New Plymouth District Council
Waitara Waste Water Treatment Plant
Monitoring Programme Report
January 2012–December 2013

Technical Report 2013–86

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Executive summary

The New Plymouth District Council (NPDC) manages the Waitara marine outfall, which discharges approximately 1,250 metres offshore from the mouth of the Waitara River into the Tasman Sea. The outfall provides for the disposal of wastewater from the Waitara municipal sewage reticulation system, along with Methanex Waitara Valley and Methanex Motunui methanol plants. The outfall was previously managed by Waitara Outfall Management Board (WOMB), which was made up of NPDC, Methanex and ANZCO Foods Waitara Ltd. In 2010 NPDC took over sole management of the outfall, and has a contract with Methanex to allow the continued use of the outfall for their discharge. NPDC operates the Waitara Waste Water Treatment Plant (WWWTP) to provide for the township of Waitara. This report for the period January 2012 to December 2013 describes effluent processed in relation to the WWWTP.

NPDC holds two resource consents, which include 19 conditions setting out the requirements that the consent holders must satisfy. One consent allows for the discharge of effluent into the Tasman Sea and the other deals with the structure which conveys the effluent (this consent is now jointly held with Methanex Motunui Ltd). The performance of the Methanex Waitara Valley and Motunui plants in relation to their consents is discussed in a separate report (13-72).

The Taranaki Regional Council (the Council) monitoring programme for the period under review included three site inspections, an assessment of data, and two inter-laboratory comparisons between NPDC and the Council. Waitara outfall reports are based on a calendar year, with annual reports also produced for shoreline bacteriological water quality (13-85) and marine ecology (13-52).

Three inspections of the WWWTP, sewerage pump stations, and Waitara foreshore were undertaken during the monitoring period. In general, these areas were found to be of a satisfactory standard and in compliance with the consent.

Records of daily discharge volumes through the WWWTP revealed the consent limit was not breached during the monitoring period.

The pH of the effluent has an upper and lower consent limit of 12 and 6. However, as disinfection of bacteria at the WWWTP is achieved by elevation of pH via lime dosing, NPDC has a process control limit in place to maintain the pH between 10.8 and 12 to ensure that correct dosing occurs. Daily testing of pH limits showed that the pH was in compliance with the process controls for 69.8% of the readings in 2012 and 65.9% in 2013. In 2012, 1.5% of the readings were high and 12.3% in 2013 - both exceeding the consent and process limits (excessive use of lime), while 28.7% of the readings were low in 2012 and 21.8% in 2013 (but not below consent limits). All other parameters complied with consent conditions during the monitoring period except for a discharge of sewage on 18 October 2013 where approximately 361 m^3 of unscreened and untreated sewage was discharged to the Tasman Sea via the Waitara Outfall. Two inter-laboratory comparisons were undertaken during the monitoring period. Generally there was a good agreement achieved between the two laboratories for the parameters tested.

Taking into account all aspects of the plants operation and the quality of the discharge throughout the monitoring period, NPDC's level of compliance and environmental performance can be regarded as 'good' in 2012, while it is regarded that 'improvement is required' for 2013 which also resulted in an infringement notice being issued.

This report includes recommendations for the 2014 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 the monitoring programme report for the period January 2012 - December 2013 by the Taranaki Regional Council (the Council) describing the monitoring programme associated with resource consents held by New Plymouth District Council (NPDC). NPDC operates the Waitara Wastewater Treatment Plant (WWWTP) situated on Queen Street, Waitara.

The WWWTP is operated by NPDC to provide for the township of Waitara, which has a population of approximately 6,500 people. The plant is situated on the true left bank of the Waitara River, approximately 1,100 metres from its mouth. There are three major users of the WWWTP: NPDC, Methanex Motunui, and Methanex Waitara Valley. Methanex and NPDC have a joint agreement to oversee the refurbishment and maintenance of the outfall (previously the responsibility of the Waitara Outfall Management Board which was disestablished in 2010).

ANZCO signed an agreement with NPDC to be removed from the Waitara Outfall Management Board and instead discharge as a trade waste customer, and withdrew its consent application to discharge through the outfall (consent number 3398-2).

In 2007, Methanex applied for replacement consents for the discharge of wastewater to the marine environment via the Waitara marine outfall from its Waitara Valley and Motunui Methanol production sites. After researching options, Methanex opted to proactively install its own on-site sewage treatment system for the Waitara Valley plant that enables discharge of the treated effluent to land. In 2011 the system was installed and commissioned and has worked successfully since, with the purified effluent being disposed of directly on-site. Subsequently, Methanex has now voluntarily surrendered consent to discharge human sewage from the Waitara Valley plant to the marine environment.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consents held by NPDC that relate to discharges of water into the Tasman Sea. This is the nineteenth Annual Report to be prepared by the Council to cover the WWWTP water discharges and their effects.

1.1.2 Structure of this report

Section 1 of this report is a background section. It sets out general information about compliance monitoring under the Resource Management Act 1991 (the Act) and the Council's obligations and general approach to monitoring sites through annual programmes, the resource consents held by NPDC, the nature of the monitoring programme in place for the period under review, and a description of the activities and operations conducted in the WWWTP outfall catchment.

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

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

Section 4 presents recommendations to be implemented in the 2014 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 Act 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 a discharger, and may include cultural and socio-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 (e.g., recreational, cultural, or aesthetic);
(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' inasmuch as is appropriate for each discharge source. Monitoring programmes are not only based on existing permit conditions, but also on the obligations of the Act to assess the effects of the exercise of consents. In accordance with section 35 of the Act, the Council undertakes compliance monitoring for consents and rules in regional plans; and maintains an overview of performance of resource users against regional plans and consents. Compliance monitoring, including impact monitoring, also enables the Council to continuously assess its own performance in resource management as well as that of resource users particularly consent holders. It further enables the Council to continually re-evaluate its approach and that of consent holders to resource management, and, ultimately, through the refinement of methods, 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 holder(s) during the period under review, this report also assigns an overall rating. The categories used by the Council, and their interpretation, are as follows:

- a **high** level of environmental performance and compliance indicates that essentially there were no adverse environmental effects to be concerned about, and no, or inconsequential (such as data supplied after a deadline) non-compliance with conditions.

- a **good** level of environmental performance and compliance indicates that adverse environmental effects of activities during the monitoring period were negligible or

minor at most, or, the Council did not record any verified unauthorised incidents involving significant environmental impacts and was not obliged to issue any abatement notices or infringement notices, or, there were perhaps some items noted on inspection notices for attention but these items were not urgent nor critical, and follow-up inspections showed they have been dealt with, and any inconsequential non compliances with conditions were resolved positively, co-operatively, and quickly.

- **improvement required (environmental)** or **improvement required (administrative compliance)** (as appropriate) indicates that the Council may have been obliged to record a verified unauthorised incident involving measurable environmental impacts, and/or, there were measurable environmental effects arising from activities and intervention by Council staff was required and there were matters that required urgent intervention, took some time to resolve, or remained unresolved at the end of the period under review, and/or, there were on-going issues around meeting resource consent conditions even in the absence of environmental effects. Abatement notices may have been issued.

- **poor performance (environmental)** or **poor performance (administrative compliance)** indicates generally that the Council was obliged to record a verified unauthorised incident involving significant environmental impacts, or there were material failings to comply with resource consent conditions that required significant intervention by the Council even in the absence of environmental effects. Typically there were grounds for either a prosecution or an infringement notice.

For reference, in the 2012-2013 year, 35% of consent holders in Taranaki monitored through tailored compliance monitoring programmes achieved a high level of environmental performance and compliance with their consents, while another 59% demonstrated a good level of environmental performance and compliance with their consents.

1.2 Process description

The Waitara marine outfall discharges into the Waitara embayment approximately 1,250 metres offshore from the mouth of the Waitara River in approximately 10 metres of water. This outfall currently provides for the disposal of wastewater from the Waitara municipal sewage reticulation system, ANZCO Foods Waitara Ltd (currently a trade customer to the WWWTP and now not discharging directly to the outfall) and the Methanex Waitara Valley and Motunui methanol plants (excluding sewage from the Waitara Valley plant).

During 1991, the Waitara Outfall Management Board undertook a refurbishment of the outfall to provide a 25 year life period and to improve the initial dilution. This process involved an impervious plastic liner inserted through the pipeline, improvement of the stability of the pipeline on the seabed, and installation of a new diffuser.

In 1991 and 1992 NPDC and AFFCO (a meat-works company which used the outfall until 1997) constructed a wastewater treatment plant for the combined domestic and meat-works effluent which had previously been discharged through the outfall with minimal treatment. The current treatment comprises screening wastewater to 0.5 mm particle diameter, followed by disinfection through the elevation of pH with

lime to pH 11 and holding for a minimum of four hours. Treated wastewater is discharged through the outfall in batches at a constant rate, the frequency depending on influent flow rates.

The Methanex wastewater enters the outfall system downstream of the municipal wastewater treatment facility.

1.3 Resource consents

1.3.1 Water discharge permit

Section 15(1)(a) of the Resource Management Act stipulates that no person may discharge any contaminant or water into water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or by national environmental standard or other regulations.

NPDC held water discharge permit **3397-1** to discharge up to 7,258 cubic metres / day of treated municipal wastes generated in Waitara Township, excluding meat-works wastes, and 51 litres/second of stormwater via a marine outfall pipeline into the Tasman Sea. This permit was issued by the Council on 11 October 1989 under Section 87(c) of the Resource Management Act. It expired on 12 March 2008.

Renewal of consent **3397-2** was completed on 15 November 2011 and commenced on 13 December 2011. This consent was issued by the Council under Section 87(c) of the Resource Management Act and allows NPDC to discharge up to 11,950 m^3/day of treated wastewater from the Waitara Wastewater Treatment Plant into the Tasman Sea via the Waitara Marine Outfall. It is due to expire on 1 June 2017.

There are 16 special conditions attached to the consent relating to effluent quality and standards, monitoring and reporting requirements, overflow contingency plan, inflow and infiltration, transfer pipeline construction, trade waste agreements, signage, complaints, community liaison, virus monitoring and a review.

A copy of the permit is attached to this report in Appendix I.

1.3.2 Coastal permit

Section 12(1)(b) of the Resource Management Act 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 a national environmental standard.

NPDC and Methanex, as joint consent holders, renewed coastal permit **4599-2** to erect, place and maintain a structure [known as the "Waitara Marine Outfall"] and to occupy the associated space in the coastal marine area. This permit was issued by the Council on 14 September 2007 under Section 87(c) of the Resource Management Act. It is due to expire on 1 June 2021.

There are three special conditions attached to the consent, these deal with maintenance of the structure and review of the consent.

A copy of the permit is attached in Appendix I.

1.4 Monitoring programme

1.4.1 Introduction

Section 35 of the Act sets out an obligation for the Council to gather information, monitor, and conduct research on the exercise of resource consents, and the effects arising, within the Taranaki region. 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.

Monitoring has been carried out by both the NPDC and the Council to determine compliance with conditions of the consent. The Council has also monitored the receiving waters for any impact caused by the discharges.

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, in discussion over monitoring requirements, preparation for any reviews, renewals, or new consents, advice on the Council's environmental management strategies and the content of regional plans, and consultation on associated matters.

1.4.3 Site inspections

The WWWTP was visited three times during the monitoring period; 10 February 2012, 14 May 2012, and 17 September 2012. 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, pump stations, the treatment plant, equipment associated with effluent monitoring, daily records, and the emergency discharge point . Air inspections were also undertaken during the inspections around the pump stations and treatment plants for potential odours or offensive emissions. Sources of data being collected by the consent holder were identified and accessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council. The shoreline adjacent to the marine outfall was surveyed for environmental effects.

1.4.4 Chemical sampling

The Council undertook sampling of the composite influent and effluent on two occasions to compare with the results of the monitoring reported by NPDC (Photograph 1). A wider range of chemical parameters were monitored by the Council to determine changes in effluent composition, which may not be evident from the weekly and monthly monitoring.

NPDC monitors both the incoming wastewater and the treated wastewater discharged from the WWWTP, for both chemical and microbiological parameters, and analyses for various parameters at both weekly and monthly intervals. The volume of incoming wastewater is measured and recorded continuously. The treated effluent discharged has continuous measurement of flow rate and pH.

It is assumed that volume of the discharged effluent is equal to that of the incoming wastewater. Results of this monitoring are forwarded to the Council on a monthly basis and reviewed by Council staff.

Photograph 1 Collecting grab samples for inter-laboratory analysis

2. Results

2.1 Inspections

Council staff carried out inspections of the WWWTP during the monitoring period. Each inspection included the treatment plant, the sewerage pump stations, and the Waitara foreshore.

Each of the three inspections (10 February 2012, 14 May 2012, and 17 September 2012) noted very similar results, that being:

- All pump stations were inspected and no odours or overflows were noted;
- The main pump station was tidy with no noticeable odour around the buildings;
- A slight odour was found downwind of the bio filter; and
- The beach area was clear on both sides of the river mouth.

As such, it was considered that during each inspection the consent was being complied with.

2.2 Results of discharge monitoring

NPDC monitors both the incoming wastewater to the WWWTP and the effluent from the WWWTP. The incoming wastewater volume, and the discharged effluent flow rate and pH are recorded continuously on charts. Incoming wastewater composition is monitored by analysis of 24-hour flow proportional composite samples taken monthly. Effluent composition is monitored by analysis of grab samples taken weekly from the line to the pH probe, in addition to the automated measurements. Grab samples are deemed to be representative of the discharge owing to the mixing and detention within the WWWTP.

NPDC sends the Council a monthly report, which comprises the following;

- Maximum flow rate and volumes of discharged effluent;
- Maximum and minimum pH;
- Daily values for total incoming wastewater volume;
- Weekly effluent chemical and microbiological analysis results; and
- Monthly incoming wastewater chemical and microbiological analysis.

Table 1 summarises the results for the WWWTP incoming wastewater analysis (influent) for 2012 and Table 2 summarises the influent for 2013. Table 3 summarises the results for the WWWTP discharge (effluent) results and Table 4 summarises the effluent for 2013.

The parameters of the influent that are unaffected by the treatment at the WWWTP are chemical oxygen demand (COD), oil and grease, ammonia, copper and zinc. Hence, analysis of the influent serves to determine compliance of the discharged effluent in terms of these parameters.

Levels of contaminants in the 12 influent samples taken during the 2012-2013 monitoring period were all well within the consent limits.

Table 1 Summary of monthly plant **influent** analysis for 2012

Parameter	Unit	Treatment plant incoming wastewater					Consent limit	Consent exceedances
		N	Minimum	Maximum	Median	Average		
Conductivity	mS/m	12	30.5	390.9	45.8	77.4	-	
pH	-	12	7.2	7.8	7.6	7.5	-	
Suspended solids	g/m^3	12	74	389	124	149.5	-	
COD	g/m^3	12	106	464	250	262	2,000	0
Oil & grease	g/m^3	12	11	197	38	58.5	500	0
Ammonia	g/m^3	12	8.3	23.2	17	16.9	100	0
Copper	g/m^3	10	0.01	0.03	0.02	0.02	0.3	0
Zinc	g/m^3	10	0.05	0.20	0.09	0.10	1.0	0
Faecal coliforms	cfu/100mL	12	3.4×10^5	4.2×10^6	1.6×10^6	2.0×10^6	-	
Enterococci	cfu/100mL	12	5.0×10^4	1.2×10^7	6.0×10^5	2.6×10^6	-	

Table 2 Summary of monthly plant **influent** analysis for 2013

Parameter	Unit	Treatment plant incoming wastewater					Consent limit	Consent exceedances
		N	Minimum	Maximum	Median	Average		
Conductivity	mS/m	12	37.6	587	54.6	106.3	-	
pH	-	12	7.1	12.6	7.6	8.0	-	
Suspended solids	g/m^3	12	124	1783	195	364.5	-	
COD	g/m^3	12	198	1350	370	429	2,000	0
Oil & grease	g/m^3	11	29	112	43	52.1	500	0
Ammonia	g/m^3	12	10.6	29	20.5	20.1	100	0
Copper	g/m^3	7	0.01	0.17	0.03	0.07	0.3	0
Zinc	g/m^3	7	0.05	0.60	0.14	0.25	1.0	0
Faecal coliforms	cfu/100mL	12	20	1.2×10^7	5.8×10^6	6.5×10^6	-	
Enterococci	cfu/100mL	12	1.0×10^5	1.4×10^7	2.8×10^6	5.2×10^6	-	

Table 3 Summary of weekly plant treated discharge (**effluent**) results for 2012

Parameter	Unit	Treatment plant effluent					Consent limit	Consent exceedances
		N	Minimum	Maximum	Median	Average		
Discharge volume	m^3/day	366	1,901	11,581	3,418	3,640	11,950	0
Conductivity	mS/m	51	38.6	200	60.6	68	-	
pH	-	51	10.5	11.9	11.3	11.2	6.0 – 12	0
Suspended solids	g/m^3	51	40	751	322	301.5	1,200	0
Faecal coliforms	cfu/100mL	51	2	200	25	27.6	5.0×10^4	0

Note: the outflow volume is not measured directly but is assumed to be similar to the total inflow to the plant.

Table 4 Summary of weekly plant treated discharge (**effluent**) results for 2013

Parameter	Unit	Treatment plant effluent					Consent limit	Consent exceedances
		N	Minimum	Maximum	Median	Average		
Discharge volume	m^3/day	365	1,555	11,664	4,455	4,360	11,950	0
Conductivity	mS/m	52	37.9	301	60.95	76.5	-	
pH	-	52	10.0	12.1	11.25	11.2	6.0 – 12	2
Suspended solids	g/m^3	52	96	683	321.5	319.8	1,200	0
Faecal coliforms	cfu/100mL	52	2	5,370	106	429.9	5.0×10^4	0

Note: the outflow volume is not measured directly but is assumed to be similar to the total inflow to the plant.

The consent limit for total discharge volume over a 24 hour period shall not exceed 11,950 cubic metres and the rate of discharge shall not exceed 138 litres per second. This limit was not breached during the monitoring period (Figures 1 & 2).

Microbiological analysis of the incoming waste and discharged treated waste indicates that the method of disinfection used (elevation of pH using lime) is usually effective for the indicator group faecal coliforms. All of the microbiological results were within consent limits during the 2012 and 2013 monitoring years (Figures 3 & 4).

In the 2013 monitoring period two pH analytical results were above the consent limit for effective disinfection, although direct measurements of faecal coliforms indicate no change in disinfection levels and were still below the consent limit.

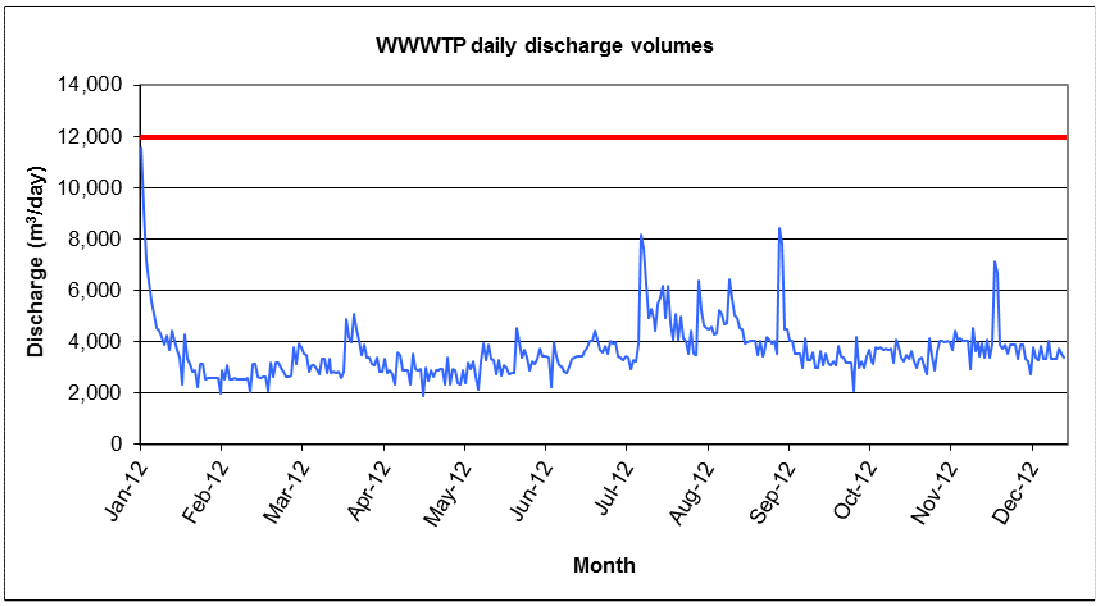

Figure 1 Total discharge volume per day from Waitara wastewater treatment plant during 2012 (consent limit shown in **red)**

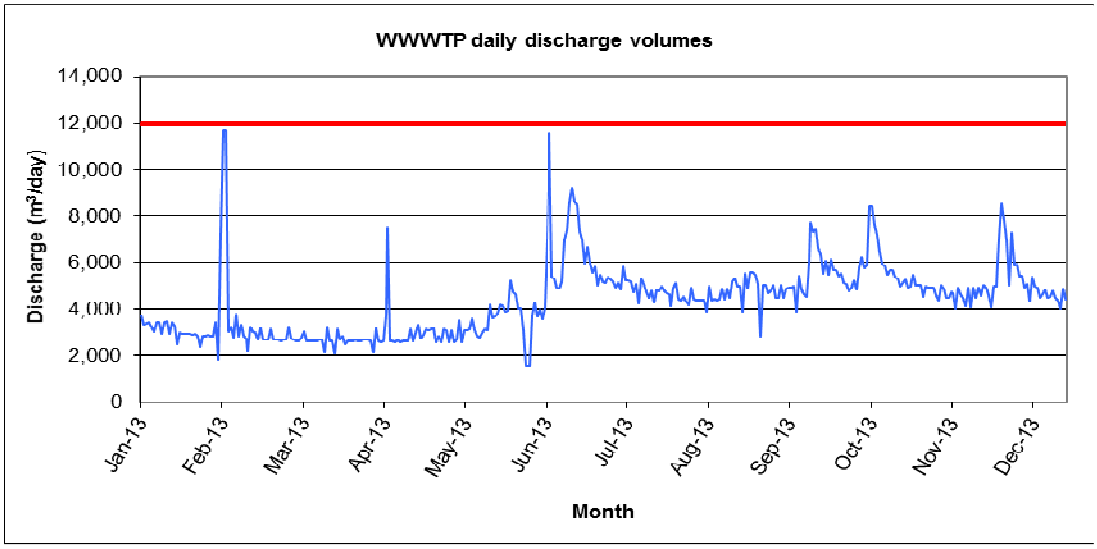

Figure 2 Total discharge volume per day from Waitara wastewater treatment plant during 2013 (consent limit shown in **red)**

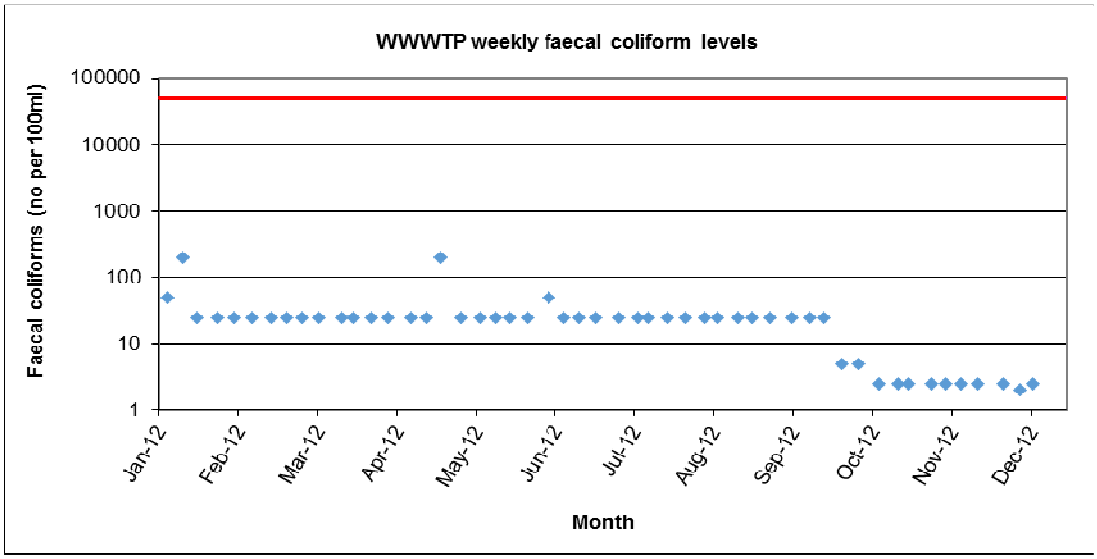

Figure 3 Weekly faecal coliform counts in Waitara wastewater discharge during 2012 (consent limit shown in **red)**

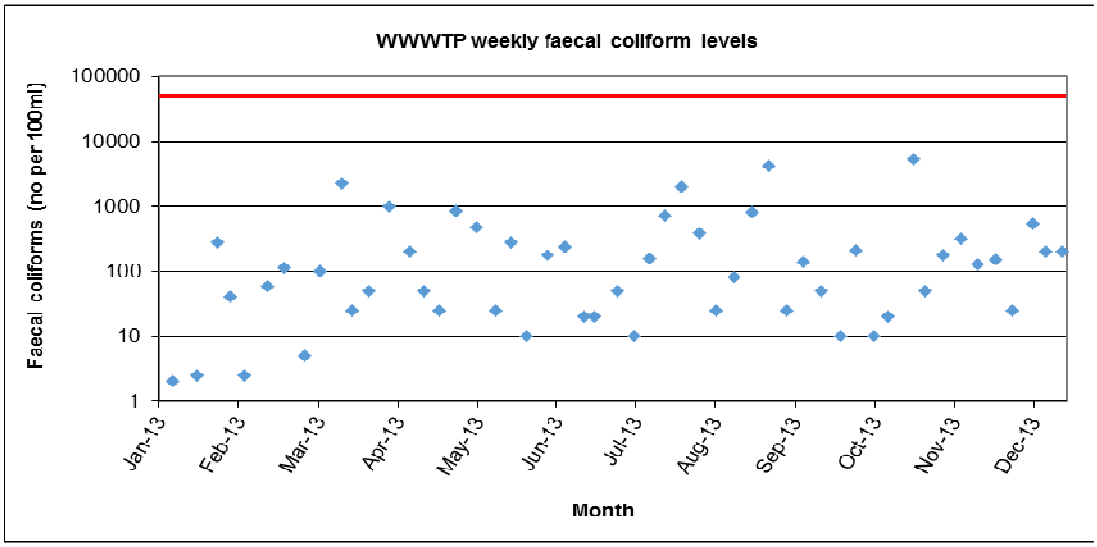

Figure 4 Weekly faecal coliform counts in Waitara wastewater discharge during 2013 (consent limit shown in **red)**

2.3 Inter-laboratory comparisons

The Council carried out compliance monitoring checks on 19 September 2012 and 13 June 2013. Split samples were collected from the incoming wastewater and the discharged effluent and analysed by NPDC and the Council. The results of the compliance monitoring and inter-laboratory comparisons are shown in Tables 5 – 8. The object of the inter-laboratory comparison is to provide a checking mechanism whereby the integrity of the data provided by NPDC to the Council can be validated.

Table 5 Results of inter-laboratory comparison between the Council and NPDC on WWWTP **influent** for 2012

Parameter	Unit	19 September 2012		
		NPDC	TRC	Agree?
Conductivity @20˚C	mS/m	41.3	36.8	*
pH	-	7.5	7.4	√
Alkalinity total	g/m^3	-	110	-
Suspended solids	g/m^3	124	120	√
COD	g/m^3	224	220	√
BOD	g/m^3	-	88	-
Total grease	g/m^3	22	17	*
Hydrocarbons	g/m^3	-	2.3	-
Ammoniacal nitrogen	g/m^3	13.8	13.8	√
Copper	g/m^3	0.01	0.01	√
Chromium	g/m^3	-	<0.03	-
Nickel	g/m^3	-	<0.02	-
Zinc	g/m^3	0.06	0.078	*
Lead	g/m^3	-	<0.05	-
Cyanide	g/m^3	-	<0.001	-
Cadmium	g/m^3	-	<0.005	-
Phenol	g/m^3	-	0.02	-
Faecal coliform	cfu/100mL	1.0 x 10^6	2.1 x 10^6	**
Enterococci	cfu/100mL	3.4 x 10^5	6.2 x 10^5	**

Key - = no analysis undertaken * = 10 – 25 % difference from mean
√ = acceptable agreement ** = > 25 % difference from mean

Table 6 Results of inter-laboratory comparison between the Council and NPDC on WWWTP **influent** for 2013

Parameter	Unit	13 June 2013		
		NPDC	TRC	Agree?
Conductivity @20˚C	mS/m	37.6	33.8	*
pH	-	7.1	7.3	√
Alkalinity total	g/m^3	-	101	-
Suspended solids	g/m^3	124	140	*
COD	g/m^3	314	130	**
BOD	g/m^3	-	100	-
Total grease	g/m^3	43	25	**
Hydrocarbons	g/m^3	-	3.4	-
Ammoniacal nitrogen	g/m^3	10.6	12	*
Copper	g/m^3	0.02	0.01	**
Chromium	g/m^3	-	<0.03	-

Parameter	Unit	13 June 2013		
		NPDC	TRC	Agree?
Nickel	g/m^3	-	<0.02	-
Zinc	g/m^3	0.05	0.050	**
Lead	g/m^3	-	<0.05	-
Cyanide	g/m^3	-	<0.001	-
Cadmium	g/m^3	-	<0.005	-
Phenol	g/m^3	-	<0.002	-
Faecal coliform	cfu/100mL	3.0 x 10^6	2.5 x 10^6	*
Enterococci	cfu/100mL	1.3 x 10^6	6.1 x 10^5	**

Key - = no analysis * = 10 – 25 % difference from mean
√ = acceptable agreement ** = > 25 % difference from mean

Table 7 Results of inter-laboratory comparison between the Council and NPDC on WWWTP treated **effluent** for 2012

Parameter	Unit	19 September 2012		
		NPDC	TRC	Agree
Conductivity@20˚C	mS/m	48.4	44.8	√
pH	-	10.8	11.0	√
Alkalinity total	g/m^3	-	240	-
Suspended solids	g/m^3	240	230	√
COD	g/m^3	-	260	-
Total grease	g/m^3	-	11	-
Ammoniacal nitrogen	g/m^3	-	8.92	-
Copper	g/m^3	-	0.01	-
Nickel	g/m^3	-	<0.02	-
Zinc	g/m^3	-	0.104	-
Faecal coliform	cfu/100mL	<50	95	**
Enterococci	cfu/100mL	-	1.4 x 10^5	-

Key - = no analysis * = 10 – 25 % difference from mean
√ = acceptable agreement ** = > 25 % difference from mean

Table 8 Results of inter-laboratory comparison between the Council and NPDC on WWWTP treated **effluent** for 2013

Parameter	Unit	13 June 2013		
		NPDC	TRC	Agree
Conductivity@20˚C	mS/m	58.6	33.4	**
pH	-	11.5	11.5	√
Alkalinity total	g/m^3	-	197	-
Suspended solids	g/m^3	146	150	√
COD	g/m^3	-	58	-
Total grease	g/m^3	-	<5	-
Ammoniacal nitrogen	g/m^3	-	7.12	-
Copper	g/m^3	-	<0.01	-
Nickel	g/m^3	-	<0.02	-
Zinc	g/m^3	-	0.022	-
Faecal coliform	cfu/100mL	240	160	**
Enterococci	cfu/100mL	-	9.3 x 10^4	-

Key - = no analysis * = 10 – 25 % difference from mean
√ = acceptable agreement ** = > 25 % difference from mean

In 2012 the influent samples had an acceptable agreement for pH, suspended solids, COD, ammoniacal nitrate and copper, while conductivity, total grease and zinc were within 10-25% of the mean. Faecal coliforms and enterococci were different between the two sample results.

In 2013 the influent samples only had an acceptable agreement for pH, with suspended solids, ammoniacal nitrogen and faecal coliforms being within 10-25% of the mean. Whereas COD, total grease, copper, zinc and enterococci had a >25% difference from the mean between the two laboratories results. Similar to the 2012 monitoring year, only one interlaboratory sample was undertaken.

For enterococci, NPDC uses the Slanetz and Bartley test method, a quick test with nutrient impregnated pads, to approximate numbers, whereas the Council uses the APHA method 9230 (mE) which is the guideline method required for monitoring of recreational waters. In addition, the large numbers of bacteria found can be in excess of 10% of the mean while still being in the same order of magnitude. In view of the fact that there is presently no requirement on NPDC to monitor for enterococci, the difference between enterococci results is simply noted.

In terms of the effluent samples for 2012, the conductivity, pH and suspended solids results were in acceptable agreement between NPDC and the Council, with faecal coliforms having greater than 25% difference of the means. For the 2013 effluent results, pH, and suspended solids were in acceptable agreement between NPDC and the Council. Conductivity and faecal coliforms were great than 25% different between the means.

2.4 Process control

Disinfection of bacteria at the WWWTP is achieved by elevation of pH via lime dosing. Consent **3397-2** has a minimum limit of pH 6 and a maximum limit of pH 12. However, there is a *process control limit* in place at the plant where the effluent must not be less than pH 10.8. The WWWTP strives to achieve a pH band between 10.8 and 12, with a target of better than 95% within process limits. Table 9 summarises the daily grab sample pH values recorded by the monitoring probe for the WWWTP for 2012 and Table 10 summaries for 2013.

Table 9 Summary of daily pH values for WWWTP effluent during 2012

Month	% pH >12	% pH = 10.8-12	% pH <10.8
January	0	80	20
February	0	74	26
March	0	76	24
April	1	57	42
May	1	71	28
June	0	69	31
July	0	73	27
August	2	60	38
September	10	73	17
October	0	74	26

Month	% pH >12	% pH = 10.8-12	% pH <10.8
November	3	65	32
December	1	65	34
Average %	**1.5**	**69.8**	**28.7**

Table 10 Summary of daily pH values for WWWTP effluent during 2013

Month	% pH >12	% pH = 10.8-12	% pH <10.8
January	3	75	22
February	1	38	61
March	4	46	50
April	6	59	35
May	4	72	24
June	37	60	3
July	24	71	5
August	20	79	1
September	18	81	1
October	23	73	4
November	2	68	30
December	6	69	25
Average %	**12.3**	**65.9**	**21.8**

In 2012, 69.8% of all daily pH readings showed complete consistency with the process control pH limit, whereas in 2013 there was 65.9% consistency with the process control pH limit.

Tables 9 & 10 show that 1.5% of readings were above both the consent (**3397-2**) and process control limits in 2012 and 12.3% in 2013. The high pH discharges were clustered around the time of heavy rainfall, with the inflow and infiltration altering the composition of the sewage and therefore the lime demand.

In June 2013 the highest percent of readings above the pH consent limit was recorded. An explanation was provided that the plant had issues with a faulty mixer in Lime Tank 1 during June 2013 which required the tank to be drained. Later that month the lime pumps and pipework became blocked with gravel. How the gravel entered a sealed system was not able to be determined.

Meanwhile in 2012, 28.7% of the readings were lower than the process control limit and in 2013, 21.8% of the readings were lower; although there were no discharges that had a pH lower than the consent limit of 6.

2.5 Contingency plans

Special condition 9 of consent **3397-2** requires that the consent holder is to update the contingency plan to be put into operation in the event of spillage or accidental discharge or pipeline failure.

During the 2012-2013 year the contingency plan was incorporated into the Incident Response Plan to reduce the duplication of documents. The Council received this Incident Response Plan in June 2013.

The plan describes the sewerage system, its maintenance programme and alarm mechanisms. Procedures for response to emergency discharge are laid down. Work was also undertaken with the Taranaki District Health Board to review the locations of signs to advise the public in the event of a discharge of partially or untreated sewage. An annual review is also being undertaken to incorporate additional feedback that the Council provided to NPDC t include more information in respect of pump models installed at each pump station. The Council considers the contingency plan to be satisfactory.

2.6 Annual report

Special condition 8 of consent **3397-2** requires NPDC to provide the Council with an annual report on the WWWTP waste disposal system before 31 July of each year.

The Council received two annual reports from NPDC during the monitoring period which extend from 1 January 2011 to 30 June 2012 (attached as Appendix II) and 1 July 2012 to 30 June 2013 (attached as Appendix III). In summary, the reports noted the following:

1 January 2012 – 30 June 2012

- Work towards addressing and removing illegal connections continued in 2012. Further works were underway to determine how best to achieve a significant reduction in inflow and infiltration.
- There were a number of overflows from pump stations in Waitara, including the Waitara WWTP, during the first six months of 2012. During this period the pump station overflowed for 285 minutes, representing less than 0.01% of the total operating time.
- Routine maintenance was undertaken over the year.
- The first six months of 2012 passed without any major problems with plant or buildings. The installed systems worked as they were designed. However, vandalism still continued to present a challenge. Generally all of the plant ran well and with the pro-active maintenance scheduling and continued up-skilling of staff, most problems were quickly rectified.
- Checking and cleaning of the milliscreens was conducted with no problems found during maintenance checks. It was noted that there were still significantly more solids being removed since ANZCO began to discharge to the Waitara plant.
- Routine maintenance was completed on the line pumps and overall the lime dosing system had run well.
- The report noted that there are a number of factors which have contributed to the continued poor performance in pH dosing. The ANZCO discharge can swing widely in pH which continues to present considerable challenges to process operations. The technicians at the WWWTP use a graph relating pH target, flow to plant, and lime dosing rate to achieve better control over the plant discharges. The strength of the ANZCO waste discharges has meant the established relationships are not always applicable. Therefore, technicians have been coordinating with the NPDC trade waste officer in reviewing the

discharges and its link to the operations and control. The variable weather conditions also make it difficult to predict where to set up operations for the best level of control. The technicians use weather forecasting to predict the lime dose, for example reducing the lime does set point if heavy rain is forecast. However, the weather forecasts have not always eventuated which sometimes results in quadrants being under-dosed. The technicians continue to focus on pH control to achieve target dose ranges.

- The outfall pump station was working well and only routine maintenance work was required to be undertaken.
- NPDC commissioned a contractor (OCEL) to undertake inspection dives along the outfall during 2012 and remedial works to a number of the outfall anchorages. Further work is required to complete the defects identified in previous inspections but dive conditions have prevented the work from being completed. As such, further dives are planned, subject to sea conditions. However, the outfall is still considered to be fit for purpose.

1 July 2012 – 30 June 2013

- Consent 3397-2 requirements state that the discharge volume shall not exceed 11,950m^3 and have a discharge rate of <138l/s within a 24 hour period, and this was complied with during the monitoring period. The highest daily discharge recorded was 11,664 m^3 however this is believed to be inaccurate due to a loss of telemetry data, but the next highest discharge was 11,577 m^3. The average daily discharge was 3,700 m^3.
- The construction of the Waitara to New Plymouth pipeline is nearing completion. The New Plymouth end had been connected into the wastewater treatment plant and testing was in progress. The detailed design of the conversion works at the WWWTP were being finalised with documents being prepared to call on tenders.
- It is a requirement of Consent 3397-2 that at least 98% of discharges fall within the range of pH 6 to pH 12. During the period of the NPDC Annual report, the pH was greater than 12 for 3,670 minutes (2.72%), however 1,040 minutes of this discharge was a result of a failure at the Waitara Outfall pump station. As a result, treated effluent overflowed into the sewer reticulation at the pump stations and was recirculated for further treatment.
- Discharge concentrations for suspended solids, COD, oil and grease, and ammoniacal nitrogen were sampled from 24 hour flow composite samples, with all samples resulting in 100% compliance with consent conditions.
- There was 100% compliance in the discharge of faecal coliforms.
- No visual effects beyond the 200 m mixing zone had been observed and no complaints were received.
- City Care now had the responsibility of the operation of the minor pump stations (overseen by NPDC) while NPDC still remain responsible for the operation of the WWWTP and Waitara Outfall pump station. City Care undertake the maintenance at these pump stations with a number of issues being identified, resulting in refurbishment of a number of pumps, mostly at Richmond Street.
- NPDC also assisted City Care in the optimisation of control for McNaughton Street and Queen Street pump stations to try and reduce the likelihood of screen over-washes through improving pump control to deliver a more uniform flow to the WWWTP.

- Routine maintenance was carried out at WWWTP during the year. Repairs have mostly been made rather than purchasing new, as a large proportion of the equipment will become redundant once the treatment plant is converted to a pumping station.
- Lime dosing was generally problem free until June 2013. However in June there were problems with one of the bearings in one lime tank and it is believed a contaminated load of lime was received into the remaining lime tank, damaging both lime dosing pumps, and a number of discharges were made without adequate lime dosing.
- A number of dives were undertaken by OCEL for repair work to the outfall pipeline anchorages. The anchorage repairs were mostly completed with work planned for the 2013-2014 summer to remove tubeworms that have grown on the pipe structure.
- NPDC submitted a contingency plan that has been incorporated as part of the Incident Response Plan to reduce duplication of documents.
- During the 2012-2013 period there were overflows at the pumping stations on 28 days, representing 0.7% of the total pumping days, equating to 6,025 minutes or 0.1% of the time. A significant proportion of this is attributed to a single event during September 2012 with a total overflow time of 4,226 minutes. The overflow occurred between the Waitara Outfall, Queen Street, McNaughton Street and Battiscombe Terrace due to a failure of the outfall pumps extending over a weekend.
- Work on identifying sources of infiltration continued, with $185,000 spent on lining the pipes in this catchment to reduce infiltration. During the period from March 2012 to April 2013 there was a reduction in inflow and infiltration.
- The conversion of the WWWTP to a transfer pump station is programmed for completion by the end of June 2014. An extension to the WWWTP has been undertaken to house new control cabinets and switchboards for this conversion.
- NPDC received 14 enquiries from customers in Waitara relating to sewer, wastewater treatment or on miscellaneous issues.
- An annual meeting was held on 6 December 2012 for interested parties so that NPDC could provide an update on the Waitara to New Plymouth pipeline and NPWWTP upgrade works as well as a summary of the monitoring undertaken in the last year relating to all consents.

2.7 Investigations, interventions, and incidents

The monitoring programme for the period under review was based on what was considered to be an appropriate level of monitoring, review of data, and liaison with the consent holder. During the year matters may arise which require additional activity by the Council e.g. 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.

The Council operates and maintains a register of all complaints or reported and discovered excursions from acceptable limits and practices, including non-compliance with consents, which may damage the environment. The Unauthorised Incident Register (UIR) includes events where the company concerned has itself notified the Council. The register contains details of any investigation and corrective action taken.

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 company is indeed the source of the incident (or that the allegation cannot be proven).

During the 2012-2013 monitoring period, there were seven incidents recorded by the Council that were associated with the WWWTP and associated pump stations. Over the period covering the report, the level of overflow reporting to the Council by NPDC has increased, with all recorded overflows being reported. For some discharges, it was clearly evident from the information provided that NPDC had operated in accordance with the approved Incident Response Plan and that no consent conditions had been breached, hence they were not recorded as incidents. The seven incidents described below were recorded in the Council's Incidents Register as further investigation was required to establish whether the Incident Response Plan had been adhered to. For six of the incidents it was found that the Incident Response Plan had been adhered to and that no follow up enforcement action was necessary. One incident (18 October 2013, described below) contravened the RMA and breached Special Condition 5, Consent 3397-2 resulting in an infringement notice being issued. This infringement notice has been taken into consideration when evaluating the environmental performance of the WWWTP for the 2013 year.

On 9 May 2012 an overflow occurred at the Queen Street pump station associated with an unplanned power outage. NPDC provided a letter of explanation that provided sufficient evidence that the Incident Response Plan had been adhered to and that the effects of the discharge would have been no more than minor.

In July 2012 notifications were received concerning two overflows from the Queen Street pump station and the Richmond Street Pump Station in Waitara. These notifications raised concerns with Council staff regarding frequency of events and whether the contingency plan was adhered to. A letter of explanation was provided by NPDC and accepted by the Council. NPDC were found to have operated in accordance with the approved Incident Response Plan.

On 9 September 2012 notification was received from NPDC about pump failures and possible overflows at some of the Waitara pump stations. An inspection of the pump stations found no evidence of any overflow or any noticeable odours around them. Further information received from NPDC showed that a discharge occurred as a result of failure of the duty and back up pumps. The problem was not apparent immediately due to failure with the alarm system. NPDC did operate in accordance with the approved Incident Response Plan and did not breach Special Condition 9 within Consent 3397-2.

On 27 December 2012 notification was received from NPDC regarding a sewage discharge into Unnamed Stream 64 from a broken pipe. Investigation found that the stream was running clean and clear. The pipe had been fixed the previous night and sewage was no longer discharging into the stream.

On 14 July 2013 notification was received concerning a sewage overflow on Queens Street, Waitara. City Care had undertaken works to control and fix the overflow. Inspection showed that a clean up had been undertaken and there were no visual effects on surrounding areas or water courses.

On 18 October 2013 notification was received concerning a discharge of sewage from the Waitara WWTP. A letter of explanation was received which outlined that a series of human errors had resulted in the discharge of approximately 361 m^3 of unscreened and untreated sewage to the Tasman Sea via the Waitara Outfall. The investigation by NPDC concluded the following causes:

1. Poor communication on methodology for work;
2. Different supervising technicians for the removal and installation of equipment;
3. Issues with obtaining appropriate authorisation;
4. Permit to work process not fully followed; and
5. Scada alarms not generated as expected.

As a result of this discharge NPDC were issued with an infringement notice (383).

On 6 November 2013 notification was received concerning a discharge of sewage from the Queen Street Pump Station, Waitara. The overflow alarm occurred when the electrician onsite became distracted during fault finding. In addition, the overflow alarm was triggered prematurely because the float had been set at the incorrect level. Due to the discharge of treated effluent from the WWWTP at the time, any discharge that occurred from the pump station as a result of this incident would have been substantially diluted. In response to the potential discharge NPDC operated in accordance with the approved Incident Response Plan.

In the Waitara Municipal Wastewater Discharge Consent 3397 Annual Report provided by NPDC it is reported that the total time overflows occurred from pump stations in Waitara, including the WWWTP during the first six months of 2012 accounted for less than 0.01% of the total time the WWWTP was operating. On each overflow occasion a letter of explanation was provided by NPDC and accepted by the Council as the letters provided sufficient evidence that the Incidence Response Plan was adhered to and that the likely environmental effects from the discharge would be less than minor.

In the Waitara Municipal Wastewater Discharge Consent 3397-2 Annual Report provided by NPDC it is reported that the total time overflows occurred from pump stations in Waitara, including the WWWTP during 1 July 2012 to 30 June 2013 accounted for less than 0.1% of the total time the WWWTP was operating.

NPDC advised that a significant proportion of the overflows was attributed to a single event during September 2012 with overflows from the Waitara Outfall, Queen Street, McNaughton Street and Battiscombe Terrace pump stations. The overflows were due to a failure of the outfall pumps which extended over a weekend.

3. Discussion

3.1 Discussion of plant performance

Variations in flow and quality of the WWWTP influent streams have been reduced through the continued reduction of stormwater infiltration and ingress into the sewerage system.

An annual report for the 2012 and 2013 monitoring period was submitted by NPDC.

The WWWTP contingency plan was updated and incorporated as part of the Incident Response Plan and this was received in June 2013.

3.2 Environmental effects of exercise of consents

The Council has in place separate monitoring programmes to assess the marine ecology and microbiology of the Waitara marine outfall which are reported on separately (TRC technical reports 13-52 and 13-85).

3.2.1 Council inspections

Three inspections of the WWWTP, sewerage pump stations, and Waitara foreshore were undertaken during the period under review. In general, these areas were found to be of a satisfactory standard and in compliance with the consent.

Records of daily discharge volumes through the WWWTP revealed the consent limit was not breached during the monitoring period.

The pH of the effluent has an upper and lower consent limit of 12 and 6. However, as disinfection of bacteria at the WWWTP is achieved by elevation of pH via lime dosing, NPDC has a process control limit in place to maintain the pH between 10.8 and 12 to ensure that correct dosing occurs.

In 2012 daily testing of pH limits showed that the pH was in compliance with the process controls for 69.8% of the readings. 1.5% of the readings were above both the consent and process limits (excessive use of lime), while 28.7% of the readings were low (but not below consent limits).

Whereas in 2013 daily testing of pH limits showed that the pH was in compliance with the process controls for 65.9% of the readings. 12.3% of the readings were above both the consent and process limits (excessive use of lime), while 21.8% of the readings were low (but not below consent limits).

There was 100% compliance within the microbiological limits within the consent, across all measurements.

All other parameters complied with consent conditions during the monitoring period.

Two inter-laboratory comparisons were undertaken during the monitoring period, generally there was good agreement achieved between the two laboratories for the parameters tested.

3.3 Evaluation of performance

A summary of the consent holder's compliance record for the period under review is set out in Tables 11 and 12.

Table 11 Summary of performance for Consent 3397-2 to discharge up to 11,950 m^3/day of treated municipal wastes generated in Waitara Township via a marine outfall

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Discharge volume < 11,950 per 24 hours and <138 l/sec	Monthly reports forwarded to Council	Yes
2. Discharge to cease once Waitara to New Plymouth pipeline is commissioned	Pipeline still being completed	N/A
3. pH of discharge 6-12 in 98% samples over 12 month period	Data submitted to Council in monthly and annual reports by NPDC	Yes – 2012 **No - 2013**
4. Suspended Solids, COD, Oil & Grease and Ammoniacal Nitrogen not to exceed maximum concentrations	Data submitted to Council in monthly and annual reports by NPDC	Yes
5. Feacal coliforms in discharge not to exceed 50,000 cfu/100ml	Data submitted to Council in monthly and annual reports by NPDC	**Yes - 2012** **No – 2013 Infringement notice issued October 2013 regarding sewage discharge**
6. Discharge not to give rise to effects in Tasman Sea beyond 200 m mixing zone	Monitored as part of Council Beach Bathing Programme	Yes
7. Consent holder to forward monitoring results monthly	Monthly electronic reports provided by NPDC, including a comprehensive explanation of results.	Yes
8. Annual report due by 31 July each year	Report received July 2013	Yes
9. Consent holder to update Contingency Plan	Plan updated and incorporated as part of Incident Response Plan, received June 2013	Yes
10. Reports on inflow and infiltration and construction of the Waitara to New Plymouth pipeline update	Reports received	Yes
11. Notification of new or modified trade waste agreements	No new Trade Waste Consents granted and no modifications to existing consents.	N/A
12. Placement and maintenance of four signs on or near the Waitara shoreline	Signs erected. Wording agreed with TDHB	Yes
13. Record of complaints	NPDC received 14 enquiries from customers in Waitara township	Yes
14. Annual meeting of submitters and interested parties	Held on 6 December 2012	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
15. Survey of microbiological contamination in mussels after commissioning of Waitara to New Plymouth pipeline	To be undertaken following commissioning of pipeline	N/A
16. Optional review of consent		N/A
Overall assessment of consent compliance and environment performance in respect of this consent		**Good – 2012** **Improvement required - 2013**

N/A = not applicable

Table 12 Summary of consent 4599-2 to erect, place and maintain a marine outfall structure and to occupy the associated coastal space

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Maintain outfall structure to satisfaction of Council	A commercial diver survey was undertaken to inspect the integrity of the outfall in 2011 – maintenance of the pipeline was also carried out at this time. . A number of dives were undertaken during 2012-2013 to repair the outfall pipeline anchorages.	Yes
2. Notification prior to maintenance work	Notification received	Yes
3. Optional review of consent	Next scheduled in June 2015, if required	N/A
Overall assessment of consent compliance and environment performance in respect of this consent		**High**

In 2012 daily pH readings exceeded the consent limit for 1.5% of the time and 12.3% of the time in 2013. There would be at most negligible effects from these exceedances. While pH values below the plants' target value of 10.8 indicates a potential for incomplete disinfection. In 2012 the pH was below 10.8 for 28.7% of the time in 2012 and 21.8% of the time in 2013, although no discharges had a pH lower than the consent limit of 6. Other than the incident in October 2013 regarding the infringement notice, there was no evidence that microbiological levels exceeded the consent limit.

During the 2012-2013 monitoring period, there were seven incidents recorded by the Council that were associated with the WWWTP and associated pump stations. NPDC provided the Council with evidence that it had operated in accordance with the approved Incident Response Plan and that no consent conditions had been breached for six of these incidents. However the incident on 18 October 2013 was found to breach Special Condition 5 of Consent 3397-2 and an infringement notice was issued.

During the monitoring period, NPDC demonstrated a good level of environmental performance and compliance with the resource consents in 2012. However, based on the 2013 record, improvement is required with the performance and extent of compliance by NPDC with Consent 3397-2 in relation to the WWWTP.

3.4 Recommendations from the 2011 Annual Report

In the 2011 Annual Report, it was recommended:

1. THAT monitoring of discharges from the Waitara Wastewater Treatment Plant in the 2012 year continues at the same level as in 2011.

This recommendation was followed in 2012 and in 2013.

3.5 Alterations to monitoring programmes for 2014

In designing and implementing the monitoring programmes for water discharges in the region, the Council has taken into account the extent of information made available by previous authorities, its relevance under the Act, the obligations of the Act in terms of monitoring discharges and effects, and subsequently reporting to the regional community, 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 discharging to the environment.

The Waitara Wastewater Treatment Plant programme for 2012 and 2013 was unchanged from that for 2011, on the grounds that there were no adverse environmental effects. Similarly, it is proposed that for 2014, the monitoring programme remains unchanged. A recommendation to this effect is attached to this report.

4. Recommendations

1. THAT monitoring of discharges from the Waitara Wastewater Treatment Plant in the 2014 year continues at the same level as in 2012 and 2013.

Glossary of common terms and abbreviations

The following abbreviations and terms are used within this report:

BOD	biochemical oxygen demand. A measure of the presence of degradable organic matter, taking into account the biological conversion of ammonia to nitrate
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 20°C and expressed in mS/m
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
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
NPWWTP	New Plymouth Waste Water Treatment Plant.
Oil & 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)
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.
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 subsequent amendments
UI	Unauthorised Incident - an event recorded by the Council on the basis that it had potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan
UIR	Unauthorised Incident Register

For further information on analytical methods, contact the Council's laboratory

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Appendix I

Resource consents for
Waitara Waste Water Treatment Plant

TARANAKI REGIONAL COUNCIL
CHIEF EXECUTIVE
PRIVATE BAG 713
47 CLOTEN ROAD
STRATFORD
NEW ZEALAND
PHONE: 06-765 7127
FAX: 06-765 5097
www.trc.govt.nz
Please quote our file number on all correspondence

Coastal Permit

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

Name of Consent Holder:	New Plymouth District Council Private Bag 2025 NEW PLYMOUTH 4342
Decision Date:	15 November 2011
Commencement Date:	13 December 2011

Conditions of Consent

Consent Granted:	To discharge up to 11,950 m^3/day (138 litres/second) of treated wastewater from the Waitara Wastewater Treatment Plant into the Tasman Sea via the Waitara Marine Outfall at or about (NZTM) 1705938E-5685058N
Expiry Date:	1 June 2017
Review Date(s):	Within one month of receiving notification of a new and/or modified trade waste agreement required under condition 11
Site Location:	Waitara Marine Outfall - At Or Beyond 1250 Metres off-shore from the Waitara River Mouth
Catchment:	Tasman Sea Waitara River

For General, Standard and Special conditions pertaining to this consent please see reverse side of this document
www.trc.govt.nz

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 to section 36 of the Resource Management Act.

Special conditions

Effluent quality and standards

1. The discharge volume over any 24-hour period shall not exceed 11,950m^3 and the rate of discharge shall not exceed 138 litres/second.

2. The consent holder shall cease the discharge authorised by this consent as soon as practicable after the Waitara to New Plymouth pipeline is commissioned to pump Waitara wastewater to the New Plymouth Wastewater Treatment Plant for treatment, bearing in mind the requirements of condition 15.

3. The pH of the discharge shall be within the range of pH 6 to pH 12 in at least 98% of the monitoring samples undertaken over any 12 month period ending 30 June.

4. On the basis of 24-hour flow proportioned composite samples, constituents of the discharge shall not exceed the following concentrations:

Constituent	Maximum concentration (g/m^3)
Suspended solids	1000
Chemical oxygen demand	800
Oil and grease	200
Ammoniacal nitrogen	50

5. On the basis of grab samples taken, the concentration of faecal coliforms in the discharge shall not exceed 50,000 per 100 millilitres.

6. 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 or suspended materials;
   (b) any conspicuous change in the colour or visual clarity;
   (c) any emission of objectionable odour; and
   (d) any significant effects on aquatic life.

Monitoring and reporting requirements

7. The consent holder shall monitor and record the parameters of the discharge to demonstrate that the conditions of this consent are being complied with. This record shall be in an electronic format and submitted to the Taranaki Regional Council on a monthly basis. The consent holder is to consult with the Taranaki Regional Council as to the record format. Following this consultation, the record format is to be undertaken as advised by the Chief Executive, Taranaki Regional Council.

8. The consent holder shall prepare and submit an Annual Report to the Chief Executive, Taranaki Regional Council, by 31 July each year that includes, but is not necessarily limited to, the following information:

   (a) details of any plant maintenance undertaken and an overview of the plant performance;
   (b) details of any outfall or pump station(s) maintenance undertaken and an overview of the performance of the outfall and pump stations;
   (c) details of any overflow events and/or system failures which result in untreated or partially treated wastewater discharges at the plant and/or pump stations; and
   (d) details of any complaints received in accordance with condition 13.

Overflow contingency plan

9. The consent holder shall review and update the *NPDC Sewer System Emergency Contingency Plan* (dated August 2008) in consultation with the Taranaki District Health Board. The updated Plan shall detail measures and procedures to be undertaken to prevent the discharge of partially or untreated wastewater from the Waitara wastewater reticulation network or treatment plant not authorised by this consent and measures to avoid, remedy or mitigate the environmental effects of such a discharge. The plan shall be submitted for approval to the Chief Executive, Taranaki Regional Council, acting within a certification capacity, within three months of the date of commencement of this consent.

   The consent holder shall operate in accordance with the approved Plan.

Inflow and Infiltration, and transfer pipeline construction

10. The consent holder shall prepare and submit a report (annually for the information required by subconditions (a) and (b), and quarterly for the information required by subconditions (c) and (d)) that includes, but is not necessarily limited to, the following information:

    (a) details of the proposed works, staging and a timeline for reducing inflow and infiltration to a level where the 'Waitara to New Plymouth sewer pipeline' will continue to meet the design specifications in achieving an overflow frequency discharge occurrence of <1% per year, averaged over a five year period;
    (b) in relation to a) above, details of the progress undertaken towards achieving the specified works;

(c) details of the proposed works, staging and a timeline for constructing and commissioning the 'Waitara to New Plymouth sewer pipeline'; and
(d) in relation to c) above, details of the progress undertaken towards achieving the specified works.

The report in (a) and (b) shall be submitted to the Chief Executive, Taranaki Regional Council, by 15 December of each year.

The report in (c) and (d) shall be submitted to the Chief Executive, Taranaki Regional Council, by 31 March, 30 June, 30 September, and 15 December of each year until implementation is complete.

Trade waste agreements

11. The consent holder shall notify and consult with the Taranaki Regional Council if any new trade waste agreements are formed and/or any existing trade waste agreements are modified, for which it may be appropriate or necessary to place limits on the concentrations of the treated wastewater of any toxic or hazardous contaminants which may be contained in that trade waste. If such limits are considered necessary, a review of the consent conditions may be undertaken in accordance with condition 16 of this consent.

Signage

12. The consent holder shall maintain four signs placed on or near the shoreline in the following areas:

(a) Waitara West Beach – Marine Park and Battiscombe Terrace Reserve; and

(b) Waitara East Beach – near the Waitara Swimming and Surf Life Saving Club and the termination of the access walkway by the Waitara Golf Club;

The consent holder shall consult with Taranaki District Health Board regarding the wording of the signs to ensure that the signs advise the public of the discharge of untreated sewage and appropriately inform the community of the potential health risks.

Complaints

13. The consent holder shall keep a record of any complaints that are received. The record shall contain the following details, where practicable:

(a) name and address of the complainant;
(b) identification of the nature of the complaint;
(c) date and time of the complaint and of the alleged event;
(d) weather conditions at the time of the complaint; and
(e) any measures taken to address the cause of the complaint.

The consent holder shall notify the Taranaki Regional Council of any complaints relating to the exercise of this consent, and forward on any details recorded in relation to any complaint[s] received, as soon as practicable.

The consent holder shall also provide details of any complaints received in the Annual Report required by condition 8.

Note: For notification purposes, at the grant date of this consent, the Taranaki Regional Council's phone number is 0800 736 222 [24 hour service].

Community liaison

14. At least once a year the consent holder shall convene a meeting of representatives of Taranaki Regional Council, Otaraua, Manukorihi, Ngati Rahiri, and other interested submitters on application 5011, to discuss any matter relating to the operation or monitoring of this consent.[1]

Virus monitoring

15. The consent holder shall survey for microbiological contamination within mussel shellfish from two impact sites and one control site on one occasion and as soon as practicable following the commissioning of the 'Waitara to New Plymouth sewer pipeline'. The results of the survey shall be provided to the Taranaki Regional Council and the Taranaki District Health Board. The consent holder shall consult with the Taranaki Regional Council in regards to the survey methodology, timing of the survey and reporting requirements.

The consent holder shall not surrender this consent prior to the requirements of this condition being fulfilled.

Review

16. In accordance with sections 128 and 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 within one month of receiving notification of a new and/or modified trade waste agreement required under condition 11 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, and in particular to address any more than minor adverse effects relating to coastal water quality.

Signed at Stratford on 13 December 2011

For and on behalf of
Taranaki Regional Council

Director-Resource Management

[1] For the avoidance of doubt, this meeting can be combined with the annual meetings required under consents 0882-4 and 7861-1.

Consent 4599-2

TARANAKI REGIONAL COUNCIL
CHIEF EXECUTIVE
PRIVATE BAG 713
47 CLOTEN ROAD
STRATFORD
NEW ZEALAND
PHONE: 06-765 7127
FAX: 06-765 5097
www.trc.govt.nz

Please quote our file number on all correspondence

Coastal Permit

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

Name of Consent Holder:	New Plymouth District Council & Methanex Motunui Ltd Private Bag 2025 NEW PLYMOUTH 4340
Consent Granted Date:	14 September 2007

Conditions of Consent

Consent Granted:	To erect, place and maintain a structure [known as the "Waitara Marine Outfall"] and to occupy the associated space in the coastal marine area at or about 2615700E-6246700N
Expiry Date:	1 June 2021
Review Date(s):	June 2009, June 2015
Site Location:	Tasman Sea
Catchment:	Tasman Sea Waitara

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 structure authorised by this consent is as shown in drawing DR-960312-005 [prepared by OCEL Consultants Ltd and provided with the application]. The consent holder shall ensure that at all times the structure is maintained to standard fit for the purpose it was designed and substantially in accordance with drawing DR-960312-005.

2. That the consent holders shall notify the Taranaki Regional Council at least 24 hours prior to undertaking any maintenance works. Notification shall include the consent number and a brief description of the activity consented and be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable only if the consent holder does not have access to email.

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 2009 and/or June 2015, 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 14 September 2007

For and on behalf of
Taranaki Regional Council

Chief Executive

Appendix II

Waitara Wastewater Treatment Plant
Annual Report 1 January 2011 to 30 June 2012

NEW PLYMOUTH DISTRICT COUNCIL
newplymouthnz.com

WAITARA MUNICIPAL WASTEWATER DISCHARGE CONSENT TRK 89/3397

ANNUAL REPORT

1 January 2011 to 30 June 2012

CONTENTS

Prepared by:
David Nepia
WASTEWATER TREATMENT PLANT SUPERINTENDENT
Graeme Pool
MANAGER OPERATIONS WATER & WASTES

File: WW 08 04 20 06

1. INTRODUCTION

This report is submitted to satisfy condition 14 of Discharge Consent TRK 89/3397.

2. RETICULATION

Work towards addressing and removing illegal connections has continued in 2011.

Further works are underway to determine how best to achieve significant reduction in inflow and infiltration with available budgets.

3. PUMP STATIONS

3.1. Sewage Discharges Directly to Environment

There were a number of overflows from pump stations in Waitara and including Waitara WWTP during 2011. There are a total of 4.73million operating minutes during 2011 across all 9 pump stations. The total minutes of overflow recorded during 2011 was 5007, of which 3460minutes of overflow took place at the end of December as a result of 124mm of rain falling on 30 & 31 December. The total minutes of overflow represents approx 0.1% of the total operating time.

In the period from 1 January 2012 to 30 June 2012 the pump station overflows were much reduced compared to the totals for 2011 but similar to the same 6 month time period in 2011. In total the pump station in Waitara overflowed for 285 minutes which represents less than 0.01% of the total operating time.

3.2. Pump Station Maintenance

Routine maintenance was undertaken over the year.

4. WAITARA WASTEWATER TREATMENT PLANT

4.1. General

The year passed without any major problems with plant or buildings. The installed systems are working as designed.

Vandalism still continues to present a challenge.

Generally all of the plant ran well and with the pro-active maintenance scheduling and continued up-skilling of the staff, most problems were quickly rectified.

4.2. Milliscreens

Checking and cleaning of these screens has been done and no problems were found during maintenance checks. Still significantly more solids are being removed since ANZCO began to discharge to the plant.

4.3. Lime Dosing

Routine maintenance was completed on the lime pumps. Overall, the lime dosing system has run well.

4.4. Effluent Retention Tanks

Quadrant level detectors and transmitters were replaced along with quadrant mixer removal for maintenance.

4.5. Non-Complying Discharges

A number of factors have contributed to the poor performance in this area. The ANZCO discharge which can swing widely in pH continues to present considerable challenges to process operations.

Technicians use a graph relating pH target, flow to plant and lime dosing rate to achieve better control over the plant discharges. ANZCO discharges strength of waste has meant the established relationships are not always applicable. Technicians have been coordinating with our tradewaste officer in reviewing discharges and its link to our operations and control.

Variable weather conditions make it difficult to predict where to set up operations for the best level of control. Technicians use weather forecasting to predict the lime dose, for example reducing the lime dose set point if heavy rain is forecast. The weather forecasts have not always eventuated resulting sometimes in quadrants being under-dosed.

1.0 pH unit swings between successive discharges meant lime dosing needed to be run close to the upper limit to ensure faecal coliform kill. The source of the pH swings is believed to be tradewaste discharges as indicated above. This has meant dose rates were often just above the 11.5 pH upper limit.

Technicians continue to focus on pH control. This has resulted in more successful intervention to achieve target dose ranges.

4.6. **Waitara WWTP % Discharges within limits (Target Max pH = 11.5)**
The council's goal is to be better than 95% compliant in all months.

During this year New Plymouth District Council introduced a new data storage and analytical tool called Water Outlook. As a result of the additional information captured and the ability to easily extract and manipulate the data the monthly reports were amended to demonstrate compliance with resource consent on a smaller time interval during each discharge rather than based on a average value per discharge. The amended reporting has been issued to TRC monthly throughout the year.

During 2011 1424mm of rainfall was recorded. On the wettest day 92mm or rain was recorded which led to 15 discharges. A total volume of 1,245,303m3 of effluent was discharged. The volume discharged per day fell within the resource consent conditions. The average daily discharge was 3,412m3 with a maximum volume discharged of 9455m3 and a minimum of 1286m3

Waitara WWTP discharged to the environment via the outfall pipe on 1474 discrete occasions and for a total of 141,750 minutes During 2011 the discharge exceed the upper consent limit for pH for 16% of this time (22,690 minutes). At no time did the discharge fall below the minimum pH discharge consent condition

Effluent grab samples were tested regularly. The consent compliance requires a maximum of 50000faecal coliforms per 100ml. During 2011 the results gave a maximum count of 5450 faecal coliforms per 100ml and an average count of 203.

A new discharge consent was granted on 13 December 2011. The consent raised the upper pH limit from 11.5 to 12. The total daily flow limit was also increased from 11664m3 to 11950m3

In the period to 30 June 582mm of rainfall was recorded. On the wettest day 99mm or rain was recorded which led to 11 discharges. A total volume of 555,697m3 of effluent was discharged. The volume discharged per day fell within the resource consent conditions. The average daily discharge was 3,250m3 with a maximum volume discharged of 11581m3 and a minimum of 1901m3

In this period, Waitara WWTP discharged to the environment via the outfall pipe on 617 discrete occasions and for a total of 60,010 minutes. The discharge exceed the upper consent limit for pH for <1% of this time (230 minutes). At no time did the discharge fall below the minimum pH discharge consent condition (numbers correct up to 18 June 2012)

Effluent grab samples were tested regularly. The consent compliance requires a maximum of 50000faecal coliforms per 100ml. During 2011 the results gave a maximum count of 200 faecal coliforms per 100ml and an average count of 42.

WAITARA OUTFALL

4.7. Outfall Pump Station

The pump station is working well and only routine maintenance work was required to be undertaken.

4.8. Outfall Pipeline

A number of dives were undertaken between January 2011 and June 2012 by OCEL. Further inspection work was undertaken along with remedial works to a number of outfall anchorages. Further work is required to complete the defects identified in previous inspections but the dive conditions have prevented the work from being completed. Further dives are planned subject to sea conditions. The outfall remains fit for purpose.

Appendix III

Waitara Wastewater Treatment Plant
Annual Report 1 July 2012 to 30 June 2013

Te Kaunihera-ā-Rohe o Ngāmotu
NEW PLYMOUTH DISTRICT COUNCIL
newplymouthnz.com

WAITARA MUNICIPAL WASTEWATER

DISCHARGE CONSENT

3397-2

ANNUAL REPORT

1 July 2012 to 30 June 2013

Prepared by: Graeme Pool
MANAGER OPERATIONS WATER & WASTES

Date: 31 July 2013
Version: One
Document: 1450556
File: WW 08 04 20 06

1 INTRODUCTION

Coastal Permit Consent 3397-2 commenced on 13 December 2011. This consent permits the discharge of up to 11,950m^3 of treated wastewater from the Waitara Wastewater Treatment Plant into the Tasman Sea via the Waitara Marine Outfall. The consent contains 16 special conditions.

This report is submitted to satisfy condition 8 of Consent 3397-2 which requires an annual report to be submitted detailing as a minimum:

a) Plant maintenance and an overview of plant performance

b) Pump station maintenance and overview the outfall and pump station performance

c) Details of any overflows and / or system failures resulting in untreated or partially treated discharges

d) Details of any complaints in accordance with condition 13

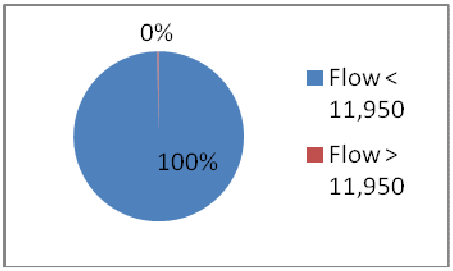
In addition to the above minimum information this report also includes performance data in relation to the other special conditions.

2 COMPLIANCE WITH SPECIAL CONDITIONS

2.1 Special condition 1

Special condition requires that the volume of discharge measured over a 24 hour period shall not exceed 11,950m^3 and the rate of discharge shall not exceed 138l/s.

This condition has been complied with during the year. Daily data has been provided with the monthly reports submitted to TRC. The highest daily discharge recorded was 11664m^3 which was recorded on occurred on 2nd and 3rd February. This data is incorrect and resulted as a loss of telemetry data. The next highest value was 11577m^3 recorded on 11 June 2013. The average daily discharge was 3700m^3



2.2 Special condition 2

Stipulates that the discharge authorised by the consent 3397-2 be ceased as soon as practicable after the Waitara to New Plymouth pipeline is commissioned.

The construction of the pipeline is nearing completion with the pipeline laid from Waitara to New Plymouth. The New Plymouth end of the pipeline has been connected

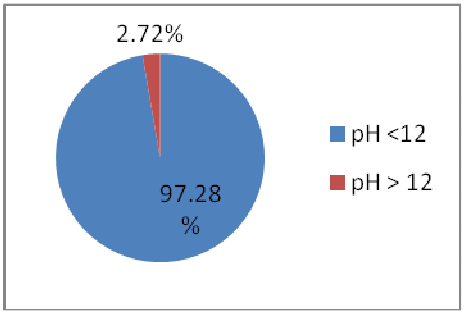
into the Wastewater treatment plant. Testing of the pipeline is in progress. Detailed design of the conversion works at Waitara WWTP are being finalised and documents are being prepared in readiness to call tenders.

2.3 Special condition 3

Special condition 3 relates to the pH of discharges from Waitara WWTP and requires that at least 98% of discharges fall within the range pH6 to pH12.

This appears to be a generous range for compliance however it should be recognised that in order to achieve disinfection the lower target from an operational perspective is around pH10.8.

Detailed daily reports for compliance have been provided within the monthly reports supplied to TRC. Of a total 134,840 minutes discharging, the pH exceeded 12 for 3670 minutes. 1040 minutes occurred between 9th and 11th September as a result of failure of the Waitara Outfall pump station. This resulted in treated effluent overflowing into the sewer reticulation at pump stations and the treated effluent being recirculated for further treatment.



2.4 Special condition 4

Special condition 4 stipulates the maximum concentrations of Suspended Solids Chemical Oxygen Demand, Oil and Grease, and Ammonical Nitrogen. These criteria are sampled on the basis of a 24 hour flow proportion composite sample.

Constituent	units	Concentration not greater than:	Sample location	Number of samples taken	% compliance
Suspended Solids	g/m³	1000	EFFLUENT	34	100%
Chemical Oxygen Demand	g/m³	800	Influent	8	100%
Oil and Grease	g/m³	200	Influent	8	100%
Ammoniacal Nitrogen	g/m³	50	Influent	8	100%

2.5 Special condition 5

On the basis of grab samples the concentration of faecal coliforms in the discharge shall not exceed 50,000 per 100 millilitres

Constituent	units	Concentration not greater than:	Sample location	Number of samples taken	% compliance
Faecal Coliforms	No/100ml	50,000	EFFLUENT	34	100%

2.6 Special condition 6

Beyond a 200m mixing zone in the Tasman Sea, the discharge shall not give rise to

a) conspicuous oil, grease, scum, foam, or suspended solids

b) Conspicuous change in colour or clarity

c) Emission of any objectionable odour

d) Any significant effects on aquatic life

NPDC have not observed or been made aware of any of these conditions being observed. TRC undertake routine sampling to determine any effects on aquatic life. No information has been passed to NPDC to suggest that any effects have been noted.

2.7 Special condition 7

This consent condition requires that monthly reports are submitted in electronic format to TRC to demonstrate compliance.

Monthly reports have been provided as required under this consent condition. The monthly reports have included a summary narrative of any key issues during each month and any significant maintenance or plant issues. With effect from July 2013 each electronic monthly report will include additional information which provides summary compliance data for the preceding 12 month period.

2.8 Special condition 8

This condition requires an annual report to be submitted. Additional information specified to be included in the annual report but not addressed separately under any other special condition is provided below.

2.8.1 Pump Stations

City Care assumed responsibility, overseen by NPDC, for routine operation of the minor pump stations with NPDC staff continuing to assume responsibility for operation of Waitara WWTP and Waitara Outfall Pump Station. Routine maintenance was undertaken over the year by City Care Limited under a new contract. A number of issues were identified at pump stations by City Care which resulted in refurbishment of a number of pumps; mostly at? Richmond St. Working with Xylem to attempt to address frequent blocking of pumps at McNaughton St a trial installation of a chopping impellor was intended. However on returning the pumps to Xylem for fitting of the new impellor it was identified that the existing pumps were in a poor state of repair. An alternative set of pumps with improved hydraulics, solids handling and blocking resistance were ordered and delivered late in June. These will be installed during July 2013.

NPDC I & E team also assisted in the optimisation of control for McNaughton St and Queen St pump stations with a view to reducing the likelihood of screens overwashes by improving pump control to deliver a more uniform flow to the WWTP.

2.8.2 Waitara Wastewater Treatment Plant

Routine maintenance has been undertaken as required during the year. The extent of maintenance undertaken has taken into account that a large proportion of the equipment will become redundant once the treatment plant is converted to a pumping station.

For the most part, repairs have been made rather than purchasing new equipment. Two quadrants are unserviceable due to seized outlet valves. This has been the case for two years however it is not possible to free these valves without removing four quadrants from service. Mixers have been taken from these out of service quadrants to replace failed mixers in otherwise usable quadrants.

Lime Dosing has generally been problem free until June 2013. Initially the bottom steady bearing in one lime tank failed and caused excessive vibration of the mixer shaft which then became distorted. The lime tank was emptied to allow the bottom bearing to be replaced including shortening of the shaft and raising the bottom bearing to allow the distortion to be cut out. While this work was in progress it is suspected that a contaminated load of lime was received into the remaining lime tank. The contamination included hard chips of stone which damaged both lime dosing pumps. Operators responded to the failed pumps before identifying that the issue was within the lime slurry. As a result a number of discharges were made without adequate lime dosing. To reduce the risk of future problems it is planned to replace the remaining bottom steady bearings in the second lime tank and to fully clean out the tank of any residual stone chips. McDonalds Lime denies that the contamination could have arisen in their manufacturing or transport process. The lime delivery and dosing system at Waitara is a closed system with nowhere that stone chip could be inadvertently introduced.

2.8.3 Waitara Outfall Pumping Station

During 2012 issues became apparent with the variable speed drives for outfall pump no 2. A replacement drive was ordered and installed but there was a compatibility issue with the old electrical control equipment and the new drive. After a lengthy period of time attempting to configure the new drive it became apparent that the most effective solution would be to replace the two remaining variable speed drives and the PLC and to rewrite the PLC programme. These control issues contributed to the overflow event of September 2012 where Pump 1 failed but the auto control system was unable to skip the out of service pump 2 and revert to Pump 3 as the standby pump. The control system also failed to generate the high level alarms that would otherwise have alerted operations staff to the problem. Work is well underway with re writing and testing the new control programme in the new PLC hardware. The new drives and control will be installed and commissioned by the end of August 2013.

2.8.4 Waitara Outfall

A number of dives were undertaken by OCEL to undertake repair work to the outfall pipeline anchorages. The anchorage repairs are now mostly complete and work will begin next summer on removing tubeworm that has grown on the pipe structure.

2.9 Special condition 9

A Contingency Plan is required. The NPDC Sewer System Emergency Discharge Contingency Plan is to be reviewed and updated in consultation with TRC and TDHB.

The Contingency Plan was reviewed and submitted for approval within the three months of the commencement of this consent as required. During the 2012/13 year, the contingency plan was incorporated into the Incident Response Plan to reduce duplication of documents. Work was undertaken with TDHB to review the locations of signs to advise the public in the event of a discharge of partially or untreated sewage. The annual review is currently underway to incorporate additional feedback received from TRC to include more information in respect of pump models installed at each pump station and to complete other missing information.

2.10 Special condition 10

This condition relates to providing reports and advising programmes of work in regards to the

a) reduction of Inflow and Infiltration to a level whereby the Waitara to New Plymouth sewer will meet the design specification in achieving a level of overflow frequency discharge frequency of <1% per year averaged over a five year period.

b) Progress on the above

c) details staging and timeline for constructing and commissioning of the Waitara to New Plymouth pipeline

d) process on the above

Pump Station Overflows

The level of reporting of overflows to TRC by NPDC has been raised with all recorded overflows being reported. This includes instances where an overflow may have occurred for very short periods of time or not at all (i.e. if the alarm is activated during routine maintenance). An instantaneous operation of the overflow alarm float generates a period of overflow of 3 minutes due to logging of telemetry data. Overflows have been reported which have lasted for only 3 minutes, many of which have not resulted in overflows as they have occurred during maintenance.

There are 11 monitored overflow points on pump stations or at Waitara WWTP.

During the 2012/13 period there were overflows on 28 days out of a total of 4015[1] days. This represents an overflow on 0.7% of the days.

The total time that overflows have occurred is 6025 minutes out of 5,781,600[2]. This represents 0.1% of the time.

A significant proportion of the total overflow time is attributed to a single event during September 2012 when a total overflow time of 4226 minutes was recorded between Waitara Outfall, Queen St, McNaughton St and Battiscombe Terrace. While

[1] The total number of pumping days is 11x365 = 4015days

[2] The total number of pumping minutes during the year is 11x365x24x60 = 5,781,600

the overflow was a result of failure of the outfall pumps extended over a weekend, the discharge continued to be treated at a gradually increasing pH due to recirculation of the treated effluent back to the treatment plant.

Inflow and Infiltration reduction

Work towards identifying sources of infiltration continued in 2012/13. Investigations had identified that Catchment 4 as defined in the GHD I & I analysis was in fact smaller than had been assumed. This meant that the rates of Infiltration were therefore higher than the analysis suggested. A sum of $185,000 was spent lining pipes in this catchment with a view to reducing infiltration.

A means of identifying and measuring inflow and infiltration was developed based on the Waster Services Association Australia recently published Guidelines for Managing Inflow and Infiltration. The KPI's enable comparison between different catchments to focus work in the areas of most need. Unfortunately NPDC does not have flow meters installed at every pump station, however through level measuring instruments and pump running times it is possible to determine flow and to generate dry weather flow profiles and instantaneous flow profiles from which the KPI's can be calculated. Summer 2012/13 proved to be extremely dry and offered an opportunity to assess the dry weather flow with a greater degree of certainty. This new baseline is now incorporated into the KPI calculations.

Comparison of the KPI values were sent to Emily Roberts with the April monthly report which indicated that there had been a reduction in Inflow and Infiltration between Mar 2012 and April 2013. The KPI's compared two weeks of similar rainfall being approx 80-90mm.

In the case of McNaughton St the KPI values of peaking factor, percentage ingress, and leakage severity were similar and well below trigger values set in the WSAA guidelines. For Queen St the peaking value, percentage ingress and leakage severity showed a marked reduction for percentage ingress (29% down to 6%) and leakage severity (42 down to 11 m^3/m pipe / m wetness). The lower values fall within the values considered acceptable under the WSAA guidelines. Further analysis of KPI's following the rainfall of 17 – 19 June 2013 is to be completed as part of the follow up investigation for overflows at this time. Detailed analysis is dependent upon obtaining detailed rainfall information for this and other events during June.

Many of the minor pump stations in Waitara are old and do not have PLC control with ultrasonic level instruments measuring wet well level. Without these control and measuring devices the KPI calculations cannot be completed. However the age of the panels is such that an upgrade is justifiable and a programme of works is being assembled to replace the old outdated control panels. A period of time will need to be allowed to determine the dry weather flow profile once the panel is replaced. Meanwhile work continues with analysis of the pump stations which can be analysed. I & I at Battiscombe Terrace and East Quay is considered of little significance. However during the rain event of 17 – 19 June 13 the KPI's showed that there is a significant inflow at Queen St and McNaughton St. Further investigation is ongoing.

2.10.1 Waitara to New Plymouth Project update

The Gravity Main and Rising Main sections of the Waitara to New Plymouth pipeline are both now completed. A complete pressure test of the rising main section from the

Waitara WWTP to the back of the Links Subdivision is now required to confirm that a number of untested joints have been installed properly.

The conversion of the Waitara WWTP over to a transfer pump station is currently programmed to be completed by the end of June 2014. A new extension to the existing Waitara WWTP building is to be completed before Christmas 2013. The building extension is to house the new control cabinets and switchboards and will save I&E cost and time during construction

2.11 Special condition 11

This condition requires that notice be given to TRC of any new Trade waste consents issued or modification of existing trade waste consents for which may require additional consent conditions to be applied. Such consent condition variation would be under the review provided for in Special Condition 16

No new Trade Waste Consents have been granted and no modifications have been made to existing Consents

2.12 Special condition 12

This condition requires that signs be placed and maintained in specified locations.

The wording for the signs was agreed with TDHB and signs have been erected and maintained at Waitara West Beach and Waitara East Beach. The Council maintains a register of these signs, and periodically inspects sign locations to confirm that signs remain in place. Replacements are organised if required.

2.13 Special condition 13

A record of complaints received is to be kept. Any complaints relating to the exercise of the consent are to be notified to TRC as soon as practicable

A record of enquiries received by NPDC is maintained.

14 enquires were received from customers located in the Waitara township which were recorded as related to sewer, wastewater treatment or miscellaneous.

Of these most related to issues with sewer reticulation and sewer blockage. Where appropriate City Care was assigned to attend to unblock council mains. Blockages of laterals are considered to be private drainage issues.

Three enquiries were related to missing manhole covers.

One enquiry was received regarding noise from Waitara WWTP which alerted operators to the failed lime mixer bottom steady bearing.

One enquiry was received on 27 June 2013 which relates more directly to the exercise of the consent. The customer noted that signs were present adjacent to Waitara Beach. The complainant wrote

“Hello my name is xxxxxxx. I am 9 years old I saw a few of your signs down at Waitara beach.

It is disgusting to see you are putting untreated sewage into the sea why are we spending time and money on not so important things such as walk ways,bridges . when we should be cleaning up our

mess. People like to fish in our sea but not if you are going to be putting sewage out to sea. Saying that please don't eat shellfish,and other creatures. Then saying they could die from this crap.I would like something done about this not tomorrow not next week not when ever I want it done today. Really not good "

A response was provided acknowledging the comments and explaining that NPDC take this matter seriously. The response also identified that NPDC is currently spending approximately $33M on upgrades to the NPWWTP and converting Waitara to a pumping station.

Further details can be provided on request.

2.14 Special condition 14

An annual meeting with representatives of TRC Otaraua, Manukorihi, Ngati Rahiri and other interested submitters shall be held.

This meeting was held on 6 December 2012. The invite for the meeting was extended to interested parties (including those specified in consents) for both New Plymouth and Waitara wastewater treatment plant consents. An update on the Waitara to New Plymouth pipeline and NPWWTP upgrade works was provided along with a summary of the monitoring undertaken in relation to all consents.

2.15 Special condition 15

This special condition refers to virus monitoring which is to be undertaken as soon as possible after the commissioning of the Waitara to New Plymouth pipeline.

The Waitara to New Plymouth Pipeline has not been commissioned and the virus monitoring required under this condition is not yet required.

2.16 Special condition 16

Special Condition 16 provides for review of this consent on serving of one month notice by TRC or within one month of TRC receiving notice of trade waste changes under Condition 11.

No notice has been received and no new trade waste consents have been granted or amended which have required a review of the consent to be undertaken