

South Taranaki District Council

Ōpunake WWTP

Monitoring Programme

Annual Report

2023/24

Technical Report 2024-62



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Executive summary

South Taranaki District Council (STDC) operates a municipal wastewater treatment plant (WWTP) located on South Road at Ōpunake, in the Otahi and Heimama catchments. This is a three-stage treatment system comprised of a primary oxidation pond, a wetlands treatment system, and a subsurface, reticulated soakage trench system that subsequently discharges to an unnamed coastal stream between the Otahi Stream and the Heimama Stream.

This report for the period July 2023 to June 2024 describes the monitoring programme implemented by 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.

During the monitoring period, South Taranaki District Council demonstrated a high level of environmental performance and high level of administrative performance.

STDC holds one resource consent to discharge treated wastewater, which includes a total of ten conditions setting out the requirements that it must satisfy. STDC also hold a resource consent to occupy the coastal marine area with the outfall structure. This includes three conditions setting out requirements that STDC must satisfy.

The Council's monitoring programme for the year under review included four inspections and 54 water samples collected for physicochemical analysis (ten samples analysing the effluent quality from the system, and 44 samples monitoring water quality at nearby contact recreational beach bathing sites).

As in previous years, the monitoring indicated that the treatment system was treating the municipal wastewater to the extent that no significant effects were noted in the receiving waters of the Tasman Sea. The water quality of nearby popular beach bathing sites was generally very good.

For reference, in the 2023/24 year, consent holders were found to achieve a high level of environmental performance and compliance for 864 (89%) of a total of 967 consents monitored through the Taranaki tailored monitoring programmes, while for another 75 (8%) of the consents a good level of environmental performance and compliance was achieved. A further 26 (3%) of consents monitored required improvement in their performance, while the remaining two (<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 remains at a high level.

This report includes recommendations for the 2024/25 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 2023 to June 2024 by the Council describing the monitoring programme associated with resource consents held by South Taranaki District Council (STDC). STDC operates a municipal wastewater treatment plant (WWTP) situated on South Road at Ōpunake.

This report covers 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 treated wastewater in the Otahi and Heimama catchments. This report is the 34th annual report to be prepared by the Council to cover the STDC's discharge 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 *Resource Management Act 1991* (RMA) and the Council's obligations;
- the Council's approach to monitoring sites through annual programmes;
- the resource consents held by STDC in the Otahi/Heimama catchments and the Tasman Sea;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted at the Ōpunake WWTP.

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 2024/25 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 2023/24 year, consent holders were found to achieve a high level of environmental performance and compliance for 864 (89%) of a total of 967 consents monitored through the Taranaki tailored monitoring programmes, while for another 75 (8%) of the consents a good level of environmental performance and compliance was achieved. A further 26 (3%) of consents monitored required improvement in their performance, while the remaining two (<1%) achieved a rating of poor.¹

1.2 WWTP system

The Ōpunake WWTP services approximately 1360 people with around 765 sewer connections. The WWTP comprises two distinct components. The first is the interception of the town sewage by diverting the terminal sewer into a pumping station. This pumping station is located on Hector Place, adjacent to the terminal sewer leading to the outfall and diverts the sewage to a land-based treatment system located on a headland bounded by State Highway 45 and the Heimama and Otahi Streams. Installation of storage at the pump station has been provided in the event of power outages, faults or breakdowns in the pumping system.

The second component is a land-based treatment system (Figure 1) and is comprised of an initial 1.25ha primary oxidation pond. Provision for aeration of this pond was made, but has not been required to date. After treatment in this pond the effluent passes through a series of two combined secondary oxidation pond/wetland systems (Photo 1). Final disposal of the effluent is via a series of soakage trenches, which are backfilled with gravel and permit effluent flow along the trenches and through the side walls into a silty sand layer. This series of trenches has been designed to allow regular intervals between the use of individual trenches. The trenches are located a minimum of 30m from the coastal cliff face. The end of the trenches are connected by a common pipe that then discharges any wastewater that has not soaked into the ground to an unnamed stream, via an overland rock filter along the stream bank. The land-based treatment system was constructed during the 1993-1994 period and has been operational during subsequent monitoring years. This system operates under consent 4248-2, which was renewed in November 2019.

¹ The Council has used these compliance grading criteria for more than 20 years. They align closely with the 4 compliance grades in the MfE Best Practice Guidelines for Compliance, Monitoring and Enforcement, 2018

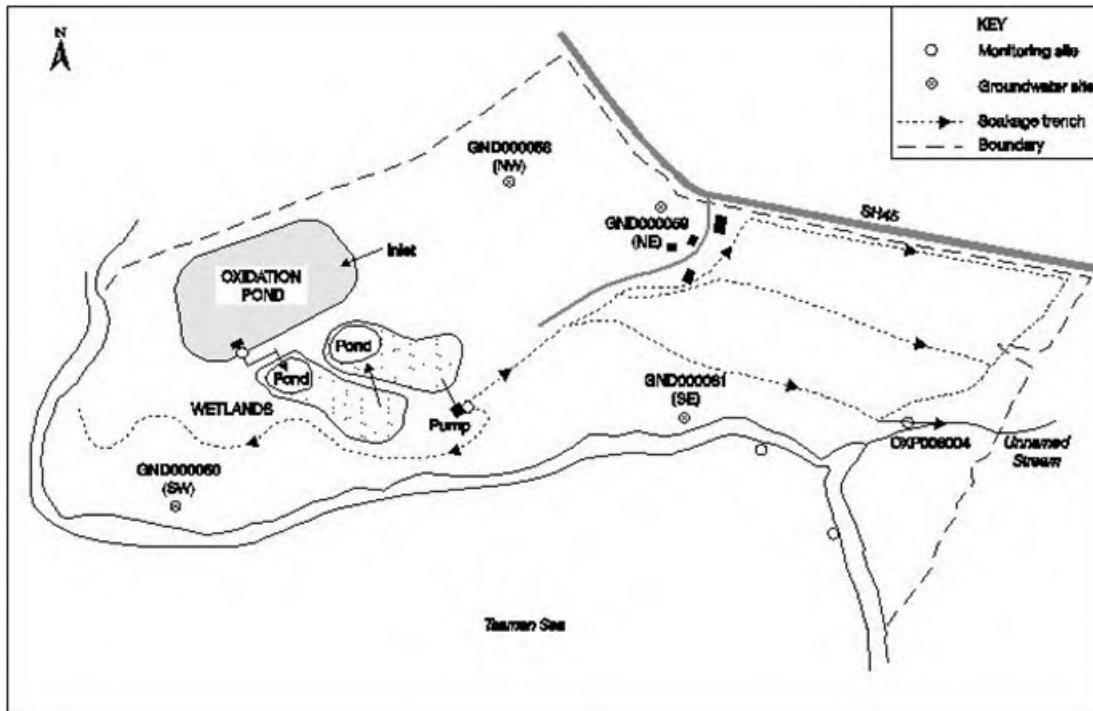


Figure 1 Schematic of Ōpunake WWTP design and layout

The site is currently leased for sheep farming in the sewage treatment area and two other areas of land in the treatment plant have been leased out for grazing of cattle (STDC, 2015).

In association with this land based sewage treatment scheme, a consent (coastal permit) was granted to allow for the use of the ocean outfall when stormwater and groundwater inflows exceed the capacity of the pump station. This allowed for the emergency discharge of untreated wastewater via the ocean outfall. This consent expired at the end of the period under review and will not be renewed, instead STDC will focus on preventing inflow and infiltration in the area in order to prevent exceedance of pump capacity.

1.3 Resource consents

STDC hold two resource consents in relation to the Ōpunake WWTP, 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 during the period under review.

Table 1 Summary of resource consents held by STDC in relation to Ōpunake WWTP

Consent number	Purpose	Granted	Review	Expires
<i>Water discharge permits</i>				
4248-3	To discharge treated municipal wastewater from the Ōpunake municipal oxidation pond and wetlands treatment system onto and into land and into Unnamed Stream 34	November 2019	June 2030	June 2036
<i>Coastal permits</i>				
4577-4	To occupy the coastal marine area with the Ōpunake marine outfall structure	November 2019	June 2030	June 2036

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 Opunake WWTP consisted of three 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 Ōpunake WWTP was visited four 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 Water quality

The Council undertook sampling of the discharges from the site and the summer water quality at nearby recreational bathing sites.

The Ōpunake WWTP primary pond effluent was analysed for dissolved oxygen and microfloral component on four occasions. The primary pond and wetland effluents were analysed for pH, conductivity, BOD, suspended solids, and bacterial components (*E.coli*) on three occasions.

Sampling of the soakage trench treated effluent was carried out on three occasions, and the samples analysed for conductivity and *E.coli* bacteria.

Contact recreational bacteriological water quality at Ōpunake Beach and at Middleton Bay was monitored by the Council on 22 occasions between 1 November 2023 and 26 March 2024.

2. Results

2.1 Water

2.1.1 Inspections

27 July 2023

A winter Inspection was carried out during wet weather. The influent screen was operating and wastes were fully contained. The main pond was dark brown with a turbid appearance. A mild odour was noted downwind. Wildlife was numerous, with over 150 mallard, paradise and teal ducks, Canadian geese and black swans.

Both wetland pond levels were normal. These were dark brown in colour and slightly turbid. No ponding was noted in the vicinity of the overland soakage trench system. Surface water (following the heavy rain) was flowing via the open trenches towards the coast.

The Hector Place pumping station and the emergency overflow were also inspected and found to be satisfactory.

17 November 2023

The step screen was operating and wastes were fully contained. The main pond was green-brown and turbid. There was a mild odour downwind. Wildlife was estimated at around 150 birds, consisting of Canadian Geese, mallard, teal and paradise ducks, and several black swans.

Both wetland ponds were light green and slightly turbid. The wetland sump pump was operating at the time of the inspection. The overland soakage trench system was inspected with no issues noted. Surface water was not observed in the open trenches.

The Hector Place pumping station and the emergency overflow were also inspected and found to be satisfactory.

26 January 2024

A summer inspection was carried out during fine weather conditions. The step screen was operating and wastes were fully contained. The main pond had a turbid green appearance. There was a slightly noticeable odour. Wildlife was abundant, in excess of 2,000 birds, the majority of which were paradise ducks.

The wetland ponds were green-brown in colour. The effluent discharge sump pump was running. No boggy areas were showing on the overland trench system, with all trenches dry. The treated wastewater discharge flow rate was estimated at 5L/s. Wildlife consisted of several ducks.

The treated wastewater discharge into the unnamed tributary was light green in colour. The unnamed tributary was a dark green colour some distance downstream (approx. 100m) from the discharge. There was a slightly noticeable odour noted around the water sampling site.

The Hector Place pump station and the emergency outfall were also inspected and found to be satisfactory.

17 May 2024

The step screen was operating and wastes were fully contained. The main pond was turbid and green. There was a slightly noticeable odour around the outlet area. Approximately 350 teal and mallard ducks, and several black swans were observed.

The wetland ponds were dark green. The effluent discharge sump pump was running. Wildlife consisted of five ducks. No boggy areas were observed and all trenches were discharging towards the coast. The treated wastewater discharge flow rate was estimated at 4L/s.

The Hector Place pump station and the emergency outfall were satisfactory



Photo 1 Opunake WWTP wetlands

2.2 Results of effluent monitoring

Effluent analyses were carried out at three locations throughout the treatment system, for the purpose of monitoring the effectiveness of each stage of treatment. These locations were the primary pond effluent (EXP001002), the partially treated wetlands effluent (EXP006001), and the fully treated final discharge from the subsurface trench system (EXP006004). The results of effluent monitoring at all three sites are displayed in Table 4 and discussed in section 2.2.4.

Along with a visual survey of each component of the system, dissolved oxygen levels (DO) and the microfloral component of the pond were measured during routine monitoring inspections. These are discussed in Sections 2.2.1 and 2.2.2 respectively.

All sampling sites are displayed below in Figure 2.

2.2.1 Dissolved oxygen levels

The dissolved oxygen concentration in WWTPs varies both seasonally and during the day as a result of a combination of factors. The photosynthetic activity of the pond's microflora together with fluctuations in influent waste loadings on the system are major influencing factors. Minimum dissolved oxygen

concentrations are generally recorded in the early hours of daylight, and therefore pond performance has been evaluated by standardising sampling times toward mid-morning for all regular inspection visits during the monitoring period.

The results of dissolved oxygen monitoring in the primary pond recorded adjacent to outlet are included in Table 2.

Table 2 Dissolved oxygen levels at the surface of the Ōpunake WWTP primary pond

Date	Time (NZST)	Temperature (°C)	Dissolved Oxygen	
			Concentration (g/m ³)	Saturation (%)
27 July 2023	11:10	10.6	4.72	43
17 November 2023	11:55	18.9	0.64	7
26 January 2024	08:40	19.1	2.81	31
17 May 2024	11:00	13.7	3.69	35

The results in Table 2 show a wide range of dissolved oxygen concentrations (between 7 to 43% saturation) in the surface layer of the primary pond near the outlet. These were typical of the levels generally recorded in this oxidation pond (the median of the 122 samples collected since 1994 is 43%), and reflect seasonal influences. No mechanical aeration of the pond occurs and super-saturation is uncommon.

STDC monitor the pond continuously via an inline DO meter, this showed that dissolved oxygen levels were compliant during the 2023/24 year.

2.2.2 Microfloral component

Pond microflora are very important for the stability of the symbiotic relation between aerobic bacteria in the primary pond. These phytoplankton may be used as a bio-indicator of pond conditions, for example cyanobacteria are often present in under-loaded conditions and chlorophyceae are present in overloaded conditions. To maintain facultative conditions in a pond system there must be an algal community present in the surface layer.

The principal function of algae is the production of oxygen which maintains aerobic conditions while the main nutrients are reduced by biomass consumption. Elevated pH (due to algal photosynthetic activity) and solar radiation combine to reduce faecal bacteria numbers significantly.

Samples of the primary pond effluent were collected during the four routine monitoring inspections for chlorophyll-a analyses. Chlorophyll-a concentration can be a useful indicator of the algal population present in the system. Pearson (1996) suggested that a minimum in-pond chlorophyll-a concentration of 300 mg/m³ was necessary to maintain stable facultative conditions. However, seasonal change in algal populations and also dilution by stormwater infiltration might be expected to occur in any WWTP which, together with fluctuations in waste loadings, would result in chlorophyll-a variability.

The results of primary pond chlorophyll-a analyses are provided in Table 3 together with field observations of pond appearance. With the exception of the November result, chlorophyll-a levels were high during the monitoring period. Historically relatively high concentrations of chlorophyll-a are found in the pond, indicative of a significant phytoplankton component.

Table 3 Chlorophyll-a levels and primary pond appearance

Date	Time	Appearance	Chlorophyll-a (mg/m ³)	Chlorophyll-a (mg/m ³) data from July 2013 to June 2023		
				N	Range	Median
27 July 2023	11:10	Turbid, dark brown	810	40	<2-1,400	339
17 November 2023	11:55	Turbid, green-brown	41			
26 January 2024	08:40	Turbid, green	320			
17 May 2024	11:00	Turbid, green	999			



Figure 2 Opunake WWTP and sampling locations (sites SEA904073 and SEA904074 were not sampled during the year due to no access)

2.2.3 Wetlands effluent monitoring

No odours were associated with the system at the time of any inspection visit. Effluent levels in the wetlands are controlled by the wetland discharge pump. Minor bird numbers were observed on this section of the treatment plant, which has implications for the level of bacteria in the wetland effluent. Results of the wetlands effluent sampling are presented in Table 4.

2.2.4 Trench system effluent monitoring

When discharging, flow rates from the trench system, estimated at the outfall of the final trench, were around 5L/s, prior to the rock rip-rap outfall through which the final effluent discharged into the stream.

Three samples of the trench system treated effluent were collected from the discharge point (OXPO06004); the results are presented in Table 4.

2.3 Results of receiving environment monitoring

Previously monitoring of the impacts of the Ōpunake WWTP on receiving waters has been measured using both water quality surveys of the receiving waters of the Tasman Sea beyond the boundary of the mixing zone with the unnamed coastal stream; and contact recreational bacteriological quality surveys of the Tasman Sea at Middleton Bay and Ōpunake Beach (Figure 3).



Figure 3 Location of receiving water sampling sites for Ōpunake WWTP

Table 4 Results of effluent analysis monitoring at each stage of the treatment plant

Site		Primary pond effluent				Wetlands polished effluent				Final treated discharge from soakage trenches			
Date		17 Nov 2023	26 Jan 2024	17 May 2024	2004-2023 Range	17 Nov 2023	26 Jan 2024	17 May 2024	2004-2023 Range	17 Nov 2023	26 Jan 2024	17 May 2024	2004-2023 Range
Time		1155	0840	1100		1210	0905	1125		1230	0930	1140	
Parameter	Unit												
Temp	°C	18.9	19.1	13.7	7.7 – 23.6	18.4	16.6	14.0	4.9 – 23.6	17.4	17.3	13.4	7.9 – 23.4
pH	pH	7.4	7.9	7.3	6.8 – 9.3	8.0	8.2	9.2	7.1 – 9.8	-	-	-	-
BOD ₅	g/m ³	12	12	43	3.0 - 140	2.7	27	34	1.2 - 92	-	-	-	-
Conductivity @25°C	mS/m	55.6	64.1	47.3	31.2-82.1	46.7	52.3	44.1	30.4-55.0	45.6	53.0	44.6	31.2 – 57.0
Enterococci	/100ml	42,000	8,500	2,600	155 – 68,000	140	2,000	1,700	10 – 20,000	-	-	-	-
<i>E.coli</i> *	/100ml	700,000	80,000	8,000	2,100 – 160,000	1,700	2,300	320	7 – 17,330	500	3,000	410	10 – 7,750
Suspended solids	g/m ³	22	62	75	4 - 195	24	115	183	5 -111	-	-	-	-

* *E.coli* replaces FC as a bacterial indicator following 2017 TRC protocol

2.3.1 Tasman Sea monitoring

A storm in April 2022 destroyed the track that provided access to the coast below to sample the receiving waters of the Tasman Sea either side of the discharge. The track is irreparable and investigation found no other suitable safe alternative so this monitoring has been discontinued.

2.3.2 Bacteriological recreation water quality monitoring

Contact recreational bacteriological water quality at Ōpunake Beach and at Middleton Bay was monitored by the Council on 22 occasions between 1 November 2023 and 26 March 2024. Samples are collected as part of the regional 'Can I swim here?' (CISH) monitoring programme, these are collected once per week on the same day, regardless of weather or tide.

2.3.2.1 MfE guidelines for contact recreation

Guidelines for microbiological water quality of marine recreational areas have been prepared by the Ministry for the Environment in conjunction with the Ministry of Health (MfE, 2003). The guidelines use a combination of a qualitative risk grading of the catchment, together with direct measurements of appropriate faecal indicators to assess the suitability of a site for recreation.

Table 5 Guideline levels for coastal contact recreation bathing sites

Mode	Enterococci (nos/100ml)		
	'Acceptable' (green)	'Alert' (amber)	'Action' (red)
Marine	≤140	141-280	>280 (2 consecutive samples)

In addition, 'Alert' and 'Action' guideline levels are used for surveillance throughout the bathing season. These guideline levels are summarized in Table 5 and are based on keeping illness risk associated with recreational water use to less than approximately 2%. Levels are based on enterococci counts as these bacteria are the preferred indicators for marine waters. Research has shown that enterococci are the indicator most closely correlated with health effects in New Zealand marine waters, in common with general findings overseas. 'Alert' and 'Action' guideline levels are used for surveillance throughout the bathing season.

2.3.2.2 Water quality at Ōpunake Beach

Contact recreational bacteriological water quality at Ōpunake Beach was monitored by the Council on 22 occasions between early November 2023 and late March 2024.

The results of this sampling are summarised in Table 6 and illustrated in Figure 4.

Table 6 Statistical summary of bacteriological monitoring at Ōpunake Beach

Parameter	Units	Number of samples	Minimum	Maximum	Median
Conductivity	µS/cm@25°C	22	51,100	53,000	52,000
Enterococci	MPN/100ml	22	<10	985	<10
Temperature	°C	22	15.2	23.5	18

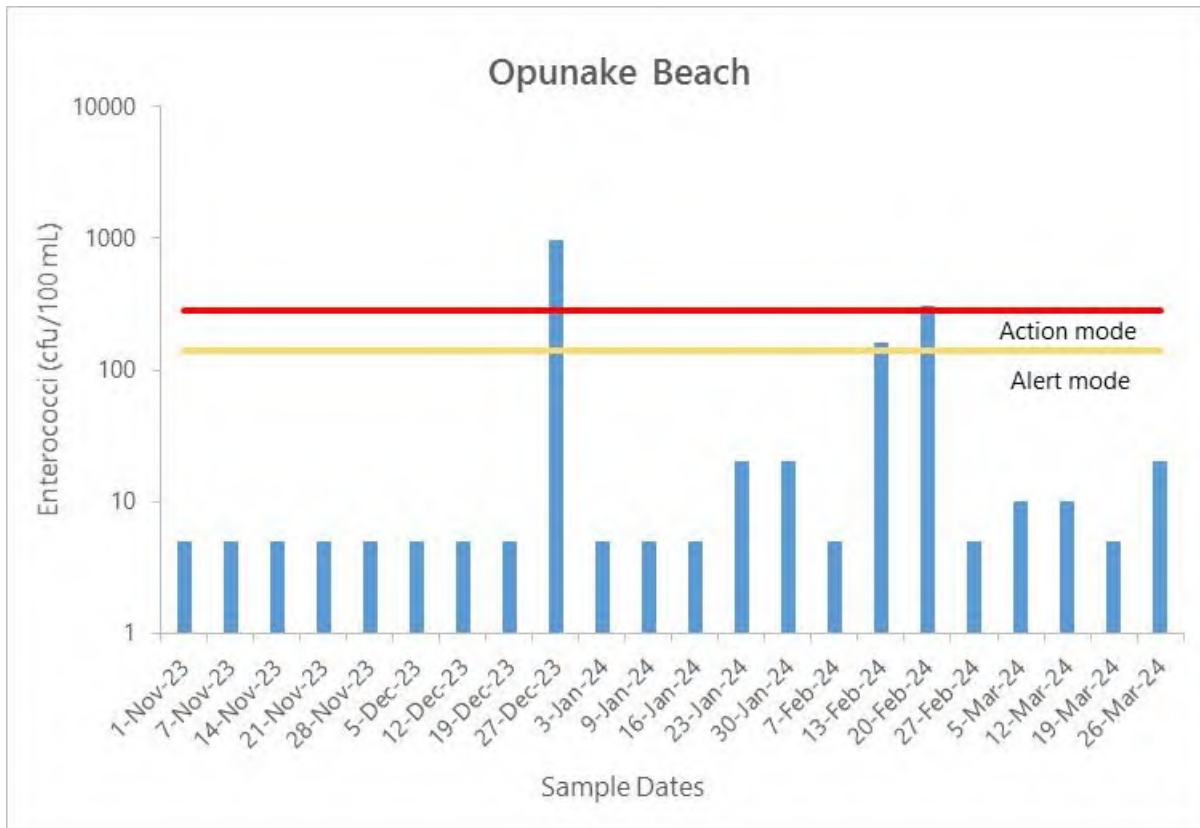


Figure 4 Enterococci results for Ōpunake Beach summer 2023/24

Note: Results of <10 are displayed on the graph as 5

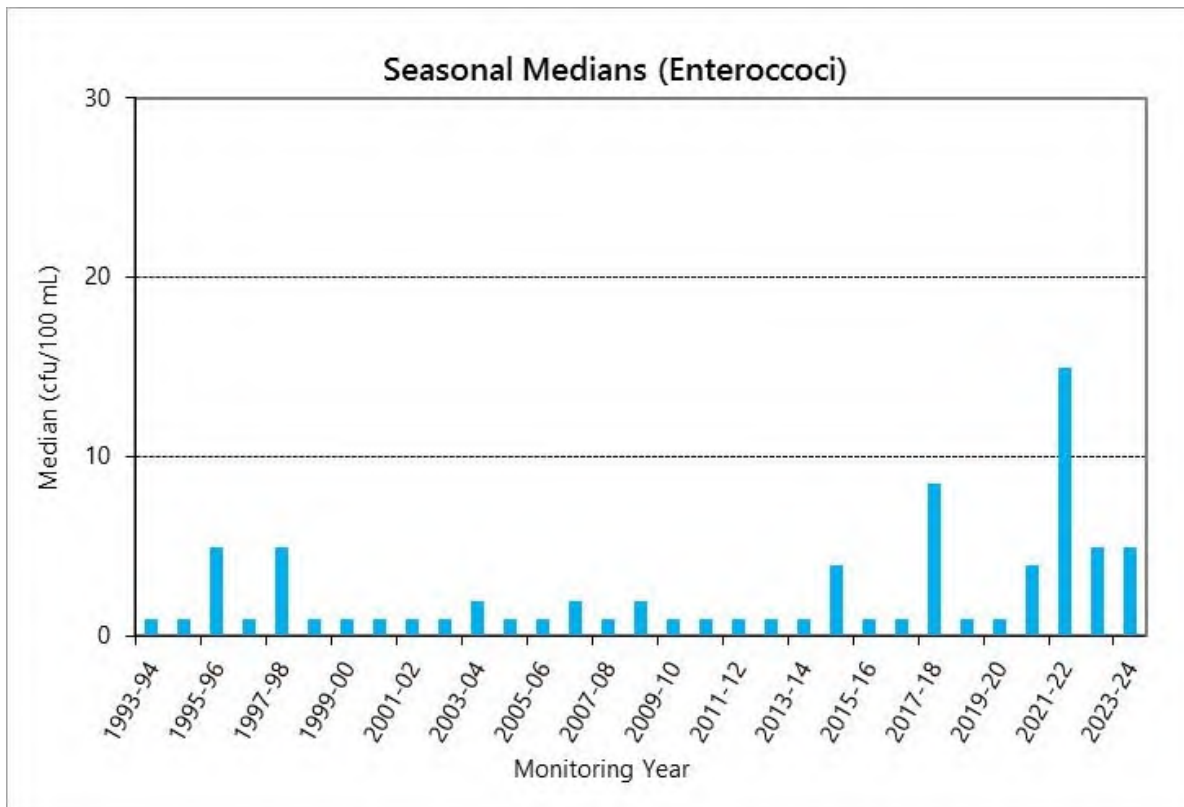


Figure 5 Median bacteriological results at Ōpunake Beach since summer 1993/94

The coastal bacteriological water quality at Ōpunake Beach was generally very good throughout the monitoring period, with a median enterococci of <10cfu/100ml. Samples collected on 27 December 2023 and 20 February 2024 exceeded the 'Action mode' guideline.

Figure 5 shows that, in terms of median numbers of enterococci, the contact recreational water quality at this site is generally very good. It is noted that the protocol for sampling has changed in the last couple of years so that samples are collected irrespective of weather or tide, unlike previously where samples were collected around high tide in fine weather only. Prolonged and/or heavy rainfall will often result in high levels of enterococci in the samples as these are washed down flooded streams and rivers from farmland. This can be exacerbated by a low tide where a sea sample collected from a site near a stream mouth may contain a high proportion of freshwater.

2.3.2.3 Water quality at Middleton Bay

Contact recreational bacteriological water quality at Middleton Bay was monitored by the Council on 22 separate occasions between early November 2023 and late March 2024. The results of this sampling are summarised in Table 7 and illustrated in Figure 6.

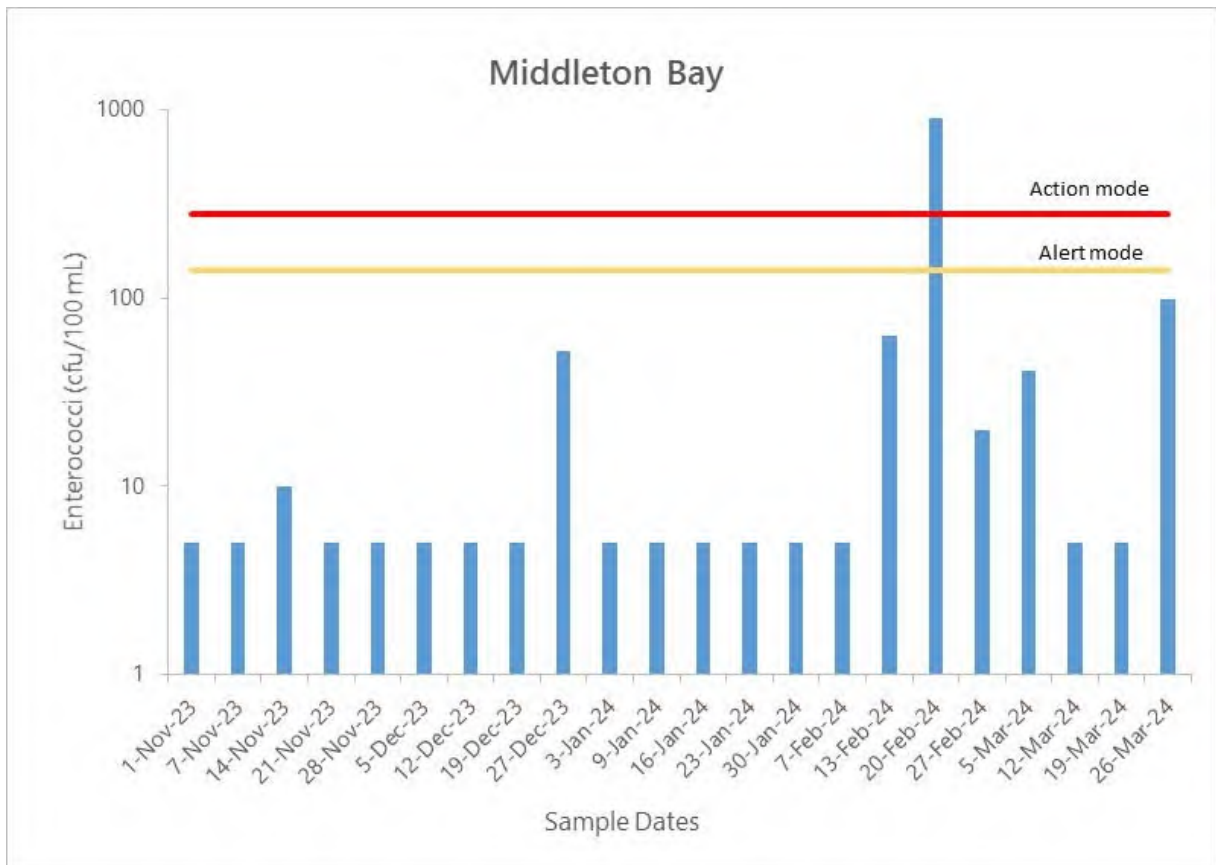


Figure 6 Bacteriological (enterococci) results from Middleton Bay during summer 2023/24

Note: Results of <10 are displayed on the graph as 5

Although not an intensively used contact recreational area, this site is monitored due to the potential for occasional discharges of untreated domestic sewage (generally following high stormwater infiltration conditions) into the coastal waters from the nearby ocean outfall.

Table 7 Statistical summary of bacteriological monitoring at Middleton Bay

Parameter	Units	Number of samples	Minimum	Maximum	Median
Specific conductivity	µS/cm@25°C	22	51,000	52,600	51,800
Enterococci	MPN/100ml	22	<10	909	<10
Temperature	°C	22	15.2	23.4	18.2

The generally high water quality was emphasised by the seasonal median count of <10 enterococci (cfu/100ml) for the 22 samples collected during the survey period. The numbers of enterococci were high on one occasion (909cfu/110ml), likely due to rainfall.

2.4 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's. 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).

Table 8 below sets out details of any incidents recorded, additional investigations, or interventions required by the Council in relation to the STDC's activities during the 2023/24 period. This table presents details of all events that required further investigation or intervention regardless of whether these were found to be compliant or not.

Table 8 Incidents, investigations, and interventions summary table

Date	Details	Compliant (Y/N)	Enforcement Action Taken?	Outcome
25-Mar-24	A complaint was received concerning a green stream.	Y	None	The discharge was from the Ōpunake WWTP. The stream was turbid but the mixing zone was visually clear in compliance with consent conditions and no further action was taken. STDC have installed an ultrasonic radar to reduce algae in the final wetland to hopefully reduce the green colour in the discharge.

3. Discussion

3.1 Discussion of site performance

The STDC Ōpunake WWTP was found to be generally well managed during the 2023/24 year. Good liaison was maintained between STDC and the Council.

Consent 0236-7, to discharge screened wastewater from the Ōpunake treatment plant through an outfall to the Tasman Sea on occasions when the capacity of the pump station and storage is exceeded, expired in June 2023 and will not be replaced. Instead STDC will be putting an emphasis on inflow and infiltration in the area to ensure that capacity is not exceeded. No overflows occurred from the Hector Place pump station during 2023/24.

An inflow and infiltration program is in place to reduce the amount of stormwater entering the system. During the 2023/24 year this consisted of 15,889m of CCTV and two manhole repairs. Work in recent years in Ōpunake has resulted in a reduction in peak flows of 68% and the hydraulic retention time (HRT) of the ponds has gone from 18 days to 39 days (recommended HRT is above 20 days).

A project has been initiated with a strategy being developed to determine the appropriate technical solution to resolve the issue of poor soakage soil infiltration of wastewater into the wetland and adjacent soakage trenches during winter months. The land becomes saturated due to high rainfall and inflow and infiltration load. The project will investigate minor improvements to the current soakage trenches and produce a concept study for future upgrade options. A review of the project design inputs is required to establish the details of the required upgrades as a result of the Ōpunake residential developments and estimated population increases as this will place additional strain and demand on the wastewater system which is already showing signs of being at capacity.

There have been some complaints received from the public about the green colour of the discharge. In an effort to prevent this algal reduction was carried out in the final wetland by ultrasonic radar.

3.2 Environmental effects of exercise of consents

Monitoring of system performance indicated that a high standard of effluent quality was produced by the oxidation pond and series of two wetlands. Wastewater quality from the wetlands was very good, reflecting the consistently high performance of the WWTP system, with significant reductions in bacterial loadings. Visual effects (discolouration due to algae) were noted in the stream, although this did not extend past the mixing zone in the receiving waters.

Bacteriological contact recreational water quality surveyed throughout the summer period at the principal coastal recreational area on Ōpunake Beach and at the nearby Middleton Bay was generally very good.

3.3 Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Tables 9-10.

Table 9 Summary of performance for consent 4248-3

Purpose: To discharge up to 2,074 cubic metres per day of treated municipal wastewater from the Ōpunake municipal oxidation pond and wetlands treatment system onto and into land and into an unnamed stream between the Otahi Stream and the Heimama Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Effluent to be treated via oxidation ponds, wetlands and other facilities as described in application	Inspections	Yes
2. Adopt best practicable option	Inspections, liaison with consent holder	Yes
3. DO to exceed 0g/m ³ for at least 3 out of 24 hours per day	Consent holder reporting	Yes
4. Consent holder to measure DO continuously and make results available to TRC	Information available on WaterOutlook	Yes
5. Discharge not to give rise to effects beyond mixing zone	Inspections, sampling	Yes
6. Discharge not to result in ponding on the land surface	Inspections	Yes
7. Discharge not to result in the overland flow of wastewater	Inspections	Yes
8. Requirements for waste transported by tanker	Liaison with consent holder	Yes
9. Consent holder to prepare and maintain contingency plan for the site	Updated contingency plan received July 2023	Yes
10. Review of consent	Next option to review consent in June 2030	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 10 Summary of performance for consent 4577-4

Purpose: To occupy the coastal marine area with the Ōpunake marine outfall structure		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Authorises occupation by current outlet structure		N/A
2. Consent holder to maintain structure in safe, sound and functional condition	Inspections	Yes
3. Optional review of consent	Next option to review consent in June 2030	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 Evaluation of environmental performance over time

Year	Consent numbers	High	Good	Improvement req	Poor
2019/20	0236-7, 4248-3, 4577-4	3	-	-	-
2020/21	0236-7, 4248-3, 4577-4	3	-	-	-

Year	Consent numbers	High	Good	Improvement req	Poor
2021/22	0236-7, 4248-3, 4577-4	3	-	-	-
2022/23	0236-7, 4248-3, 4577-4	3	-	-	-
2023/24	4248-3, 4577-4	2	-	-	-

During the year, STDC demonstrated an overall high level of environmental and administrative performance with the resource consents as defined in Appendix II.

3.4 Recommendations from the 2022/23 Annual Report

In the 2022/23 Annual Report, it was recommended:

1. THAT in the first instance, monitoring of consented activities at Ōpunake WWTP in the 2023/24 year continue at the same level as in 2022/23.
2. THAT should there be issues with environmental or administrative performance in 2023/24, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.
3. THAT the option for a review of resource consents 4248-3 and 4577-4 in June 2024, as set out in conditions of the consents, not be exercised, on the grounds that the current conditions are adequate.

These recommendations were implemented.

3.5 Alterations to monitoring programmes for 2024/25

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 2024/25 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 2024/25.

4. Recommendations

1. THAT in the first instance, monitoring of consented activities at Opunake WWTP in the 2024/25 year continue at the same level as in 2023/24.
2. THAT should there be issues with environmental or administrative performance in 2024/25, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Glossary of common terms and abbreviations

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

Biomonitoring	Assessing the health of the environment using aquatic organisms.
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.
cfu	Colony forming units. A measure of the concentration of bacteria usually expressed as per 100 millilitre sample.
Conductivity	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 25°C and expressed in mS/m.
DO	Dissolved oxygen.
DRP	Dissolved reactive phosphorus.
<i>E.coli</i>	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.
Fresh	Elevated flow in a stream, such as after heavy rainfall.
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.
HRT	Hydraulic retention time.
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.
MfE	Ministry for the Environment.
mS/m	Millisiemens per metre.
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).
NO ₃ ⁻	Nitrate, normally expressed in terms of the mass of nitrogen (N).
NO ₂ ⁻	Nitrite, normally expressed in terms of the mass of nitrogen (N).

NTU	Nephelometric Turbidity Unit, a measure of the turbidity of water.
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	<i>Resource Management Act 1991</i> and including all subsequent amendments.
SFRG	Suitability for Recreational Grading. Describes the general condition of a site based on risk as well as indicator bacteria water quality.
SS	Suspended solids.
SEM	State of Environment
Temp	Temperature, measured in °C (degrees Celsius).
TKN	Total Kjeldahl nitrogen. Combination of organic nitrogen, NH ₃ , and NH ₄ ⁺ .
Turb	Turbidity, expressed in NTU.
WWTP	Wastewater treatment plant.

For further information on analytical methods, contact a manager within the Environment Quality Department.

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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.

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 12 November 2019

Commencement Date 3 December 2019

Conditions of Consent

Consent Granted: To discharge treated municipal wastewater from the
Opunake municipal oxidation pond and wetlands treatment
system onto and into land and into Unnamed Stream 34

Expiry Date: 1 June 2036

Review Date(s): June 2024, June 2030

Site Location: 4443 South Road, Opunake

Grid Reference (NZTM) 1671850E-5633540N (land)
1672323E-5633419N (water)

Catchment: Unnamed Stream 34

*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. Any effluent discharged shall be treated via the oxidation ponds, wetlands and other facilities as described in the application.
2. 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.
3. The dissolved oxygen concentration in the aerobic pond shall exceed 0 gm^{-3} for minimum of 3 hours during each 24-hour period ending at midnight New Zealand Standard Time.
4. The consent holder shall measure dissolved oxygen 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.
5. The discharge authorised by this consent shall not give rise to any of the following effects beyond a mixing zone of 20 metres from the mouth of the receiving stream:
 - (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.

6. The discharge shall not result in ponding on the land surface.

For the purpose of this condition, ponding means wastewater on the ground surface over a continuous area exceeding 10 m^2 or a combined area greater than 30 m^2 .

7. The discharge shall not result in overland flow of wastewater other than as authorised by this consent.
8. Other than septic tank cleanings, waste transported by tanker may only be discharged into the Opunake Wastewater Treatment Plant if:
 - (a) the waste comes from within the South Taranaki District;
 - (b) 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
 - (c) 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
 - (d) 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.

Consent 4248-3.0

9. 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.
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 during the month of June 2024 and/or June 2030, 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 12 November 2019

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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 12 November 2019

Commencement Date 12 November 2019

Conditions of Consent

Consent Granted: To occupy the coastal marine area with the Opunake marine outfall structure

Expiry Date: 1 June 2036

Review Date(s): June 2024, June 2030

Site Location: Hector Place, Opunake

Grid Reference (NZTM) 1673027E-5632336N

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. This consent authorises the occupation of space in the Coastal Marine Area by the outlet structure existing at the time the application for this consent was lodged, and as described in the application. Any change to the nature or scale of the structure may therefore need to be authorised by a formal process in accordance with the Resource Management Act 1991.
2. The consent holder shall maintain the structure in a safe and sound condition such that it continues to function effectively as an emergency wastewater outlet and protection structure.
3. 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 2024 and/or June 2030, 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 12 November 2019

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.