissolved carbonaceous BOD (g O_2/m^3)	7.3	5.6	2.1	14	6.9	6.3	6.6	71	< 2	87	9
Oil and grease (g/m^3)	<7	<8	5	<20	<7	<7	<7	72	< 5	430	<5
Total Ammoniacal N (g/m^3)	48	25	47	36	68	53	48	69	5	75	35
Total N (g/m^3)	53	30	56	41	81	60	55	73	21	92	47
Total P (g/m^3)	8.2	6.1	9.4	9.6	13	9.9	9.5	73	4.2	21	9.1
Temp. °C	12.4	15.0	22.2	22.5	17.2	11.0	16.1	99	7.6	23.8	16.4
Conductivity @ 25°C (µS/cm)	837	606	784	750	1075	861	81.1	101	474	1,400	816
pH	7.8	7.7	8.1	8.3	7.8	7.8	7.8	72	6.8	8.3	7.7
Suspended solids (g/m^3)	48	28	61	106	55	34	52	73	5	430	51
Turbidity (NTU)	33	20	38	58	44	26	36	73	6.7	98	33

Total biochemical oxygen demand (BOD) concentrations in the six samples collected during the monitoring period were similar to the historic median. Total BOD largely consisted of the carbonaceous fraction during the year. The results did not show a significant non-carbonaceous component in the total BOD, indicative of nitrification contributions, which are associated with high industrial waste loadings.

The concentrations of the remaining parameters were generally comparable with the historic data.

The quality of the final effluent demonstrated seasonal variability, with patterns evident for a number of effluent parameters (Table 4, Appendix III). Most parameters, including suspended solids and turbidity, were greatest over the summer months, a period of less rainfall and therefore less dilution via infiltration.

The results from the faecal indicator bacteria analyses are provided in Table 5 and discussed below. A summary of results recorded since the commissioning of the existing pond configuration is also included for comparison. The complete sampling record for these parameters, since July 2010, has also been included in Appendix III for reference.

In 2022-2023, concentrations of faecal indicator bacteria were generally comparable with previous results (Table 5, Appendix III). Both the median *E coli* and enterococci counts were higher than the historic medians. All of the results were well under their respective historic maximums.

Table 5 Faecal indicator bacteria counts in the final effluent sampled from the maturation cells

Parameter	Sample date and time (2022-2023)							Summary statistics (2010-2022)			
	13 Jul 2022	21 Sep 2022	20 Dec 2022	8 Feb 2023	3 Apr 2023	6 Jun 2023	Median	Number	Min	Max	Median
	12:05	11:45	10:30	11:05	11:30	12:15					
Enterococci (cfu/100 ml)	7,400	2,400	170	2,200	800	2,200	2,200	73	12	22,000	1,000
***E. coli* (cfu/100 ml)**	70,000	14,000	9,000	27,000	11,000	9,000	12,500	49	100	110,000	9,000

The results from the metals analyses are provided in Table 6 and discussed below.

Table 6 Trace metals in the final effluent sampled from the maturation cells

Parameter	HWWTP maturation pond		
	21 Sep 2023	3 Apr 2023	Median (2010-2022)
Arsenic (g/m^3)	<0.011	<0.011	<0.001
Cadmium (g/m^3)	<0.001	<0.001	<0.005
Chromium (g/m^3)	<0.010	<0.010	<0.03
Copper (g/m^3)	<0.010	<0.010	<0.01
Lead (g/m^3)	<0.002	<0.002	<0.05
Mercury (g/m^3)	0.0002	<0.00008	<0.00008
Nickel (g/m^3)	<0.010	<0.010	<0.02
Zinc (g/m^3)	0.02	0.02	0.02

With the exception of zinc and mercury, all results were below the detection limit during the year under review. Concentrations of trace metals in wastewater at the HWWTP have consistently been low; at or below levels of detection for routine analyses of municipal wastewaters (Table 6). Traces of cadmium, chromium, copper, mercury and nickel and low levels of zinc have occasionally been found since the reconfiguration of the system in early 2010.

2.1.5 Discharge volume

Condition 2 of consent 5079-2 limits the HWWTP discharge to the outfall to no more than 12,000 m^3/day (based on a seven day average). Condition 3 allows for an increased discharge limit (16,000 m^3/day) during emergency situations (with associated requirements). Condition 8 requires that STDC measure and record the rate and volume of effluent discharged to the outfall. This data is presented below in Figure 3 for the 2022-2023 monitoring period.

The majority of discharges during the 2022-2023 monitoring year were within the normal operating consent limit of 12,000 m^3, with all discharges below the emergency consent limit of up to 16,000 m^3. The consent allows for four instances of up to 14 consecutive days where the outflow may exceed 12,000m^3, these were all used during 2022-2023 (Figure 3). The maximum daily outflow was 7,442 m^3, recorded on 29 September 2022, while the maximum 7-day average daily outflow was 14,770 m^3, based on the seven days from 21 to 27 August 2022.

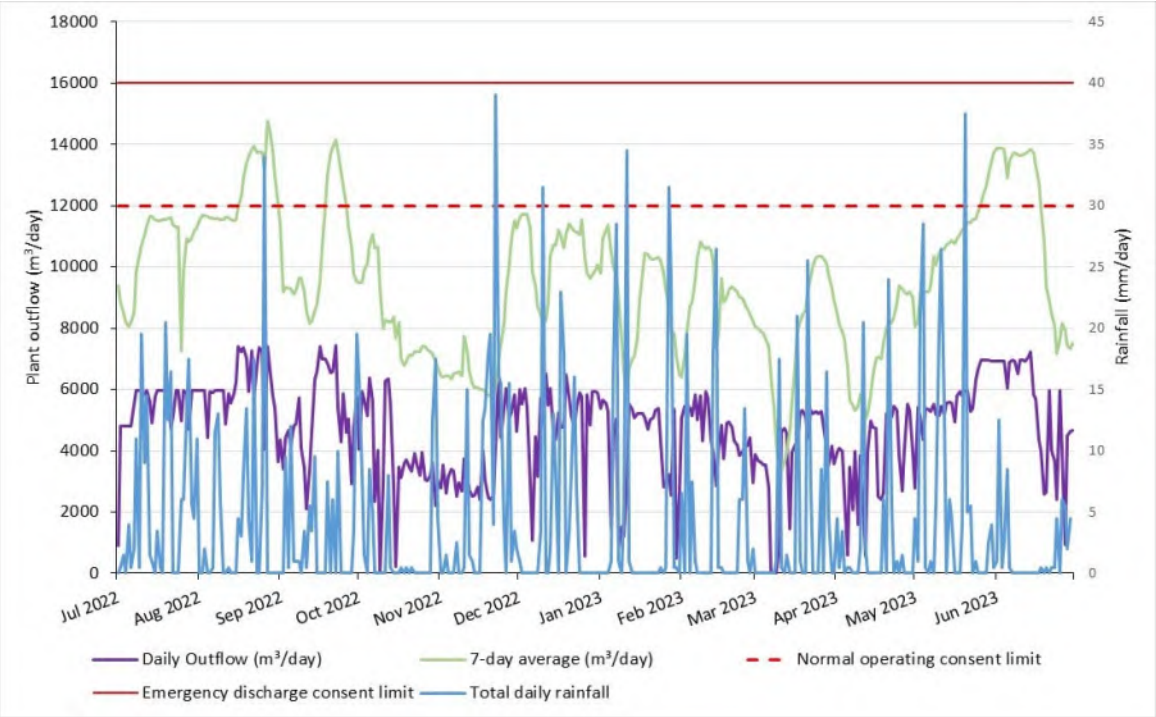

Figure 3 Daily discharge volumes (m^3/day) from the HWWTP and daily rainfall data (mm) from a Council rainfall station located approximately 5 km east of the site (2022-2023)

2.2 Receiving environment monitoring

Condition 7 of the consent requires that the discharge does not give rise to various effects on the Tasman Sea beyond a mixing zone of 200 m from the center-line of the outfall diffuser. Sub-condition d) requires that there are no significant adverse effects on aquatic life. Condition 15 requires the consent holder to ensure that a monitoring programme is established to record and analyse effects on various aspects of the coastal ecosystem. This monitoring has typically been carried out by way of marine ecological surveys, shellfish tissue analysis and shoreline water quality testing (see Section 1.4.5 for further background).

2.2.1 Marine ecology

In order to assess the effects of the Fonterra dairy factory and HWWTP combined outfall discharge on the nearby intertidal communities, surveys were conducted at four sites in summer (February 2023, post-peak season) (Figure 4). The surveys included three potential impact sites either side of the outfall (two southeast and one northwest) and one control site (further northwest). Any adverse effects of the Fonterra/STDC outfall discharge on the intertidal communities would likely have been evident as a significant decline in species diversity at the potential impact sites relative to the control sites. While sand inundation and climatic factors remain the primary drivers influencing local marine biodiversity, significant decreases in species abundance and diversity could signal a potential issue or severe contamination related to the Fonterra/STDC outfall discharge. The main findings of these surveys are summarised below, and presented in Figures 5 and 6.

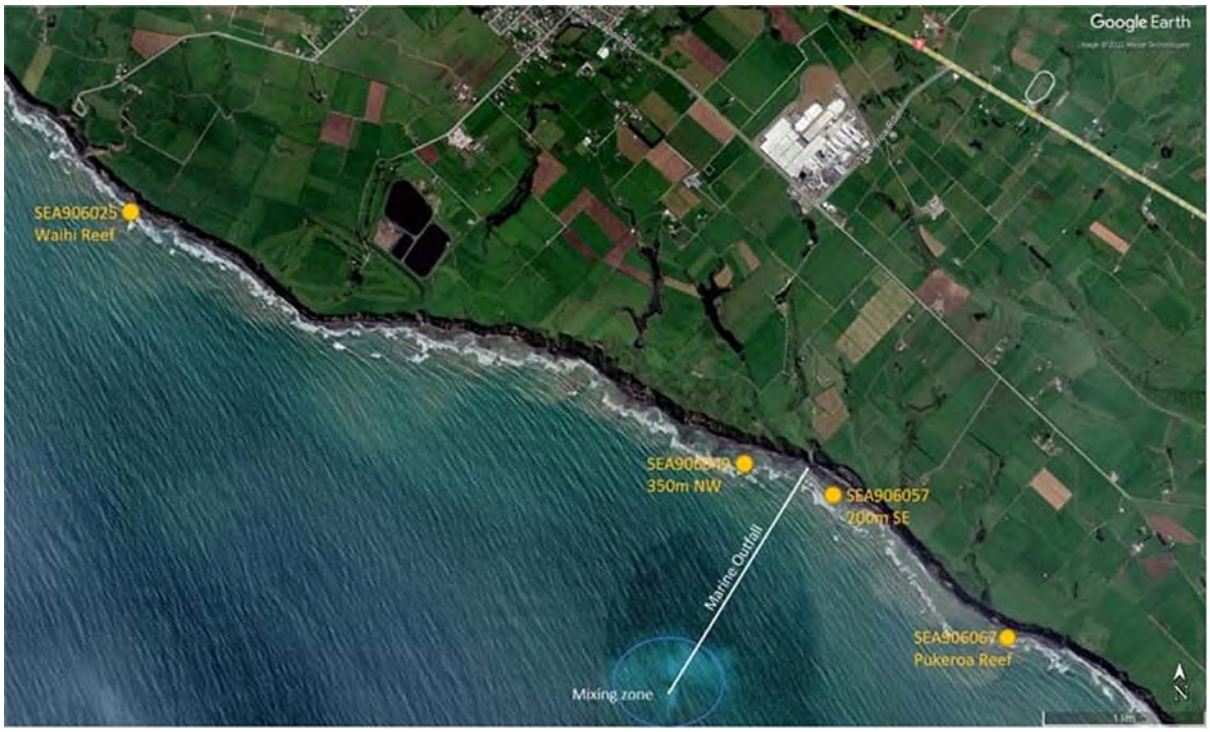

Figure 4 Location of intertidal survey sites in relation to the outfall

Impacts of the marine outfall discharge on the local intertidal communities were not evident from the 2023 summer survey results. The site with the lowest species richness and diversity results was Pukeroa Reef, one of the potential impact sites. However, this site presented significant sand inundation at the time of the survey (36%). This was likely the driver of the decline in richness and diversity. The potential impact site located at 200 m SE of the outfall had very similar species richness and diversity to the control site at Waihi Reef. The other potential impact site located 350 m NW of the outfall had experienced a natural rock fall event and was buried by large boulders and other debris, which caused the decline in richness and diversity observed in the previous monitoring period. However, the 2023 data shows that this site experienced an increase in these parameters from the previous year, which suggests the local intertidal community is beginning to recover.

Overall, these results indicate that the marine outfall discharge was not having detectable adverse effects on nearby intertidal reefs. Natural environmental factors, including coastal erosion, exposure and substrate mobility, appear to remain the dominant drivers of species richness and diversity at the sites surveyed.

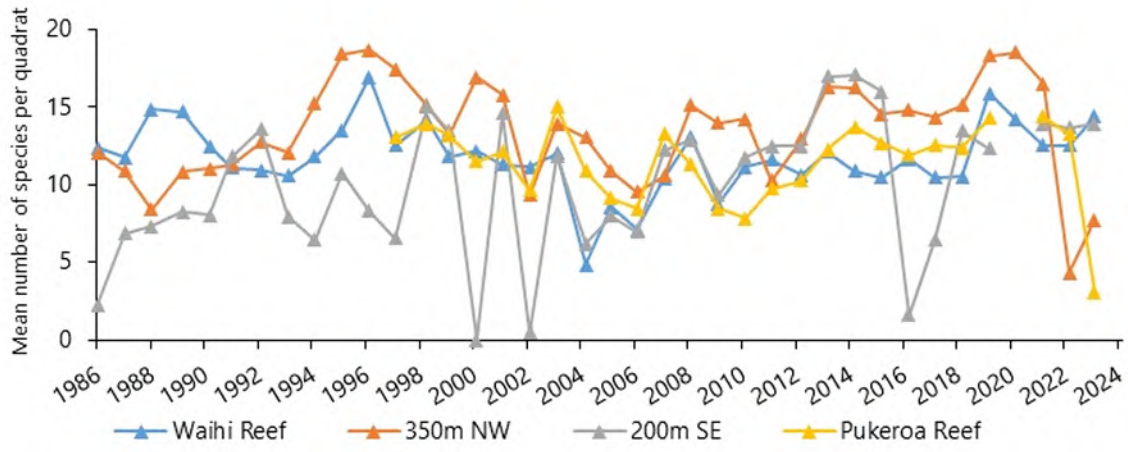

Figure 5 Mean number of species per quadrat for summer surveys (1986-2023)

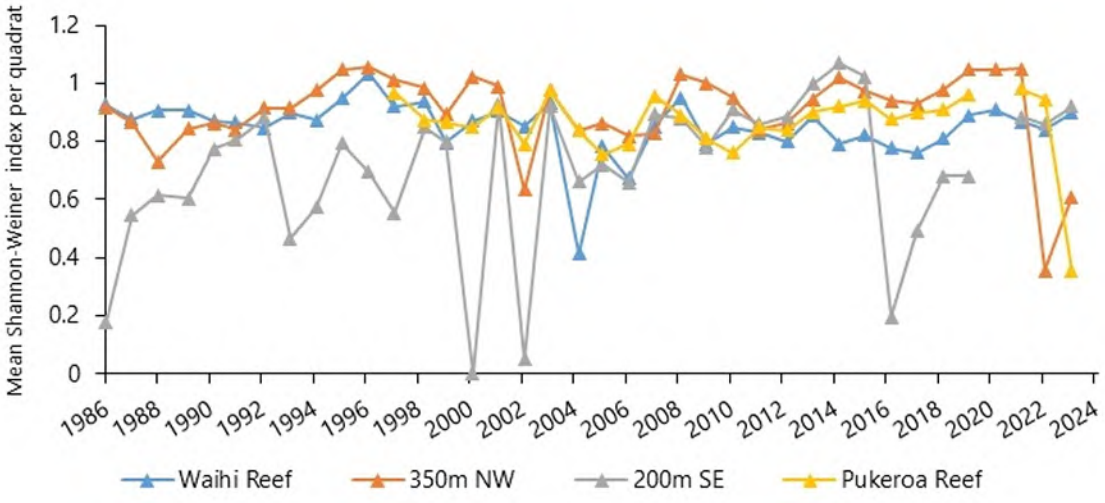

Figure 6 Mean Shannon-Weiner Indices per quadrat for summer surveys (1986-2023)

A copy of the intertidal ecological survey report is available from the Council upon request.

2.2.2 Shoreline water and shellfish microbiology

In waters affected by discharges from wastewater treatment plants, the relationship between indicators and pathogens can be altered by the wastewater treatment process. Currently, it is norovirus that is believed to pose the greatest health risk in seawater containing treated wastewater. Norovirus is the main cause of gastroenteritis associated with shellfish consumption and only low concentrations are required to pose a high risk of infections in humans. Mussels and other filter feeding molluscs are efficient at concentrating norovirus, which can be retained in their flesh for up to 8-10 weeks.

Counts of faecal indicator bacteria in shellfish tissue provide information relating to the bioaccumulation of this bacteria. However, because faecal indicator bacteria occur within the gut of warm blooded animals, their presence in the coastal environment may be indicative of a variety of contamination sources. For example, non-point source runoff from agricultural land, particularly into nearby rivers and streams, in addition to point source discharges, such as sewage treatment systems.

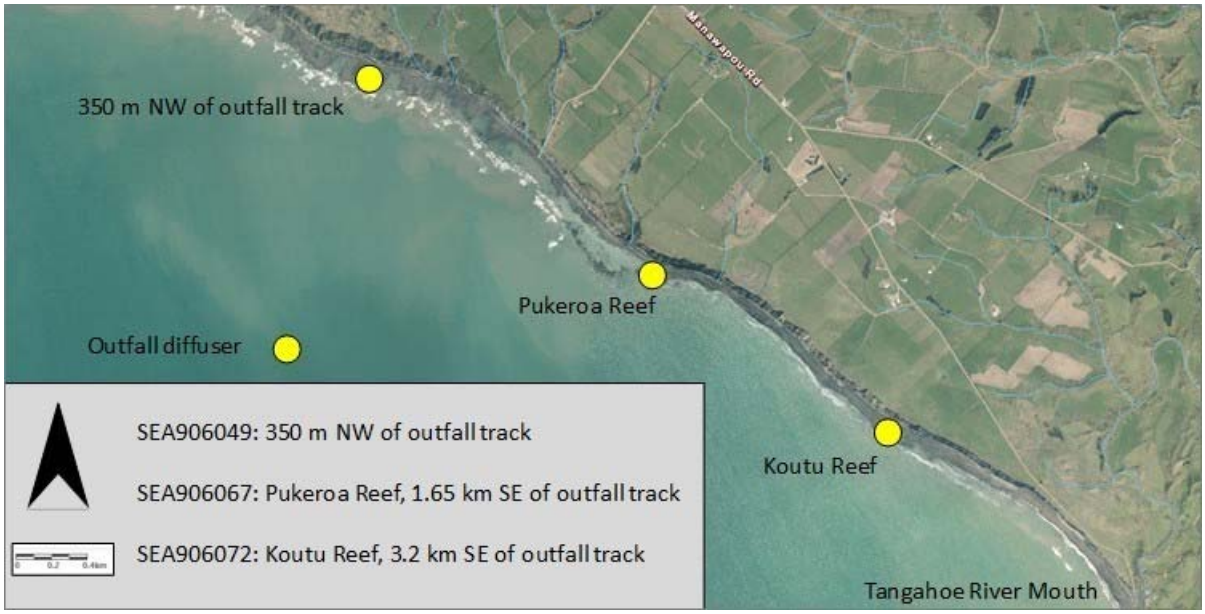

Figure 7 Location of shoreline water and shellfish microbiology monitoring sites in relation to the outfall

During the year under review, shoreline water and green-lipped mussel (*Perna canaliculus)* samples were collected from three intertidal reef locations in the vicinity of the Outfall on two occasions (Figure 7). The results of these samples, presented in Table 7, were compared against the following guidelines, for reference.

There are microbiological standards for a lot/consignment of bivalve molluscs under the Australia New Zealand Food Standards Code (2002): The acceptable concentration of *Escherichia coli* (230 MPN/100 g), should not be exceeded in more than one in five samples of food, and no sample of food shall exceed a concentration of 700 MPN/100 g. When assessing the results from the Council's monitoring against these guidelines, all mussels sampled at an individual site during the monitoring period were considered to be from the same "lot of food".

There are also microbiological guidelines for recreational shellfish gathering waters as part of the Microbiological Water Quality Guidelines for Marine and Freshwater Areas (MfE/MoH, 2003). The guidelines state that the median faecal coliform content of samples taken over a shellfish gathering season shall not exceed 14 MPN/100 ml, and no more than 10% of the samples should exceed 43 MPN/100 ml (five-tube decimal dilution test). Although faecal coliforms are not tested for here, *E. coli* belong to the faecal coliform group and in some environmental samples, *E. coli* can account for the majority of faecal coliforms present.

It is worth noting that the number of samples collected as part of this monitoring programme each year is too low to make robust assessments against the relevant guidelines. Nonetheless, the guidelines still provide a useful reference point to compare the results against.

The acceptable *E. coli* limit (230 MPN/100 g) was exceeded in one sample of mussels, collected from the site 350m NW of the outfall track on 20 February 2023 (Table 7). At 1,300 MPN/100 g this significantly exceeded the maximum *E. coli* standard of 700 MPN/100 g. The sample collected from Pukeroa Reef on the same day was also high, being equal to the acceptable limit.

Faecal indicator bacteria counts in the shoreline waters were generally low throughout the monitoring year (Table 7). The 14 MPN/100 ml guideline value was exceeded at the 350 m NW site on 20 February 2023, this result (50 MPN/100 ml) also exceeded the upper guideline value (43 MPN/100 ml). The conductivity results associated with the seawater samples indicate that generally there was very little freshwater influence in the shoreline waters.

It should be noted that all faecal indicator bacteria analyses were undertaken outside of the recommended 36-hour timeframe prescribed by the National Environmental Monitoring Standard (NEMS) for discrete water quality measurements (see http://www.nems.org.nz/). Analyses typically commenced approximately 40 hours following sample collection, due to logistical constraints related to spring tide timings and courier schedules.

Norovirus was detected in low levels in the mussels collected at the site 350m NW on 12 August 2022, and on 20 February 2023 the norovirus genogroup I (GI) was detected at Pukeroa and Koutu reefs (Table 7). Factors which can increase the risk of norovirus infection in shellfish include prolonged onshore winds which can direct the effluent back towards shore, and norovirus infection rates in the community which will directly affect the levels of norovirus in the HWWTP wastewater.

Table 7 Shoreline water and shellfish microbiological sample results (2022-2023)

Date	Site	Mussels			Seawater			
		Norovirus		*E. coli*	Temp	Condy	Enterococci	*E. coli*
		GI	GII	(MPN/100 g)	°C	@25°C (µS/cm)	(cfu/100 ml)	(cfu/100 ml)
12 Aug 2022	350 m NW	P	P	45	12.7	51,000	5	13
	Pukeroa Reef	N	N	-	12.9	51,700	9	10
	Koutu Reef	N	N	45	13.1	50,300	8	12
20 Feb 2023	350 m NW	N	N	1,300	21.7	51,400	1	50
	Pukeroa Reef	P	N	230	21.4	51,400	2	6
	Koutu Reef	P	N	78	21.2	51,400	1	1

P = Positive N = Negative

2.2.3 Trace metals in shellfish

Shellfish tissue trace metal concentrations can provide evidence of longer term bio-accumulation of metals, which may originate from non-point source run-off and/or point source discharges e.g. sewage treatment systems. Trace metal concentrations in shellfish tissue are monitored in relation to discharges from the HWWTP system and the Fonterra Whareroa dairy factory biennially.

The results from the 2022-2023 monitoring year are presented in Table 8 below.

Table 8 Trace metal concentrations in green-lipped mussels in 2022-2023 with historic ranges

Parameter	Unit	350 m NW			Pukeroa Reef			Shellfish guideline maximum limit* (mg/kg)
		12 Aug 2022	Historic min	Historic max	12 Aug 2022	Historic min	Historic max	
Arsenic	mg/kg	1.22	0.92	1.93	1.59	0.82	1.84	**1.0#**
Cadmium	mg/kg	0.037	0.015	0.06	0.045	0.008	0.07	**2.0**
Chromium	mg/kg	0.17	0.06	0.39	0.26	0.03	0.28	-
Copper	mg/kg	0.80	0.56	1.39	0.84	0.42	1.82	-
Iron	mg/kg	188	28	300	290	11.6	260	-
Lead	mg/kg	0.096	<0.05	0.17	0.171	<0.05	0.142	**2.0**
Mercury	mg/kg	0.014	0.0096	0.013	0.020	0.009	0.014	**1.0**
Nickel	mg/kg	0.70	0.28	1.60	0.81	0.27	1.1	-
Zinc	mg/kg	6.1	5.6	10.3	8.5	2.8	9.8	-

* Australia New Zealand Food Standards Code, 2016.

\# Australia New Zealand Food Standards Code guideline is for inorganic arsenic which is estimated to be 10% of total arsenic. The Council results are for total arsenic.

The results from the year under review found that the concentrations of arsenic, cadmium, lead and mercury in the mussels at both sites were much lower than the food safety guidelines. Although no guidelines exist for the remaining trace metals, the results from this year were largely similar to previous results.

2.2.4 Cultural health monitoring (kaimoana survey)

A draft monitoring proposal was originally developed as part of the consent renewal process. However, it was recognised that a preferable approach would be to directly involve Ngāti Ruanui in the development of the monitoring methodology. In October 2021, Council met with Ngāti Ruanui to discuss possible monitoring approaches, based on possible cultural health indicators of local importance, and associated monitoring methodologies that have been applied elsewhere. It was decided to focus the monitoring effort on pāua, as it is an important taonga species, and it was not being covered by the current monitoring regime. Implementation was postponed in 2019-2020, due to the COVID-19 pandemic, and was unable to be rolled out again in 2020-2021 or 2021-2022 due to various reasons.

On 20 April 2023 the survey methodology was trialled at Pukeroa Reef, with two Council staff accompanied by two representatives of Ngāti Ruanui. Following initial discussions between Council and Ngāti Ruanui representatives, the survey took place in the low intertidal/shallow subtidal zone on the outer edge of the lagoon at Pukeroa Reef (Figure 8). The mobile app 'Kaimoana Survey app', developed by Council, was utilised over a search period of 30 minutes. The "timed-count method" is the favoured approach for surveying pāua in Taranaki, due to their cryptic and heterogeneous distribution beneath loose rocks and boulders.

The outer edge of the lagoon at Pukeroa Reef was searched for 30 minutes. During that time, boulders were overturned looking for pāua and kina. However, due to significant sand inundation present on the reef, no pāua or kina were found (Photo 2). After discovering the sand on arrival at the reef, the Ngāti Ruanui representatives had predicted it would be difficult to find for pāua, with limited suitable habitat.

Figure 8 Kaimoana survey area on Pukeroa Reef. Survey track form Kaimoana survey app in red

Although the survey was not successful with regards to quantifying pāua and kina due to the sand inundation, it did allow a successful trial of the new app.

Ngāti Ruanui explained that pāua gathering at Pukeroa Reef is usually conducted subtidally with snorkel gear. The results from this trial suggest that the timed-count method for pāua and kina might not be the most suitable method for this reef during siginificant sand inundation events. It was recommended that further discussion is undertaken with iwi to find an alternative survey method that would be more effective, along with discussing what alternative cultural health indicators are important, and how they could be monitored (e.g. mapping and monitoring of mussel beds).

Photo 2 Example of pockets of sand observed on the outer edge of the lagoon at Pukeroa Reef

2.3 Monitoring and management plans

Resource consent 5079-2 contains four special conditions relating to the Tangata Whenua Involvement Plan (TWIP).

Condition 11 requires STDC and Fonterra Ltd to submit to Council a TWIP, developed in consultation with Te Runanga o Ngati Ruanui and Te Korowai o Ngāruahine (collectively referred to as "Tangata Whenua" for the purposes of this consent).

Conditions 12, 13 and 14 provide further details around the purpose, processes and requirements of the TWIP.

The TWIP was finalised during the 2018-2019 monitoring year.

It is a requirement of the Tangata Whenua Involvement Plan that a Kaitiaki Group is formed, comprising representatives from Tangata Whenua, Fonterra Ltd, STDC and the Council. Kaitiaki Group meetings were held during the monitoring period.

Conditions 15 and 16 outline Monitoring Plan requirements.

Changes to the existing rocky shore intertidal monitoring component were made for the 2021-2022 monitoring period. Specifically, the monitoring frequency has been reduced from biannual (spring and summer), to annual (summer only). This reduction in survey frequency was discussed with representatives of Ngati Ruanui on 16 August 2021. An agreement was reached on the basis that the monitoring frequency could be revised and reverted back to biannual if warranted. Grounds for reviewing the monitoring frequency could include an unexplained decrease in diversity of the rocky shore reef communities, a change in the nature of the wastewater discharge, etc.

Condition 17 requires STDC to develop and update a Contingency Plan. An updated Contingency Plan was provided to Council in July 2023.

2.4 Additional reporting requirements

Consent 5079-2 contains two special conditions relating to reporting requirements.

Condition 18 requires STDC to supply an 'Annual Performance and Data Summary Report' on the HWWTP. This report was provided in July 2023.

Condition 19 requires STDC to provide a 'Wastewater Treatment Best Practicable Option (BPO) Report' in consultation with Te Rununga o Ngati Ruanui and Te Korowai o Ngāruahine one year after the issue of the consent, and at six-yearly intervals thereafter. The requirements of this report are set out in the copy of the permit contained in Appendix I. This report was provided on 5 July 2019, with the next report due in 2025.

2.5 Incidents, investigations, and interventions

The monitoring programme for the year was based on what was considered to be an appropriate level of monitoring, review of data, and liaison with STDC. During the year matters may arise which require additional activity by the Council, for example provision of advice and information, or investigation of potential or actual causes of non-compliance or failure to maintain good practices. A pro-active approach, that in the first instance avoids issues occurring, is favoured.

For all significant compliance issues, as well as complaints from the public, the Council maintains a database record. The record includes events where the individual/organisation concerned has itself notified the Council. Details of any investigation and corrective action taken are recorded for non-compliant events.

Complaints may be alleged to be associated with a particular site. If there is potentially an issue of legal liability, the Council must be able to prove by investigation that the identified individual/organisation is indeed the source of the incident (or that the allegation cannot be proven).

In the 2022-2023 period, the Council was not required to undertake significant additional investigations and interventions, or record incidents, in association with STDC's conditions in resource consents or provisions in Regional Plans.

3 Discussion

3.1 Discussion of site performance

Regular inspections of the HWWTP found that odours, ranging from slight to noticeable, were detected in the vicinity of the anaerobic lagoon, but never beyond the site boundary. Sampling results found that the quality of the final effluent was comparable with previous years.

The discharge volume remained compliant during the year, being under the 12,000 m^3/day limit, except when the emergency discharge limit was exercised, on two occasions in September 2022 and also during May and June 2023. There were no overflows to the creek as allowed for by consent 7520-1.

The DO concentrations in the two aerobic ponds remained compliant with the resource consent throughout the duration of the monitoring period. Plant outflow volumes also remained compliant with the normal operating limit during the year.

Pond 1 continued to be dosed with enzymes for the bacterial removal of settled solids and the maturation cells also began to have enzymes added for solids removal from June 2023.

Inflow and infiltration work conducted during 2022-2023 consisted of 539 m of pipe relining, nine manhole inspections, and CCTV inspection in Normanby.

There are plans to install a CH_4 Generating Reactor (CGR) at the site and, pending emerging technology (as identified by the next BPO report in 2024/2025), a microfiltration plant in the future.

3.2 Environmental effects of exercise of consents

During the 2022-2023 period, STDC discharged effluent from the HWWTP to the Tasman Sea via the marine outfall. The Council monitored the environmental effects of discharges by assessment of rocky shore communities in the intertidal zone, along with shoreline water and shellfish monitoring for microbiological quality.

Impacts of the outfall discharge on local intertidal communities were not evident in the survey undertaken during the monitoring period.

Results from faecal indicator bacteria analyses undertaken on green-lipped mussels and shoreline water at the three sites along the coast found that faecal contamination was generally low. One sample of mussels from Koutu Reef exceeded the maximum *E. coli* limit stipulated in the Australia New Zealand Food Standards Code (2002). Faecal indicator bacteria counts in shoreline waters were also generally low, with one result exceeding the guideline. It is noted that the number of samples collected was too low to make robust assessments against the relevant guidelines, and also that exceedances are not necessarily related to the discharge from the HWWTP, given that *E. coli* can be derived from other sources such as agricultural run-off, or nearby birds.

Norovirus was detected in green-lipped mussels at one site when sampled in August 2022, and two sites in February 2023. Given that norovirus is a human-specific wastewater pathogen, these positive results demonstrate that effluent from the outfall can impinge on the coast under certain conditions; posing a potential health risk for kaimoana gatherers.

Concentrations of arsenic, cadmium, lead and mercury in green-lipped mussels sampled at two sites along the coast were much lower than the food safety guidelines.

3.3 Evaluation of performance

A summary of the consent holder's compliance record for the year under review is set out in Tables 9-11.

Table 9 Summary of performance for consent 5079-2

Purpose: *To discharge up to 12,000 m^3/day of treated municipal wastes through a marine outfall*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Discharge only through specified outfall and diffuser	Outfall design has not changed since installation	Yes
2. Maximum average daily discharge over seven-day period 12,000 m^3	Consent holder continuous recording; supply of data. Limit exceeded during four time periods, this fell under emergency condition 3	Yes
3. Limits for emergency discharges	Consent holder liason and continuous recording; supply of data. Four discharges complying with 3 (a), (b) and (c)	Yes
4. Provision of emergency discharge report	Liasion with consent holder	Yes
5. Minimum DO concentration requirements	Consent holder continuous recording; supply of data	Yes
6. Measurement of DO and provision of data	Consent holder continuous recording; supply of data	Yes
7. Discharge to have no (specified) adverse effects beyond mixing zone	Marine ecological surveys, seawater and shellfish testing, kaimoana survey	**No.** **Faecal indicator bacteria exceeded guidelines at the shoreline on one occasion. Norovus detected in green lipped mussels at three sites**
8. Measurement and provision of rate and volume of effluent discharge	Consent holder continuous recording; supply of data	Yes
9. Conditions for reciept of tanker waste	Consent holder liason	Yes
10. Preparation, implementation and compliance with all plans required by consent	Kaitiaki Group meetings, self-reporting, Council monitoring	Yes
11. Preparation and submission of Tangata Whenua Involvement Plan (TWIP)	Tangata Whenua Involvement Plan (version 2) previously provided to Council	Yes
12. Purpose of the TWIP		N/A
13. Minimum requirements of the TWIP	Council review	Yes
14. Provision for consent holder review and amendment of TWIP	Review not undertaken during monitoring period	N/A

Purpose: *To discharge up to 12,000 m^3/day of treated municipal wastes through a marine outfall*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
15. Monitoring Plan requirement	Monitoring Plan active	Yes
16. Implementation and compliance with Monitoring Plan	Liaison with consent holder	Yes
17. Preparation of Contingency Plan	Updated plan received May 2023	Yes
18. Provision of Annual Performance Data Summary Report	Report received	Yes
19. Wastewater Treatment BPO Report	Report received July 2019, next report due in 2025	Yes
20. Council review provision	Next optional review in June 2025	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**Good** **High**

Table 10 Summary of performance for consent 7520-1

Purpose: *To discharge partially treated wastewater to an unnamed stream as a consequence of high rainfall*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Discharge shall only occur as a consequence of high rainfall events	Inpsection and liasion with consent holder	Yes
2. Temporary holding pond capacity shall be no less than 55,000 m^3	Pond design has not changed since installation	Yes
3. No modifications to the treatment plant that may result in an increase in the frequency of the discharge.	Inspections and consent holder liaison	Yes
4. Provision of discharge timing and volume records	Liasion with consent holder, no discharges during 2022-2023	Yes
5. Adopt the best practicable option	Inpsection and liasion with consent holder, no discharges during 2022-2023	Yes
6. Notification of Council immediately after a discharge.	Liasion with consent holder, no discharges during 2022-2023	Yes
7. Provision of contingency plan	Updated plan received May 2023	Yes
8. Monitoring programme including physicochemical, bacteriological and ecological monitoring of the wastewater treatment system and receiving waters	Additonal monitoring not considered necessary as there were no discharges	N/A

Purpose: *To discharge partially treated wastewater to an unnamed stream as a consequence of high rainfall*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
9. Optional review provision re environmental effects	No further option for reivew prior to expiry	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

N/A = not applicable

Table 11 Summary of performance for consent 10810-1

Purpose: *To discharge emissions into the air from desludging and dewatering related activities at the Hawera Wastewater Treatment Plant*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Exercise of consent to be undertaken in accordance with application	Inspections and liaison with consent holder	Yes
2. Minimium of three years between discharges	Liaison with consent holder – no desludging undertaken during 2022-2023	Yes
3. Notification required prior to discharge	No desludging undertaken during monitoring period	N/A
4. Adopt the best practicable option to prevent or minimise adverse effects	No desludging undertaken during monitoring period	N/A
5. Leachate from dewatering site not to be discharged to land	No desludging undertaken during monitoring period	N/A
6. Odour Management Plan to be prepared and adhered to	No desludging undertaken during monitoring period	N/A
7. Provision of contingency plan	Plan received	Yes
8. No odour beyond site boundary	No desludging undertaken during monitoring period	N/A
9. Consent lapse in 2025 if not exercised	Consent exercised	N/A
10. Optional review provision re environmental effects	Option for reivew June 2025	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**N/A**
Overall assessment of administrative performance in respect of this consent		**N/A**

N/A = not applicable (consent not exercised)

Table 12 Evaluation of environmental performance over time

Year	Consent no	High	Good	Improvement req	Poor
2010	5079-1	-	1	-	-
	7520-1	1	-	-	-
2011	5079-1	-	-	1	-
	7520-1	1	-	-	-
2012	5079-1	-	-	1	-
	7520-1	1	-	-	-
2013	5079-1	1	-	-	-
	7520-1	1	-	-	-
2015	5079-1	-	1	-	-
	7520-1	1	-	-	-
2016	5079-1	-	1	-	-
	7520-1	1	-	-	-
2017	5079-1	-	-	1	-
	7520-1	1	-	-	-
2018	5079-1	-	-	1	-
	7520-1	1	-	-	-
2019	5079-2	1	-	-	-
	7520-1	-	-	-	-
2020	5079-2	1	-	-	-
	7520-1	-	-	-	-
	10810-1	-	-	-	-
2021	5079-2, 10810-1	2	-	-	-
	7520-1	-	-	-	-
2022	5079-2, 7520-1	1	1	-	-
Totals		14	4	4	-

During the year, STDC's demonstrated a good level of environmental and a high level of administrative performance with the resource consents as defined in Appendix II.

3.4 Recommendations from the 2021-2022 Annual Report

In the 2021-2022 Annual Report, it was recommended:

1. THAT in the first instance, monitoring of the HWWTP, comprising inspection and effluent analysis in relation to the treatment system, and water quality and shellfish tissue analysis in relation to the receiving waters, be continued for the 2022-2023 monitoring period.
2. THAT should there be issues with environmental or administrative performance in 2022-2023, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

3. THAT local iwi and hapu are invited to join Council staff for shellfish sampling when safe to do so.

These recommendations were implemented.

3.5 Alterations to monitoring programmes for 2023-2024

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- reporting to the regional community.

The Council also takes into account the scope of assessments required at the time of renewal of permits, and the need to maintain a sound understanding of industrial processes within Taranaki exercising resource consents.

No planned changes have been made to the 2023-2024 monitoring programme.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2023-2024.

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4 Recommendations

1. THAT in the first instance, monitoring of consented activities at HWWTP in the 2023-2024 year continue at the same level as in 2022-2023.
2. THAT should there be issues with environmental or administrative performance in 2023-2024, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.
3. THAT local iwi and hapu are invited to join Council staff for shellfish sampling when safe to do so.
4. THAT further discussion is had with the Kaitiake group about the design and implementation of future cultural surveys.

Glossary of common terms and abbreviations

The following abbreviations and terms may be used within this report:

As*	Arsenic.
BOD	Biochemical oxygen demand. A measure of the presence of degradable organic matter, taking into account the biological conversion of ammonia to nitrate.
BODF	Biochemical oxygen demand of a filtered sample.
Bund	A wall around a tank to contain its contents in the case of a leak.
CBOD	Carbonaceous biochemical oxygen demand. A measure of the presence of degradable organic matter, excluding the biological conversion of ammonia to nitrate.
Cr*	Chromium.
Cd*	Cadmium.
cfu	Colony forming units. A measure of the concentration of bacteria usually expressed as per 100 millilitre sample.
COD	Chemical oxygen demand. A measure of the oxygen required to oxidise all matter in a sample by chemical reaction.
Conductivity	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 25°C and expressed in µS/cm.
Cu*	Copper.
DO	Dissolved oxygen.
DRP	Dissolved reactive phosphorus.
E. coli	Escherichia coli, an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre sample.
Ent	Enterococci, an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre of sample.
F	Fluoride.
FC	Faecal coliforms, an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre sample.
g/m^3	Grams per cubic metre, and equivalent to milligrams per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures.
Incident	An event that is alleged or is found to have occurred that may have actual or potential environmental consequences or may involve non-compliance with a consent or rule in a regional plan. Registration of an incident by the Council does not automatically mean such an outcome had actually occurred.
Intervention	Action/s taken by Council to instruct or direct actions be taken to avoid or reduce the likelihood of an incident occurring.
Investigation	Action taken by Council to establish what were the circumstances/events surrounding an incident including any allegations of an incident.

Incident Register	The Incident Register contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan.
L/s	Litres per second.
m^2	Square Metres.
µS/cm	Microsiemens per centimetre.
Mixing zone	The zone below a discharge point where the discharge is not fully mixed with the receiving environment. For a stream, conventionally taken as a length equivalent to 7 times the width of the stream at the discharge point.
NH_4	Ammonium, normally expressed in terms of the mass of nitrogen (N).
NH_3	Unionised ammonia, normally expressed in terms of the mass of nitrogen (N).
Ni*	Nickel.
NO_3	Nitrate, normally expressed in terms of the mass of nitrogen (N).
NTU	Nephelometric Turbidity Unit, a measure of the turbidity of water.
O&G	Oil and grease, defined as anything that will dissolve into a particular organic solvent (e.g. hexane). May include both animal material (fats) and mineral matter (hydrocarbons).
Pb*	Lead.
pH	A numerical system for measuring acidity in solutions, with 7 as neutral. Numbers lower than 7 are increasingly acidic and higher than 7 are increasingly alkaline. The scale is logarithmic i.e. a change of 1 represents a ten-fold change in strength. For example, a pH of 4 is ten times more acidic than a pH of 5.
Physicochemical	Measurement of both physical properties (e.g. temperature, clarity, density) and chemical determinants (e.g. metals and nutrients) to characterise the state of an environment.
Resource consent	Refer Section 87 of the RMA. Resource consents include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15).
RMA	*Resource Management Act 1991* and including all subsequent amendments.
SS	Suspended solids.
tDS	Tonnes dry solids.
Temp	Temperature, measured in °C (degrees Celsius).
Turb	Turbidity, expressed in NTU.
Zn*	Zinc.

*an abbreviation for a metal or other analyte may be followed by the letters 'As', to denote the amount of metal recoverable in acidic conditions. This is taken as indicating the total amount of metal that might be solubilised under extreme environmental conditions. The abbreviation may alternatively be followed by the letter 'D', denoting the amount of the metal present in dissolved form rather than in particulate or solid form.

For further information on analytical methods, contact an Environmental Quality Manager.

Bibliography and references

Department of Health 1992: 'Provisional Microbiological Water Quality Guidelines for Recreational and Shellfish-Gathering Waters in New Zealand'. Public Health Services, Wellington, January 1992.

Pearson, HW 1996: 'Expanding the horizons of pond technology and application in an environmentally conscious world'; Water Science and Technology 33(7): 1-9.

Don, G 2004: 'Wastewater treatment plant avifauna'. Water and Wastes in NZ. July 2004.

Food Standards Australia New Zealand 2002: New Zealand (Australia New Zealand Food Standards Code) Food Standards 2002. Standard 1.6.1 'Microbiological limits for food'.

Food Standards Australia New Zealand 2016: New Zealand (Australia New Zealand Food Standards Code) Food Standards 2016. Standard 1.4.1 'Contaminants and natural toxicants'.

Kelly, S. 2007a: 'Contaminant monitoring in shellfish: Results of the 2005 Shellfish Contaminant Monitoring Programme'. Auckland Regional Council Technical Publication Number 332.

Kelly, S. 2007b: 'Marine Receiving Environment Stormwater Contaminants: Status Report 2007'. Auckland Regional Council Technical Publication Number 333.

Ministry for the Environment and Ministry of Health 2003: 'Microbiological Water Quality Guidelines for Marine and Freshwater Recreational Areas'. June 2003.

Taranaki Catchment Commission 1985: 'Trace metals in North Taranaki shellfish. Results of a baseline survey conducted in 1981'. TCC Technical Report 85-3.

Taranaki Catchment Board 1988: 'Report on Taranaki Municipal Oxidation Ponds 1987/88'. TCB Report.

Taranaki Catchment Board 1989: 'Report on Taranaki Municipal Oxidation Ponds 1988/89'. TCB Technical Report 89/10.

Taranaki Regional Council 1990: 'South Taranaki District Council Oxidation Ponds Monitoring 1989/90'. TRC Technical Report 90-25.

Taranaki Regional Council 1991: 'South Taranaki District Council Municipal Oxidation Ponds Systems Monitoring Programmes Annual Report 1990/91'. TRC Technical Report 91-16.

Taranaki Regional Council 1992: 'South Taranaki District Council Municipal Oxidation Ponds Systems Monitoring Programmes Annual Report 1991-92'. TRC Technical Report 92-13.

Taranaki Regional Council 1993: 'South Taranaki District Council Municipal Oxidation Ponds Systems Monitoring Programmes Annual Report 1992-93'. TRC Technical Report 93-21.

Taranaki Regional Council 1994: 'South Taranaki District Council Municipal Oxidation Ponds Systems Monitoring Programme Annual Report 1993-94'. TRC Technical Report 94-9.

Taranaki Regional Council 1995: 'South Taranaki District Council Municipal Oxidation Ponds Systems Monitoring Programme Annual Report 1994-95'. TRC Technical Report 95-46.

Taranaki Regional Council 1996: 'South Taranaki District Council Municipal Oxidation Ponds Systems Monitoring Programme Annual Report 1995-96'. TRC Technical Report 96-43.

Taranaki Regional Council 1997: 'South Taranaki District Council Municipal Oxidation Ponds Systems Monitoring Programme Annual Report 1996-97'. TRC Technical Report 97-71.

Taranaki Regional Council 1998: 'South Taranaki District Council Municipal Oxidation Ponds Systems Monitoring Programme Annual Report 1997-1998'. TRC Technical Report 98-44.

Taranaki Regional Council 1999: 'South Taranaki District Council Municipal Oxidation Ponds Systems Monitoring Programme Annual Report 1998-1999'. TRC Technical Report 99-75.

Taranaki Regional Council 2001: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme Annual Report 1999-2000'. TRC Technical Report 2000-87.

Taranaki Regional Council 2003: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme 2000-2003 Report'. TRC Technical Report 2003-61.

Taranaki Regional Council 2004: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme 2003-2004 Report'. TRC Technical Report 2004-88.

Taranaki Regional Council 2005: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme 2004-2005 Report'. TRC Technical Report 2006-88.

Taranaki Regional Council 2006: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme 2005-2006 Report'. TRC Technical Report 2006-88.

Taranaki Regional Council 2007: 'Fonterra Whareroa Compliance Monitoring Programme Annual Report 2006-2007'. TRC Technical Report 2007-44.

Taranaki Regional Council 2007: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme 2006-2007 Report'. TRC Technical Report 2007-93.

Taranaki Regional Council 2008: 'Fonterra Whareroa Compliance Monitoring Programme Annual Report 2007-2008'. TRC Technical Report 2008-39.

Taranaki Regional Council 2008: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme 2007-2008 Report'. TRC Technical Report 2008-67.

Taranaki Regional Council 2009: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme 2008-2009 Report'. TRC Technical Report 2009-22.

Taranaki Regional Council 2010: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme 2009-2010 Report'. TRC Technical Report 2010-63.

Taranaki Regional Council 2011: 'Fonterra Whareroa Compliance Monitoring Programme Annual Report 2010-2011'. TRC Technical Report 2011-70.

Taranaki Regional Council 2011: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme 2010-2011 Report'. TRC Technical Report 2011-56.

Taranaki Regional Council 2012: 'Fonterra Whareroa Compliance Monitoring Programme Annual Report 2011-2012'. TRC Technical Report 2012-58.

Taranaki Regional Council 2012: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme 2011-2012 Report'. TRC Technical Report 2012-62.

Taranaki Regional Council 2013: 'Fonterra Whareroa Compliance Monitoring Programme Annual Report 2012-2013'. TRC Technical Report 2013-24.

Taranaki Regional Council 2014: 'Fonterra Whareroa Compliance Monitoring Programme Annual Report 2013-2014'. TRC Technical Report 2014-73.

Taranaki Regional Council 2014: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme 2012-2014 Report'. TRC Technical Report 2014-26.

Taranaki Regional Council 2015: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme Annual Report 2014-2015'. TRC Technical Report 2015-37.

Taranaki Regional Council 2016: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme Annual Report 2015-2016'. TRC Technical Report 2016-46.

Taranaki Regional Council 2017: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme Annual Report 2016-2017'. TRC Technical Report 2017-76.

Taranaki Regional Council 2018: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme Annual Report 2017-2018'. TRC Technical Report 2018-58.

Taranaki Regional Council 2019: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme Annual Report 2018-2019'. TRC Technical Report 2019-85.

Taranaki Regional Council 2020: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme Annual Report 2019-2020'. TRC Technical Report 2020-52.

Taranaki Regional Council 2021: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme Annual Report 2020-2021'. TRC Technical Report 2021-76.

Taranaki Regional Council 2023: 'South Taranaki District Council, Hawera Municipal Oxidation Ponds System. Monitoring Programme Annual Report 2021-2022'. TRC Technical Report 2022-06.

Taranaki Regional Council 2023: 'MAR2202: Pukeroa Reef cultural health monitoring trial, April 2023. Internal memorandum #3173628.

Taranaki Regional Council 2023: 'MAR2207: Intertidal ecological survey in relation to the combined Fonterra/STDC outfall, summer 2022-23'. Internal memorandum #3205686.

Taranaki Regional Council 2023: 'Fonterra Whareroa Monitoring Programme Annual Report 2022-2023'. TRC Technical Report 2023-14.

Appendix I

Resource consents held by South Taranaki District Council

(For a copy of the signed resource consent
please contact the TRC Consents department)

Water abstraction permits

Section 14 of the RMA stipulates that no person may take, use, dam or divert any water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or it falls within some particular categories set out in Section 14. Permits authorising the abstraction of water are issued by the Council under Section 87(d) of the RMA.

Water discharge permits

Section 15(1)(a) of the RMA stipulates that no person may discharge any contaminant into water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or by national regulations. Permits authorising discharges to water are issued by the Council under Section 87(e) of the RMA.

Air discharge permits

Section 15(1)(c) of the RMA stipulates that no person may discharge any contaminant from any industrial or trade premises into air, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Permits authorising discharges to air are issued by the Council under Section 87(e) of the RMA.

Discharges of wastes to land

Sections 15(1)(b) and (d) of the RMA stipulate that no person may discharge any contaminant onto land if it may then enter water, or from any industrial or trade premises onto land under any circumstances, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Permits authorising the discharge of wastes to land are issued by the Council under Section 87(e) of the RMA.

Land use permits

Section 13(1)(a) of the RMA stipulates that no person may in relation to the bed of any lake or river use, erect, reconstruct, place, alter, extend, remove, or demolish any structure or part of any structure in, on, under, or over the bed, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Land use permits are issued by the Council under Section 87(a) of the RMA.

Coastal permits

Section 12(1)(b) of the RMA stipulates that no person may erect, reconstruct, place, alter, extend, remove, or demolish any structure that is fixed in, on, under, or over any foreshore or seabed, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Coastal permits are issued by the Council under Section 87(c) of the RMA.

Coastal Permit
Pursuant to the Resource Management Act 1991
a resource consent is hereby granted by the
Taranaki Regional Council

Name of Consent Holder:	South Taranaki District Council Private Bag 902 Hawera 4640
Decision Date:	5 June 2018
Commencement Date:	26 June 2018

Conditions of Consent

Consent Granted:	To discharge through a combined marine outfall into the Tasman Sea: • municipal wastes (including trade wastes, meat processing and dairy industry wastes) from the reticulated sewerage systems in Hawera, Normanby and Eltham; and • septic tank cleanings and other wastes transported by tanker from within the South Taranaki District; following treatment in the oxidation ponds at the Hawera Waste Water Treatment Plant
Expiry Date:	1 June 2052
Review Date(s):	June 2019 and at 6-yearly intervals thereafter
Site Location:	Tasman Sea, Rifle Range Road, Hawera
Grid Reference (NZTM)	Between 1711294E-5612963N & 1711437E-5612906N
Catchment:	Tasman Sea

For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document

General condition

a. The consent holder shall pay to the Taranaki Regional Council all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act, 1991.

Special conditions

1. The discharge shall only occur through the outfall and diffuser located between the points defined by map references (NZTM) 1711294E-5612963N and 1711437E-5612906N.

2. Except as provided for by conditions 3 and 4, the average daily discharge over any 7-day period ending at 6.00 am New Zealand Standard Time shall not exceed 12,000 cubic metres.

3. During an emergency situation, the average daily discharge over any 7-day period ending at 6.00 am New Zealand Standard Time may exceed 12,000 cubic metres (an "emergency discharge") provided that:

   (a) an emergency discharge does not exceed 16,000 cubic metres; and
   (b) there are no more than 4 emergency discharges in any one calendar year; and
   (c) each emergency discharge occurs for no more than 14 consecutive days.

   For the purposes of this condition, an emergency situation is the inability of the consent holder to pump and treat the discharge at the rates otherwise provided for in this consent, due to an event beyond the control of the consent holder, including: storm events, high rainfall, failure of power supply, and damage to infrastructure (pumping station, pipeline, treatment plant).

4. On each occasion that condition 3 is exercised, the consent holder shall within seven working days of the emergency discharge ceasing, provide a written report to the Chief Executive, Taranaki Regional Council giving reasons for the emergency discharge and the volume that was discharged. A copy of each report prepared in accordance with this condition shall also be provided to Tangata Whenua.

5. The dissolved oxygen concentration in the aerobic ponds shall exceed 0 gm^{-3} for minimum of 3 hours during each 24-hour period ending at 6.00 am New Zealand Standard Time.

6. The consent holder shall measure dissolved oxygen (DO) in the aerobic ponds continuously and make the measurements available to Chief Executive, Taranaki Regional Council on a secure website within 2 hours of being recorded.

7. The discharge authorised by this consent shall not give rise to any of the following effects in the Tasman Sea beyond a mixing zone of 200 metres from the centre line of the outfall diffuser:

   (a) the production of conspicuous oil or grease films, scums or foams, or floatable suspended materials;
   (b) any conspicuous change in the colour or visual clarity;
   (c) any emission of objectionable odour; or
   (d) any significant adverse effects on marine life, and in particular on: benthic communities; and/or intertidal aquatic life in and around Pukeroa Reef.

8. The consent holder shall measure and record the rate and volume of effluent discharged to an accuracy of ± 5%. Records of the date, time, rate and volume of discharge taken at intervals not exceeding 15 minutes shall be made available to the Chief Executive, Taranaki Regional Council via a secure website within 2 hours of being recorded.

9. Other than septic tank cleanings, waste transported by tanker from within the South Taranaki District may only be discharged into the WWTP if:

   (a) discharge of the waste is authorised by a licence, permit or consent and/or a trade waste agreement pursuant to a Trade Waste Bylaw; and/or
   (b) the nature and volume of the waste and its inclusion in the discharge does not result in any significant change to the environmental effects of the discharge; and
   (c) at the end of the calendar month following the acceptance of any waste in accordance with this condition, the consent holder provides to the Chief Executive of the Taranaki Regional Council a report which details the source, nature and volume of the tanker waste that was discharged and if relevant, reference to any licence, permit or consent and/or a trade waste agreement which authorised discharge of the waste.

Monitoring and Management Plans

10. The consent holder shall prepare, implement and comply with all plans required by the conditions of this consent.

Tangata Whenua Involvement Plan

11. Within 3 months of the date of this consent, the consent holder in conjunction with Fonterra Limited shall prepare and submit to the Taranaki Regional Council a Tangata Whenua Involvement Plan ("TWIP"). The TWIP shall be developed in consultation with Te Runanga o Ngati Ruanui Trust and Te Korowai o Ngāruahine Trust (collectively referred to as "Tangata Whenua" for the purposes of this consent).

12. The purpose of the TWIP is to recognise Tangata Whenua's kaitiakitanga responsibilities over the coastal marine area impacted by the discharge authorised by this consent and to identify the process and extent of involvement by Tangata Whenua in:

   (a) the development, implementation and reviews of the Monitoring Plan, Contingency Plan and Wastewater Management BPO Report;
   (b) the development and implementation of any BPO identified by the Wastewater Treatment BPO Report;
   (c) monitoring the conditions of this consent; and
   (d) the establishment of a Kaitiaki Group.

13. As a minimum the TWIP shall detail:

    (a) *Development of Plans* - A process for Tangata Whenua to have input into and provide feedback to the consent holder and Taranaki Regional Council on the development of the Monitoring Plan (condition 15), Contingency Plan (condition 16), and Wastewater Treatment BPO Report (condition 18) prior to each being lodged with the Taranaki Regional Council.

    (b) *Implementation and review of Plans* - A process for Tangata Whenua to have input into and provide feedback on the implementation and reviews of:

        (i) the Monitoring Plan and Contingency Plan;
        (ii) monitoring of the effects of the discharge;
        (iii) the Annual Performance and Data Summary Reports (condition 17); and
        (iv) the Wastewater Treatment BPO Reports.

    (c) *Information Sharing* - A process for ongoing information sharing between Tangata Whenua and the consent holder to enable an improved understanding of the relevant cultural values that may be affected by the activities authorised by this consent.

    (d) *Kaitiaki Group* - A process to establish and maintain a Kaitiaki Group (KG), which shall include:

        (i) the process by which the Taranaki Regional Council, Te Runanga o Ngati Ruanui Trust, Te Korowai o Ngāruahine Trust, Fonterra Limited and the consent holder will be invited to become members of the KG;
        (ii) the process by which membership may be amended and advisers appointed and/or engaged by the KG;
        (iii) the terms of reference for the KG, which shall be the conditions of this consent and the consent held by the Fonterra Limited to discharge through the same outfall (1450-3.0) and their implementation;
        (iv) the way the KG will operate, including frequency of meetings and methods of communication between members;
        (v) the reasons the KG may cease to function and the process for that.

14. The consent holder may review and amend the TWIP from time to time in consultation with Tangata Whenua. A copy of the amended plan shall be provided to the Taranaki Regional Council.

<u>Monitoring Plan</u>

15. Within 6 months of the date of this consent, the consent holder shall ensure a Monitoring Plan is prepared. The purpose of the Monitoring Plan is to identify the techniques, methodologies and procedures that will be employed to acquire data in relation to, and to monitor compliance with, the conditions of this consent and the effects of the discharge authorised by this consent and consent 1450-3.0 (held by the Fonterra Limited) on:

    (a) Benthic sediments and marine ecology;
    (b) Pukeroa Reef; and
    (c) Shellfish microbiology.

    Advice Note: *The Taranaki Regional Council assumes responsibility for the preparation and implementation of the Monitoring Plan for annual compliance purposes.*

16. At all times, the consent holder shall implement and comply with those aspects of the Monitoring Plan that the consent holder is responsible for (as detailed in the Monitoring Plan).

Contingency Plan

17. The consent holder shall prepare, maintain and regularly update a 'Contingency Plan' which details measures and procedures that will be undertaken to prevent and/or to avoid environmental effects from a spillage or any discharge of contaminants not authorised by this consent. The plan and any amended versions shall be provided to the Chief Executive of the Taranaki Regional Council.

Reporting

Annual Performance and Data Summary Report

18. Each year before 31 August, the consent holder shall prepare and provide an Annual Performance and Data Summary Report to the Chief Executive, Taranaki Regional Council. The Annual Performance and Data Summary Report shall relate to the preceding 12 month period ending 30 June and summarise:
    (a) Data relating to the performance of the outfall and major components within the WWTP, and compliance with the conditions of this consent;
    (b) Results of any monitoring undertaken in accordance with the Monitoring Plan; and
    (c) Any incidents involving spills or accidental discharges and the measures taken to avoid, remedy or mitigate the adverse environmental effects of such a spill or discharge.

Wastewater Treatment BPO Report

19. Within one year of the date of this consent and at 6-yearly intervals thereafter, the consent holder shall provide to the Chief Executive, Taranaki Regional Council and to Tangata Whenua, a Wastewater Treatment BPO Report, which:
    (a) reviews best practicable options ("BPO") for wastewater, biosolids or tradewaste treatment processes and assesses whether any BPO identified could be successfully applied to reduce the quantity of the discharge or improve the quality of the discharge from the WWTP and the financial implications of doing so, including costs and benefits;
    (b) details any measures which have been undertaken in the preceding 6 years or which are proposed to be undertaken in the following 6 years by the consent holder to implement an identified BPO and/or improve the management of inflow and infiltration in the sewer network, or wastewater, biosolids or tradewaste treatment processes; and
    (c) details any measures which have been undertaken in the preceding 6 years or which are proposed to be undertaken in the following 6 years by the consent holder to improve the management of the WWTP during storm events and/or periods of high rainfall, which are designed to minimise the number of occasions that it is necessary to exercise condition 3.

For the purposes of this consent, best practicable option ("BPO") means the best method for preventing or minimising the adverse effects on the environment having regard, among other things, to—

(a) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and
(b) the financial implications, and the effects on the environment, of that option when compared with other options; and
(c) the current state of technical knowledge and the likelihood that the option can be successfully applied.

Review

20. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2019 and at 6-yearly intervals thereafter, for the purposes of:

(a) ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time; or
(b) implementing any BPO identified by a Wastewater Treatment BPO Report prepared in accordance with condition 19.

Signed at Stratford on 5 June 2018

For and on behalf of
Taranaki Regional Council

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A D McLay
Director - Resource Management

Discharge Permit

Pursuant to the Resource Management Act 1991
a resource consent is hereby granted by the
Taranaki Regional Council

Name of Consent Holder:	South Taranaki District Council Private Bag 902 HAWERA 4640
Consent Granted Date:	4 November 2009

Conditions of Consent

Consent Granted:	To discharge, as a consequence of high rainfall, partially treated wastewater from the Hawera Wastewater Treatment Plant into Unnamed Stream 22 at or about (NZTM) 1708616E-5614555N
Expiry Date:	1 June 2027
Review Date(s):	June 2015, June 2017, June 2021
Site Location:	Beach Road, Hawera
Legal Description:	Lot 1 DP 382332 Lot 1 DP 16178 Blk IX Hawera SD
Catchment:	Unnamed Stream 22

For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document

General conditions

a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.

b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.

c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:

i) the administration, monitoring and supervision of this consent; and
ii) charges authorised by regulations.

Special conditions

1. The discharge shall only occur as a consequence of high rainfall events when the inflows to the wastewater treatment plant are such that the holding capacity of the treatment plant is exceeded.

2. The temporary holding pond capacity shall be no less than 55,000 cubic metres.

3. The consent holder shall not undertake any modifications to the treatment plant that may result in an increase in the frequency of the discharge.

4. The consent holder shall record the timing and duration of the overflow to the Unnamed Stream, and report these records to the Chief Executive, Taranaki Regional Council, on request.

5. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.

6. The consent holder shall phone the Taranaki Regional Council immediately after becoming aware of each discharge authorised by this permit, in order to enable the undertaking monitoring of the discharge in accordance with special condition 8.

7. Within three months of the granting of this consent, the consent holder shall prepare and maintain a contingency plan. The contingency plan shall be adhered to in the event of a discharge and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, detail measures and procedures to be undertaken to avoid, remedy or mitigate the environmental effects of the discharge.

8. Subject to Section 36 of the Resource Management Act [1991], monitoring, including physicochemical, bacteriological and ecological monitoring of the wastewater treatment system and receiving waters shall be undertaken, as deemed reasonably necessary by the Chief Executive, Taranaki Regional Council, to understand the effects of the discharge.

9. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2015 and/or June 2017 and/or June 2021, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 4 November 2009

For and on behalf of
Taranaki Regional Council

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Director-Resource Management

Discharge Permit

Pursuant to the Resource Management Act 1991
a resource consent is hereby granted by the
Taranaki Regional Council

Name of Consent Holder:	South Taranaki District Council Private Bag 902 Hawera 4640
Decision Date	26 February 2020
Commencement Date	26 February 2020

Conditions of Consent

Consent Granted:	To discharge emissions into the air from desludging and dewatering related activities at the Hawera Wastewater Treatment Plant
Expiry Date:	1 June 2052
Review Date(s):	June 2025 and at 6-yearly intervals thereafter, and 60 days immediately following any discharge event
Site Location:	Hawera Wastewater Treatment Plant, 24 Beach Road, Hawera
Grid Reference (NZTM)	1709024E-5614563N (approximate location of dewatering area)

For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document

General condition

a. The consent holder shall pay to the Taranaki Regional Council all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act 1991.

Special conditions

1. The exercise of this consent shall be undertaken in general accordance with the information provided in support of the original application for this consent. Where there is conflict between the application and consent conditions the conditions shall prevail.

2. There shall be a minimum of 3 years between the commencement of each discharge event.

3. On each occasion that the discharge occurs, the consent holder shall notify the Chief Executive, Taranaki Regional Council, at least 30 working days beforehand. Notification shall include the consent number, a brief description of the activity consented, and the intended commencement date. Notification shall be submitted to the Taranaki Regional Council by using the 'Notification of work' form on the Council's website (http://bit.ly/TRCWorkNotificationForm), or an alternative method that may be advised by the Chief Executive.

4. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any actual or likely adverse effect on the environment associated with the discharge of contaminants from the site.

5. Leachate from the dewatering site shall not be discharged to land.

6. The site shall be operated in accordance with an 'Odour Management Plan' prepared by the consent holder and approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity. The plan shall detail how the site will be managed to achieve compliance with the conditions of this consent and shall address, as a minimum:

   a) prevention of off-site odour emissions; and
   b) site odour assessments.

7. Before exercising this consent, the consent holder shall prepare and thereafter regularly update a 'Contingency Plan' that details measures and procedures that will be undertaken in the event of odour beyond the boundary of the site that is offensive or objectionable. The plan shall be approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity as being adequate to avoid, remedy or mitigate the environmental effects of such an event.

8. The discharge, either by itself or in combination with discharges to air from other sources on the site of the Hawera Waste Water Treatment Plant, shall not cause an odour beyond the boundary of the site that is offensive or objectionable.

   Note: For the purposes of this condition:

   (i) The consent holder's site is defined as Lot 1 DP 382332 & Lot 1 DP 16178 BLK IX Hawera SD; and
   (ii) Assessment under this condition shall be in accordance with the Good Practice Guide for Assessing and Managing Odour in New Zealand, Air Quality Report 36, Ministry for the Environment, 2003.

9. This consent shall lapse on 31 March 2025, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

10. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:

    (a) 60 days immediately following the date that any discharge event commences; and
    (b) during the month June 2025, and at 6-yearly intervals thereafter;

    for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 26 February 2020

For and on behalf of
Taranaki Regional Council

_____

A D McLay
Director - Resource Management

Appendix II

Categories used to evaluate environmental and administrative performance

Categories used to evaluate environmental and administrative performance

Environmental performance is concerned with actual or likely effects on the receiving environment from the activities during the monitoring year. Administrative performance is concerned with the Company's approach to demonstrating consent compliance in site operations and management including the timely provision of information to Council (such as contingency plans and water take data) in accordance with consent conditions.

Events that were beyond the control of the consent holder and unforeseeable (that is a defence under the provisions of the RMA can be established) may be excluded with regard to the performance rating applied. For example loss of data due to a flood destroying deployed field equipment.

The categories used by the Council for this monitoring period, and their interpretation, are as follows:

Environmental Performance

High: No or inconsequential (short-term duration, less than minor in severity) breaches of consent or regional plan parameters resulting from the activity; no adverse effects of significance noted or likely in the receiving environment. The Council did not record any verified unauthorised incidents involving environmental impacts and was not obliged to issue any abatement notices or infringement notices in relation to such impacts.

Good: Likely or actual adverse effects of activities on the receiving environment were negligible or minor at most. There were some such issues noted during monitoring, from self-reports, or during investigations of incidents reported to the Council by a third party but these items were not critical, and follow-up inspections showed they have been dealt with. These minor issues were resolved positively, co-operatively, and quickly. The Council was not obliged to issue any abatement notices or infringement notices in relation to the minor non-compliant effects; however abatement notices may have been issued to mitigate an identified potential for an environmental effect to occur.

For example:

- High suspended solid values recorded in discharge samples, however the discharge was to land or to receiving waters that were in high flow at the time;
- Strong odour beyond boundary but no residential properties or other recipient nearby.

Improvement required: Likely or actual adverse effects of activities on the receiving environment were more than minor, but not substantial. There were some issues noted during monitoring, from self-reports, or during investigations of incidents reported to the Council by a third party. Cumulative adverse effects of a persistent minor non-compliant activity could elevate a minor issue to this level. Abatement notices and infringement notices may have been issued in respect of effects.

Poor: Likely or actual adverse effects of activities on the receiving environment were significant. There were some items noted during monitoring, from self-reports, or during investigations of incidents reported to the Council by a third party. Cumulative adverse effects of a persistent moderate non-compliant activity could elevate an 'improvement required' issue to this level. Typically there were grounds for either a prosecution or an infringement notice in respect of effects.

Administrative performance

High: The administrative requirements of the resource consents were met, or any failure to do this had trivial consequences and were addressed promptly and co-operatively.

Good: Perhaps some administrative requirements of the resource consents were not met at a particular time, however this was addressed without repeated interventions from the Council staff. Alternatively

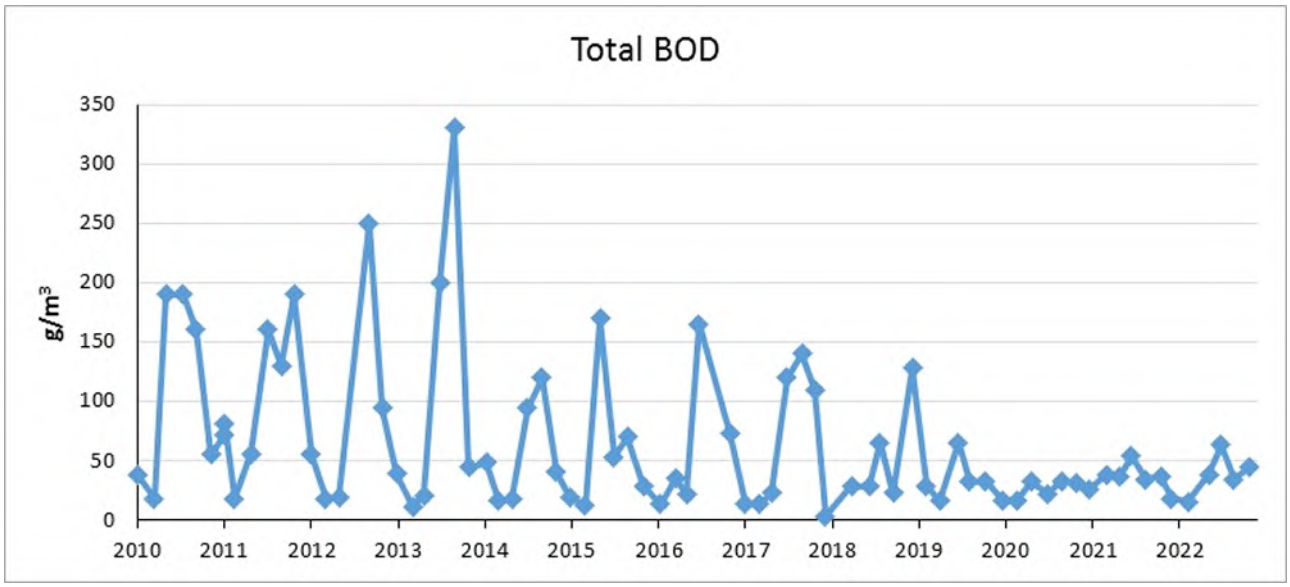
adequate reason was provided for matters such as the no or late provision of information, interpretation of 'best practical option' for avoiding potential effects, etc.

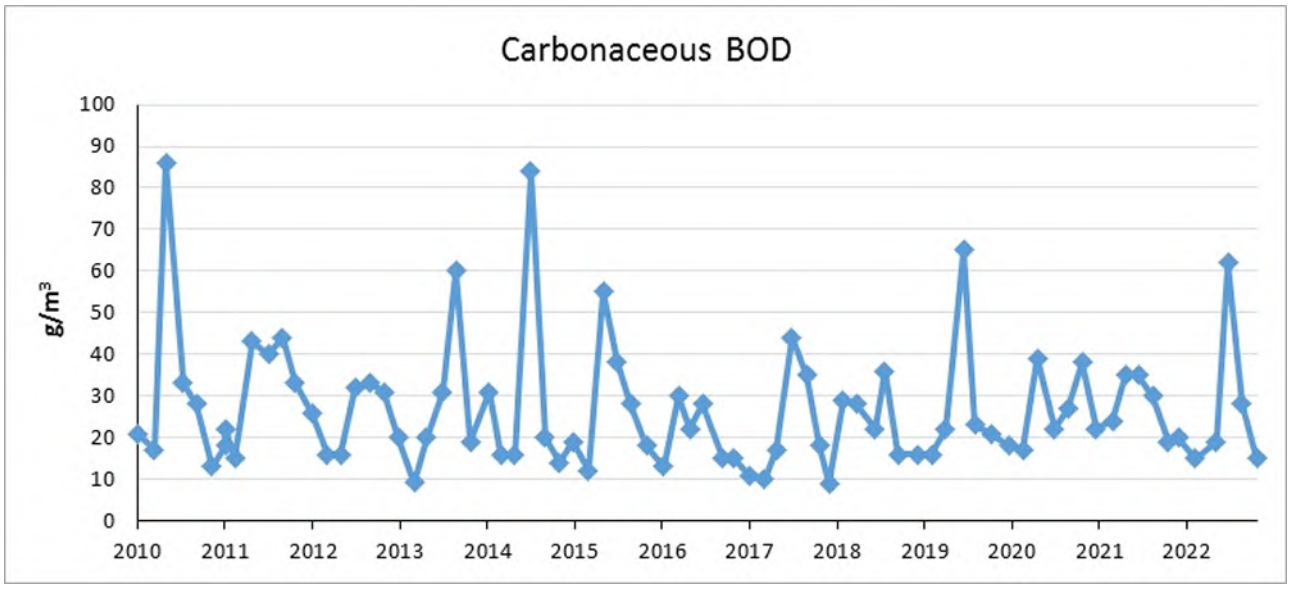
Improvement required: Repeated interventions to meet the administrative requirements of the resource consents were made by Council staff. These matters took some time to resolve, or remained unresolved at the end of the period under review. The Council may have issued an abatement notice to attain compliance.

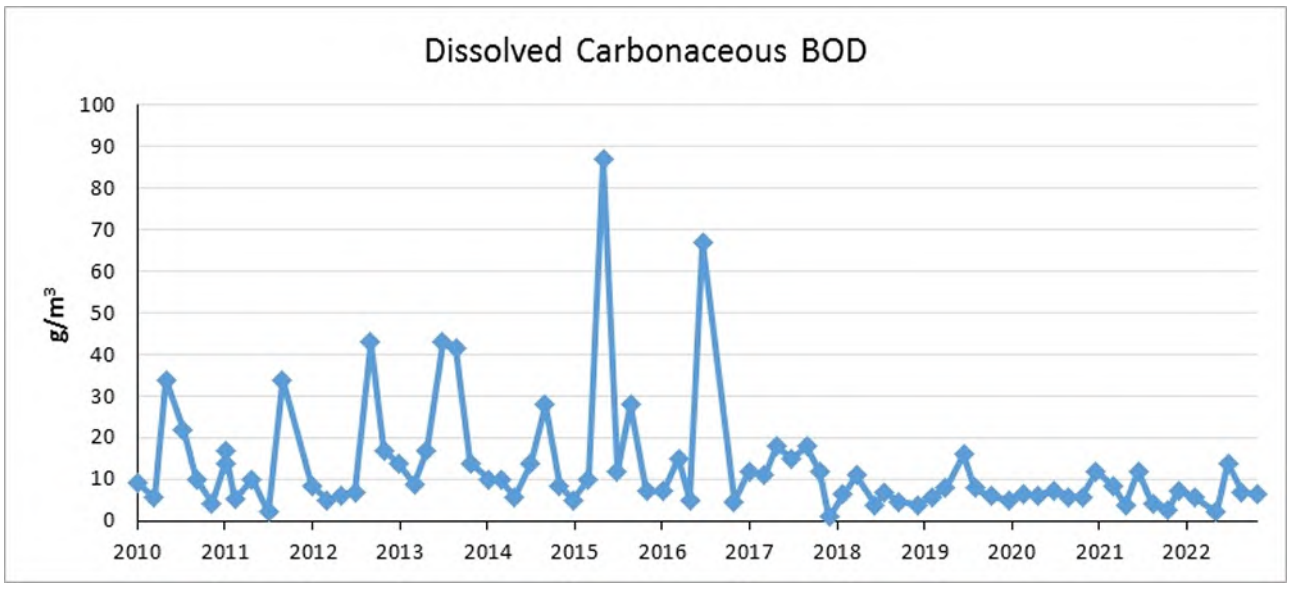
Poor: Material failings to meet the administrative requirements of the resource consents. Significant intervention by the Council was required. Typically there were grounds for an infringement notice.

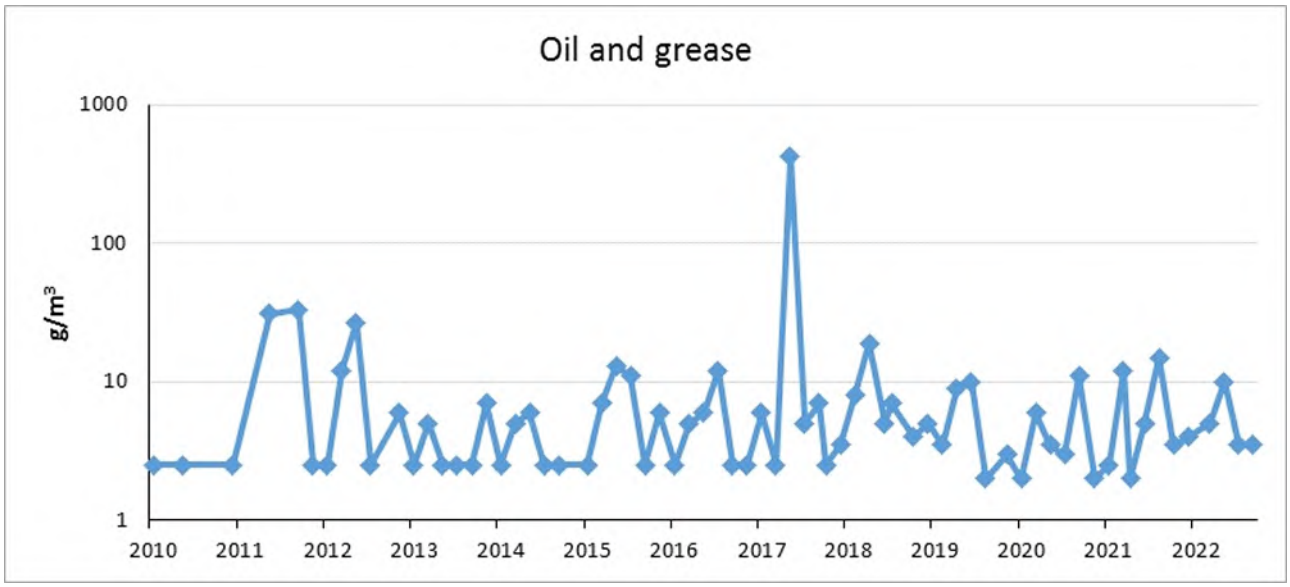
Appendix III

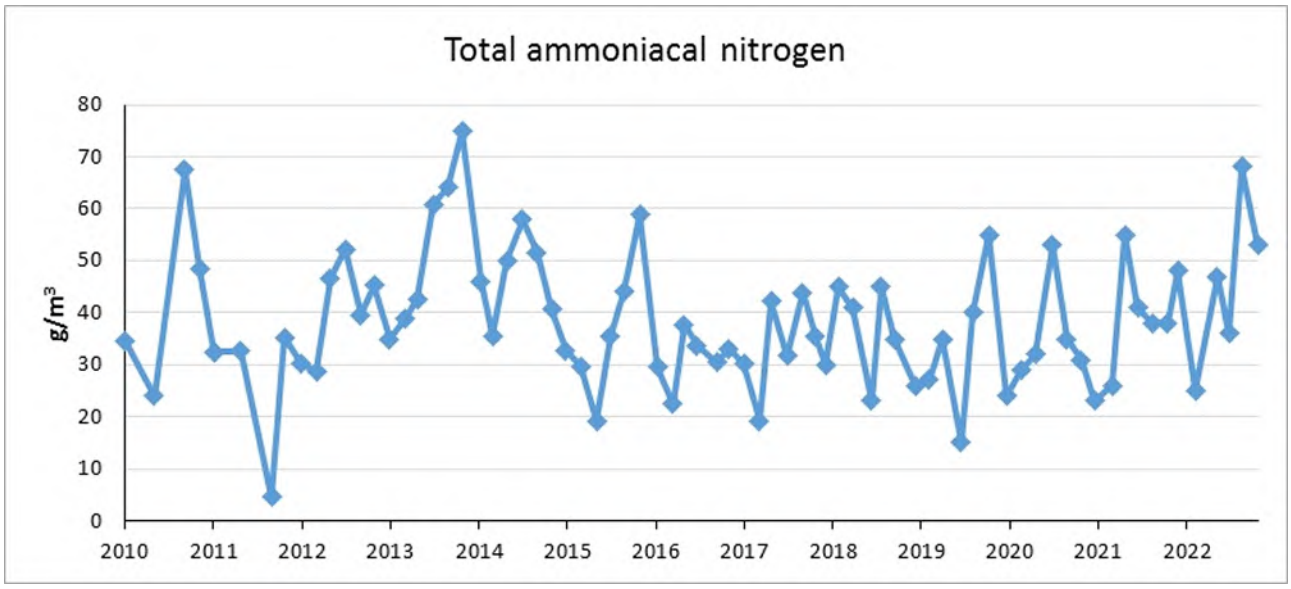
Final effluent sampling results (2010-2023)

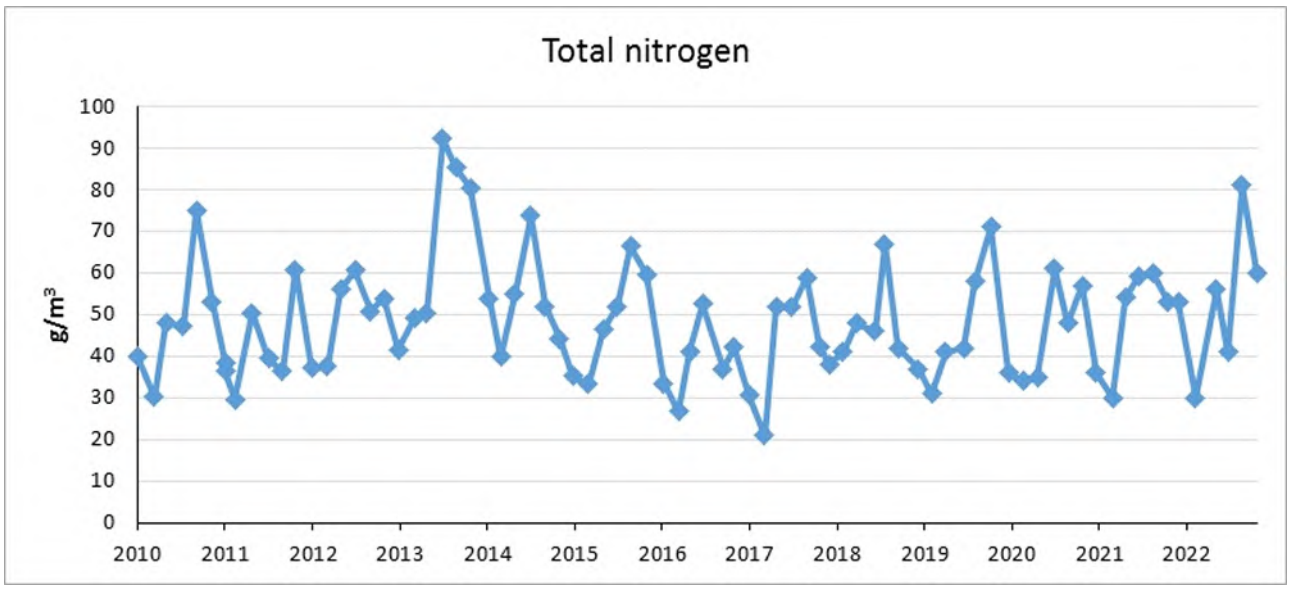

Total BOD
g/m3
350
300
250
200
150
100
50
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

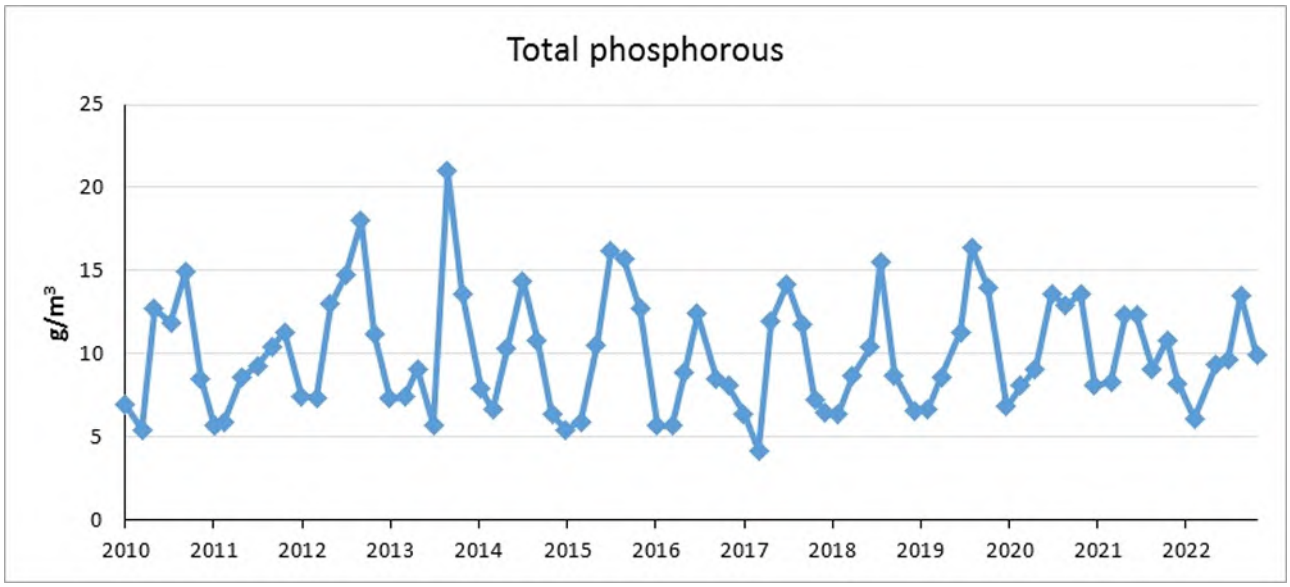

Carbonaceous BOD
g/m3
100
90
80
70
60
50
40
30
20
10
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

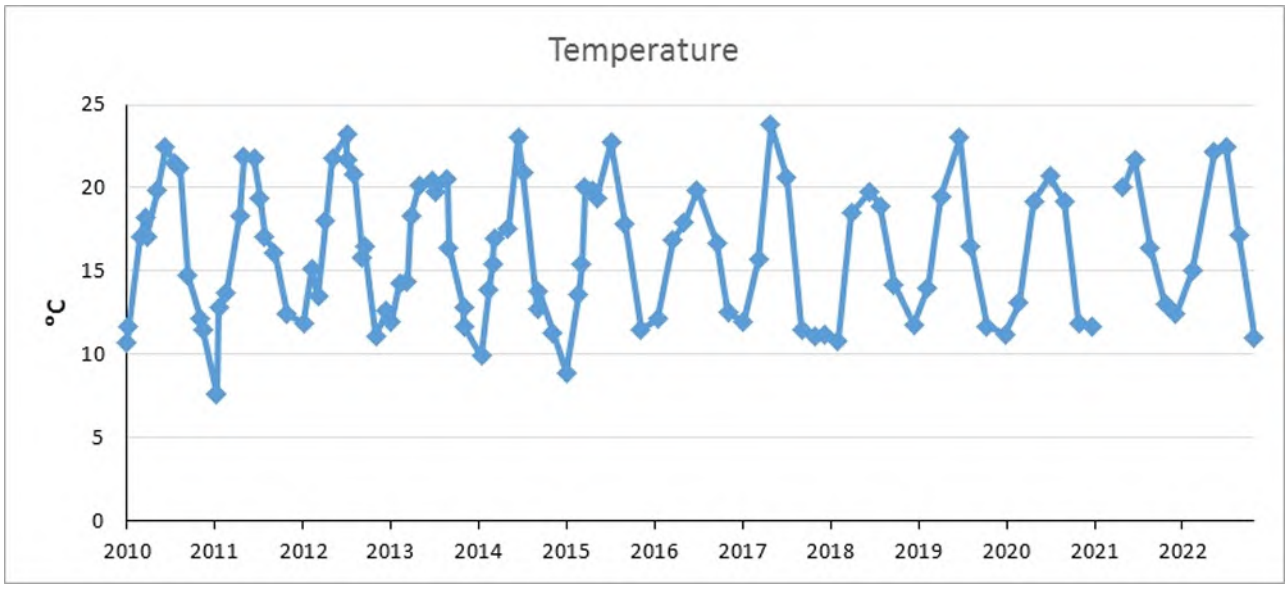

Dissolved Carbonaceous BOD
g/m3
100
90
80
70
60
50
40
30
20
10
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

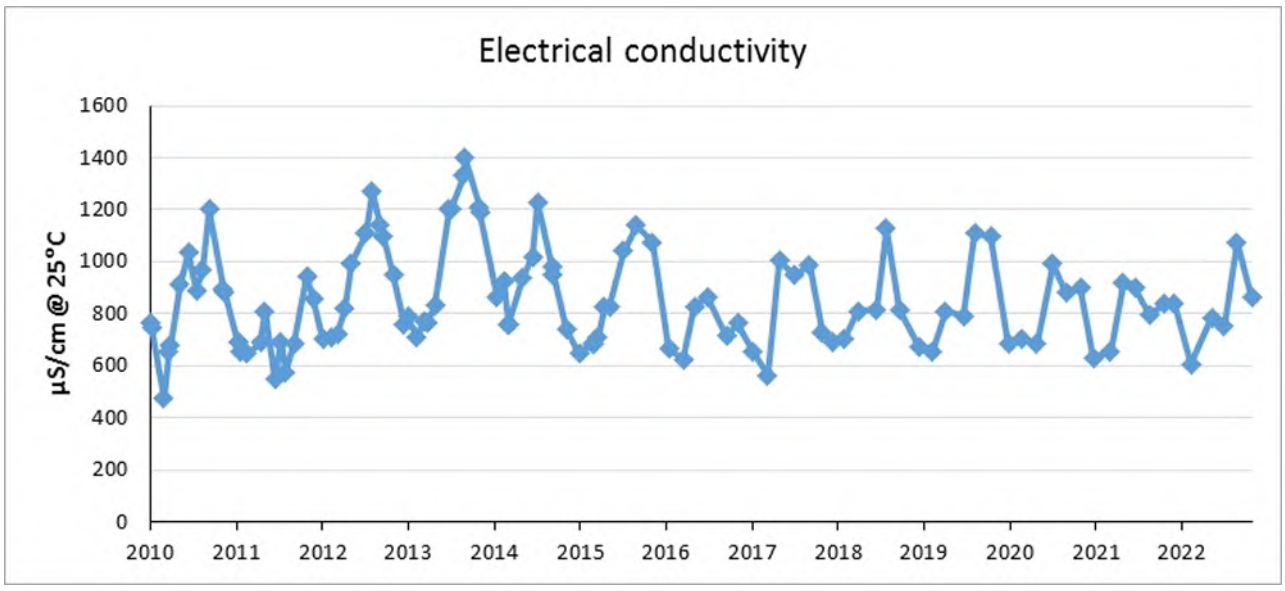

Oil and grease
1000
100
10
1
g/m³
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

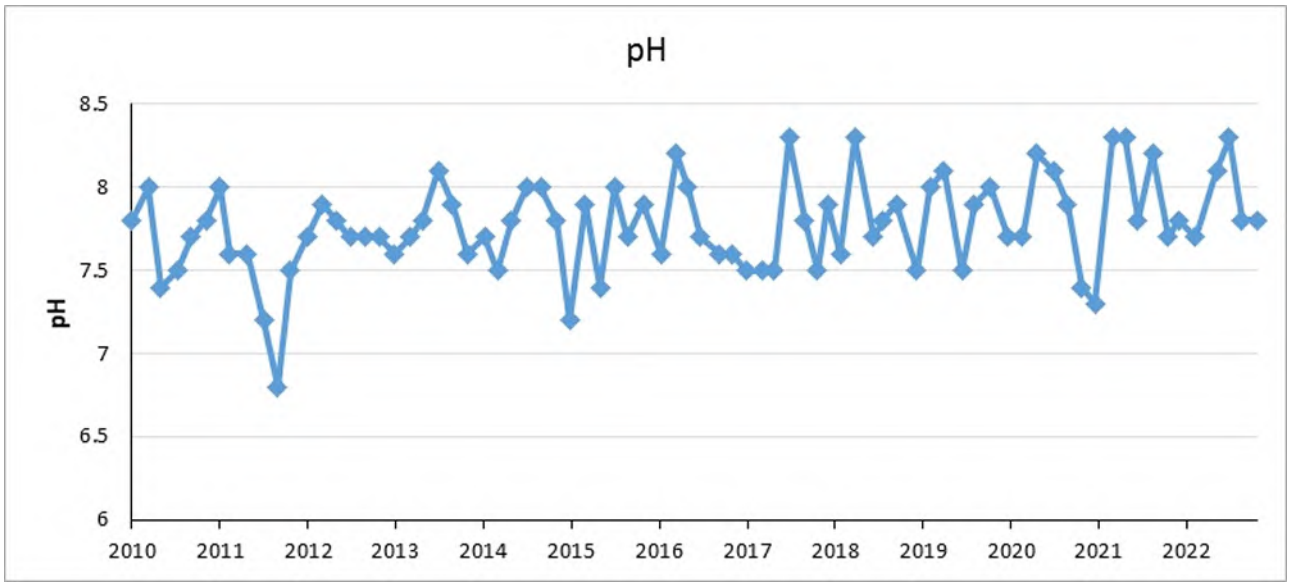

Total ammoniacal nitrogen
80
70
60
50
40
30
20
10
0
g/m³
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

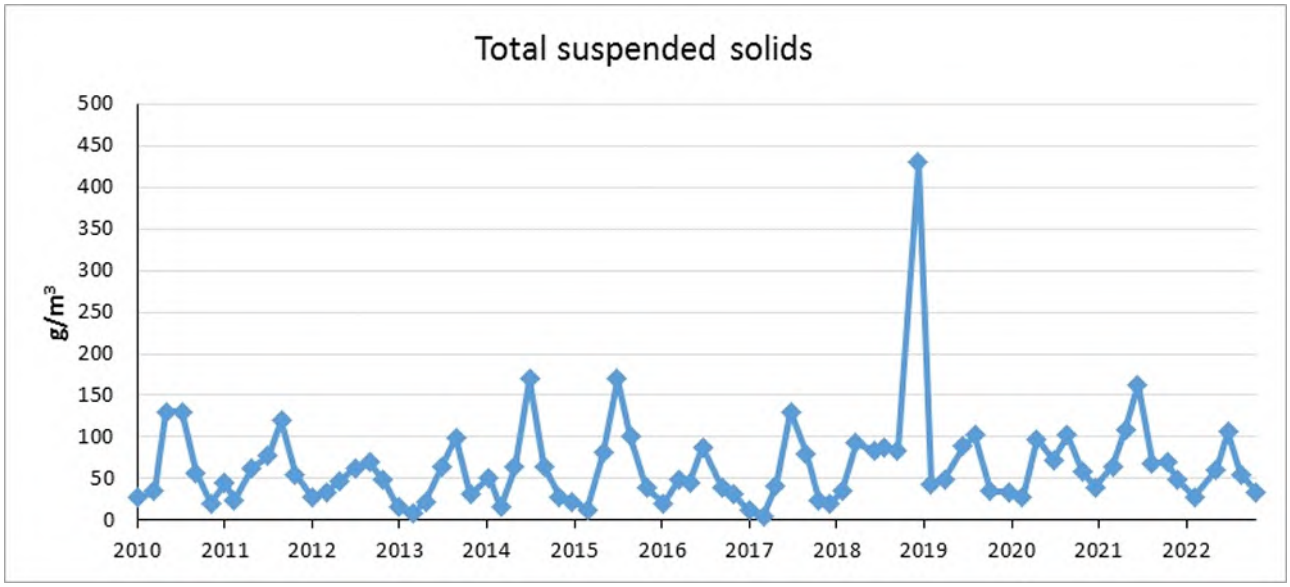

Total nitrogen
100
90
80
70
60
50
40
30
20
10
0
g/m³
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

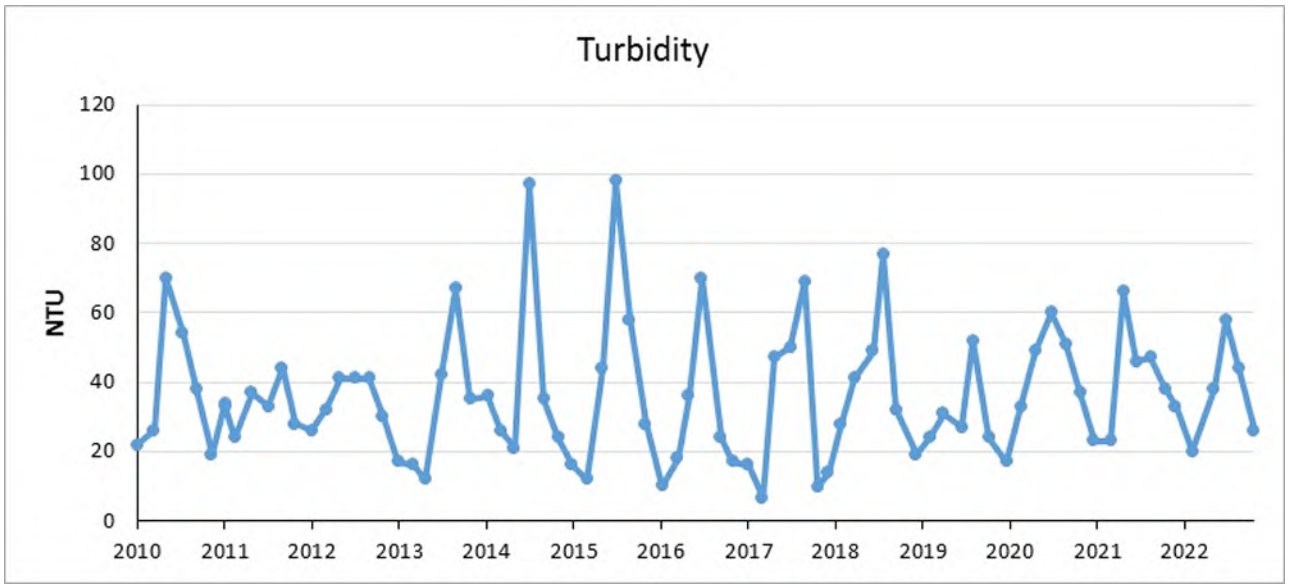

Total phosphorous
g/m³
25
20
15
10
5
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

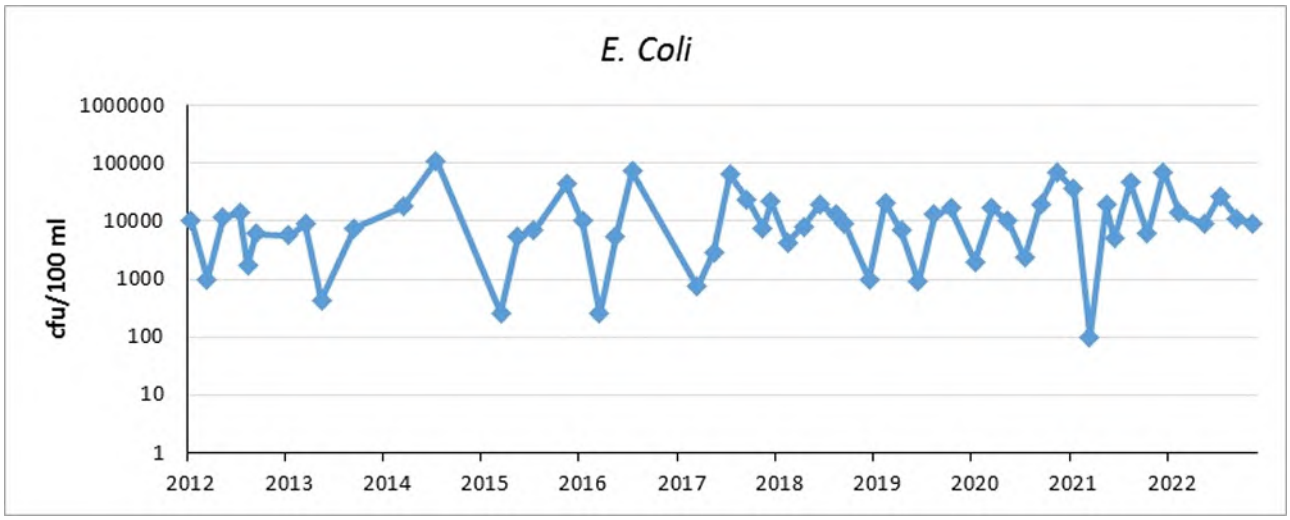

Temperature
°C
25
20
15
10
5
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

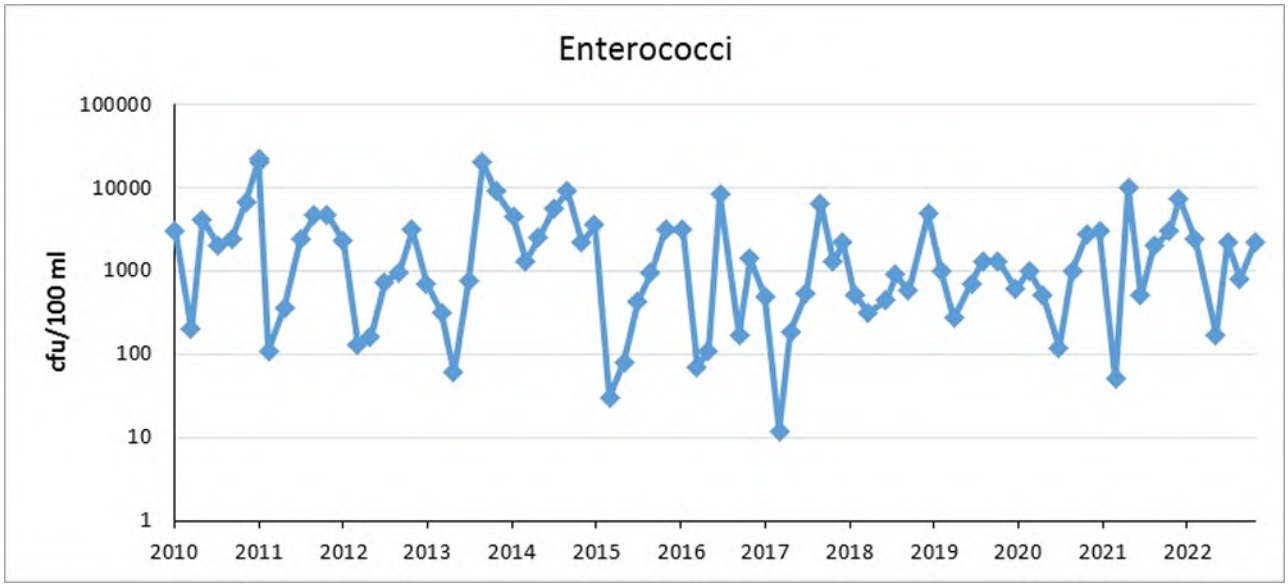

Electrical conductivity
µS/cm @ 25°C
1600
1400
1200
1000
800
600
400
200
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022


pH
8.5
8
7.5
7
6.5
6
pH
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022


Total suspended solids
500
450
400
350
300
250
200
150
100
50
0
g/m3
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022


Turbidity
120
100
80
60
40
20
0
NTU
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022


E. Coli
cfu/100 ml
1000000
100000
10000
1000
100
10
1
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022


Enterococci
cfu/100 ml
100000
10000
1000
100
10
1
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022