

New Plymouth District Council
Waitara Marine Outfall
Bacteriological Monitoring Programme
Annual Report 2012-2013

Technical Report 2013–85

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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 wastewaters from the 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. This report for the period November 2012 to April 2013 describes the bacteriological monitoring programme and any effects of the Waitara outfall on local water quality.

NPDC and Methanex hold a total of four resource consents relating to the Waitara marine outfall, which include a total of 64 conditions setting out the requirements that the consent holder must satisfy. Three consents allow for the discharge of effluent into the Tasman Sea. One consent deals with the structure which conveys the effluent.

The Council's monitoring programme for the year under review involved sampling five sites on 13 occasions during the summer period (1 November 2012 to 31 March 2013). Four sites within the Waitara Embayment and one site within the Waitara River were regularly sampled for temperature, conductivity, faecal coliforms, *E. coli*, and enterococci bacteria.

It is anticipated that any adverse effects of the Waitara marine outfall discharge on the bacteriological water quality within the Waitara Embayment would be indicated by high bacterial counts at the four coastal monitoring sites. During the 2012-2013 summer period, there were occasional relatively high faecal indicator bacterial counts, with 6% of bacteriological results above the 'Action' level (280 enterococci cfu/100ml) as defined in the Microbiological Water Quality Guidelines (Ministry for the Environment, 2003). Two samples from Waitara East Beach exceeded the 'Action' level: 310 enterococci cfu/100ml on 31 January 2013 and 400 enterococci cfu/100ml on 11 February 2013, while one sample from Turanga Reef exceeded the 'Action' level (320 enterococci cfu/100ml) on 18 February 2013.

Bacteriological results for the 2012-2013 summer period showed that there was intermittent faecal contamination of the beaches in the Waitara Embayment during conditions when the Waitara River was in low flow. There was no evidence of a failure in the disinfection at the Waitara wastewater treatment plant during these occasions and the high results remain unexplained. On the basis of the results presented within this report, the Council finds no evidence to indicate that the discharge through the Waitara marine outfall resulted in any significant adverse effects on water quality within the Waitara Embayment.

During the year, the NPDC and Methanex demonstrated a good level of environmental performance and compliance with the resource consents. In respect of the subject of this monitoring programme (maintenance of receiving water suitability for recreational use), NPDC and Methanex demonstrated a good level of environmental performance.

During the monitoring year there were three incidents recorded by the Council that were associated with the Waitara Waste Water Treatment Plant and the associated pump stations.

This report includes recommendations for the 2013-2014 summer period.

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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 Annual Report for the summer period 2012-2013 by the Taranaki Regional Council (Council) describing the bacteriological monitoring programme associated with resource consents held by New Plymouth District Council (NPDC), Methanex Motunui Ltd and Methanex Waitara Valley Ltd. The outfall was previously managed by Waitara Outfall Management Board (WOMB) to oversee the refurbishment and maintenance of the outfall, 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. The NPDC operates the wastewater treatment plant situated on Queen Street, Waitara.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consents held by NPDC and Methanex to assess the impact of the wastewater discharge on shoreline seawater quality (suitability for bathing) within the Waitara Embayment in the Tasman catchment. This is the twenty-first Annual Report to be prepared by the Council to cover the Waitara outfall 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 and the Council's obligations and general approach to monitoring sites through annual programmes, the resource consents, the nature of the monitoring programme in place for the period under review, and a description of the activities and operations conducted in the Waitara 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 2013-2014 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 Resource Management 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 Resource Management Act to assess the effects of the exercise of consents. In accordance with section 35 of the Resource Management Act 1991, 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, and Methanex Waitara Valley and Motunui methanol plants.

During 1991 the WOMB 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.

NPDC and AFFCO constructed a wastewater treatment plant for the combined domestic and meat-works effluent in 1991 and 1992 which had previously been discharged through the outfall with minimal treatment. The current treatment comprises screening wastewater to 0.5 mm particle diameter (meat-works wastewater was screened at the works), followed by disinfection through the elevation of pH with lime to a target level of pH 11 and holding for a minimum of three hours. Treated wastewater is discharged through the outfall in batches at a constant rate, the frequency depending on influent flow rates.

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 into water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or by national 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. This consent expired on 12 March 2008.

Renewal of consent **3397-2** was completed on 15 November 2011 and its implementation 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 m³/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.

Methanex Waitara Valley held water discharge permit **3399-1** to discharge up to 5,000 cubic metres/day of treated wastes including process and water treatment wastes and domestic sewage and contaminated stormwater from a methanol plant at Waitara into the Tasman Sea via a marine outfall pipeline. This permit was first issued by the Council on 11 October 1989 under Section 87(e) of the Resource Management Act and expired on 28 May 2008. Consent **3399-2**, to discharge treated wastewater and stormwater from the Waitara Valley methanol plant into the Tasman Sea via the Waitara marine outfall, was granted on 29 April 2008. There are 20 conditions attached to the consent relating to the outfall, effluent volume, dilution and composition, contingency plans and annual reports, and review of conditions. Sewage at the Waitara Valley plant is now treated and dispersed to land (on-site).

Methanex Motunui held water discharge permit **3400-1** to discharge up to 12,096 cubic metres/day treated wastes from the manufacture of methanol and synthetic gasoline and contaminated stormwater from a Synthetic Fuels Plant at Motunui, including up to 1,000 cubic metres per annum treated water drawn from gasoline storage tanks at Omata Tank Farm, into the Tasman Sea via a marine outfall pipeline. This permit was first issued by the Council on 11 October 1989 under Section 87(e) of the Resource Management Act. It expired on 12 March 2008. Consent **3400-2**, to discharge treated wastewater and stormwater from the Motunui methanol plant into the Tasman Sea via the Waitara marine outfall, was granted on 29 April 2008.

There are 21 conditions attached to the consent relating to effluent volume, dilution and composition, contingency plans and annual reports, and review of conditions.

Copies of these permits are 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 national regulations.

NPDC and Methanex, as joint consent holders, renewed coastal permit 4599 to erect, place and maintain a structure [known as the “Waitara Marine Outfall”] and to occupy the associated coastal 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 Resource Management 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.

The monitoring programme for the Waitara marine outfall bacteriological programme consisted of two primary components.

1.4.2 Programme liaison and management

There is generally a significant investment of time and resources by the Council in ongoing liaison with resource consent holders over consent conditions and their interpretation and application, 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 Bacteriological sampling

A minimum of twelve samples are collected from each of the five sites (Table 1), undertaken according to documented Council procedures. Samples were collected from each of the sites during the bathing season when hydrological flow conditions of the Waitara River allowed, within two hours of high tide, and no less than three days after river fresh conditions. Samples were collected between 0900 and 1800 (NZDT), in line with the Ministry for the Environment (MfE) guidelines (refer to section 1.4.3.2).

Samples were analysed for enterococci, *E. coli*, faecal coliforms and conductivity. At each site, the following was recorded; time, water temperature, weather condition, wind condition, surf condition, colour/appearance of the water and number of bathers/other users.

Table 1 Waitara bacteriological monitoring sites

Location	Description	Site number
Airedale Reef	Shoreline 1,000 m east of Waitara River mouth	SEA901030
East Beach	Shoreline 200 m east of Waitara River mouth	SEA901033
West Beach	Shoreline 200 m west of Waitara River mouth	SEA901037
Tuaranga Reef	Shoreline 2,000 m west of Waitara River mouth	SEA901052
Bertrand Road	Waitara River at Bertrand Road bridge	WTR000800

**Figure 1** Waitara bacteriological monitoring sites



Photograph 1 Waitara East Beach

1.4.3.1 Environmental Assessment

Although the sites monitored within the Waitara Embayment are not popular summer bathing beaches, the bacteriological results were assessed in relation to suitability for contact recreation guidelines (see 1.4.3.2). The use of the beaches, particularly for surfing and windsurfing, is noted.

The Waitara bacteriological monitoring programme is one of two 'impact' monitoring programmes carried out in relation to discharges from Waitara outfall. The other programme monitors the diversity of intertidal communities within the Waitara Embayment (Refer to Technical Report 13-52 – Waitara Marine Outfall Ecological Monitoring Programme Annual Report 2011-2013).

The major effluents contributing to the Waitara outfall discharge are monitored at source in 'compliance' monitoring programmes. Annual reports are also produced on these programmes (Refer to Technical Reports 13-52 (as above), and 13-86 - Waitara Waste Water Treatment Plant Monitoring Programme Report 2012-2013).

1.4.3.2 Guidelines for Recreational Water Quality 2003

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

In addition, 'Alert' and 'Action' guideline levels are used for surveillance throughout the bathing season. These guideline levels are summarised in Table 2 and are based on keeping illness risk associated with recreational water use to less than approximately 2% (i.e. even at the threshold of 'Action' category it is anticipated that more than 98% of all swimmers will experience no ill-effects from microbiological exposure). Levels are based on enterococci counts as these bacteria are the preferred indicators for marine waters. Research has shown that enterococci are the indicator most closely correlated with health effects in New Zealand marine waters, in common with general findings overseas. In coastal waters, faecal coliforms and *E. coli* are not as well correlated with health risks, but can be used as indicators, in addition to enterococci, where enterococci levels alone may be misleading.

Table 2 Recreational water quality guidelines 2003

	Mode		
	Surveillance	Alert	Action
Enterococci (cfu/100ml)	No single sample >140	Single sample >140	Two consecutive single samples >280
Procedure	<ul style="list-style-type: none"> • Continue routine monitoring 	<ul style="list-style-type: none"> • Increase sample to daily • Undertake sanitary survey • Identify sources of contamination • Consult CAC to assist in identifying possible source 	<ul style="list-style-type: none"> • Increase sample to daily • Undertake sanitary survey • Identify sources of contamination • Consult CAC to assist in identifying possible source • Erect warning signs • Inform the public through the media that a public health problem exists

CAC = Catchment Assessment Checklist



Photograph 2 Waitara West Beach

2. Results

2.1 Water

2.1.1 Summer 2012-2013 monitoring

Samples were collected on 13 occasions during the 2012-2013 bathing season.

Summary statistics for the 2012-2013 summer period are shown in Table 3. The raw data for this period are presented in Appendix II.

The hydrograph presented in Figure 7 shows the flow rate in the Waitara River during the sampling period (1 November 2012 to 31 March 2013). Sampling dates have been superimposed to indicate the level of discharge from the Waitara River during each sampling run.

Table 3 Summary statistics for the 2012-2013 summer sampling period

Site	Parameter	Units	Minimum	Maximum	Median
Airedale Reef	Conductivity	mS/m	4210	4770	4640
	<i>E. coli</i>	No/100ml	<1	110	4
	Enterococci	No/100ml	<1	110	15
	Faecal coliforms	No/100ml	<1	110	4
	Temperature	°C	16.1	22.9	19.5
Waitara East Beach	Conductivity	mS/m	3810	4760	4580
	<i>E. coli</i>	No/100ml	<1	100	16
	Enterococci	No/100ml	<1	400	37
	Faecal coliforms	No/100ml	<1	110	16
	Temperature	°C	15.9	19.6	19.6
Waitara West Beach	Conductivity	mS/m	3580	4790	4660
	<i>E. coli</i>	No/100ml	<1	60	6
	Enterococci	No/100ml	3	90	8
	Faecal coliforms	No/100ml	<1	60	6
	Temperature	°C	15.8	22.5	19.8
Tuaranga Reef	Conductivity	mS/m	4240	4790	4690
	<i>E. coli</i>	No/100ml	<1	120	4
	Enterococci	No/100ml	<1	320	8
	Faecal coliforms	No/100ml	<1	120	4
	Temperature	°C	15.8	28.8	19.6
Waitara River at Bertrand Road	Conductivity	mS/m	7.9	11.2	10.2
	<i>E. coli</i>	No/100ml	11	500	46
	Enterococci	No/100ml	4	180	36
	Faecal coliforms	No/100ml	11	500	48
	Temperature	°C	16.2	22.3	20.6

The 2012-2013 faecal coliform, *E.coli* and enterococci counts at each site are shown in Figures 2 - 6. Conductivity is also provided to indicate the extent of the freshwater influence at each site (the lower the conductivity, the greater the freshwater component – the conductivity of seawater at 20°C without freshwater influence is approximately 4,750 mS/m).

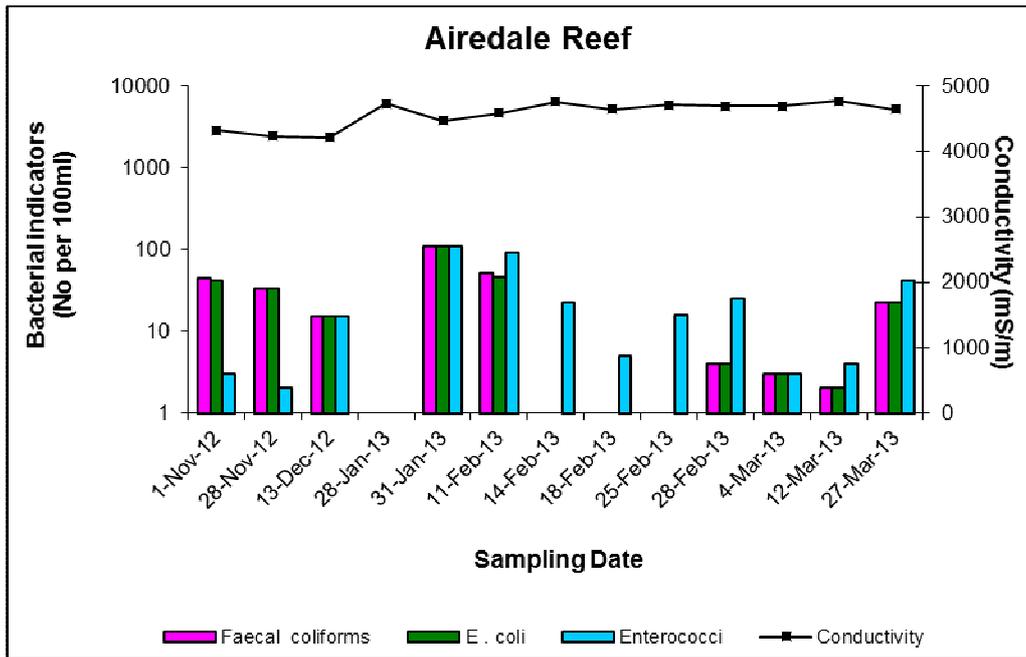


Figure 2 Bacteriological results at Airedale Reef

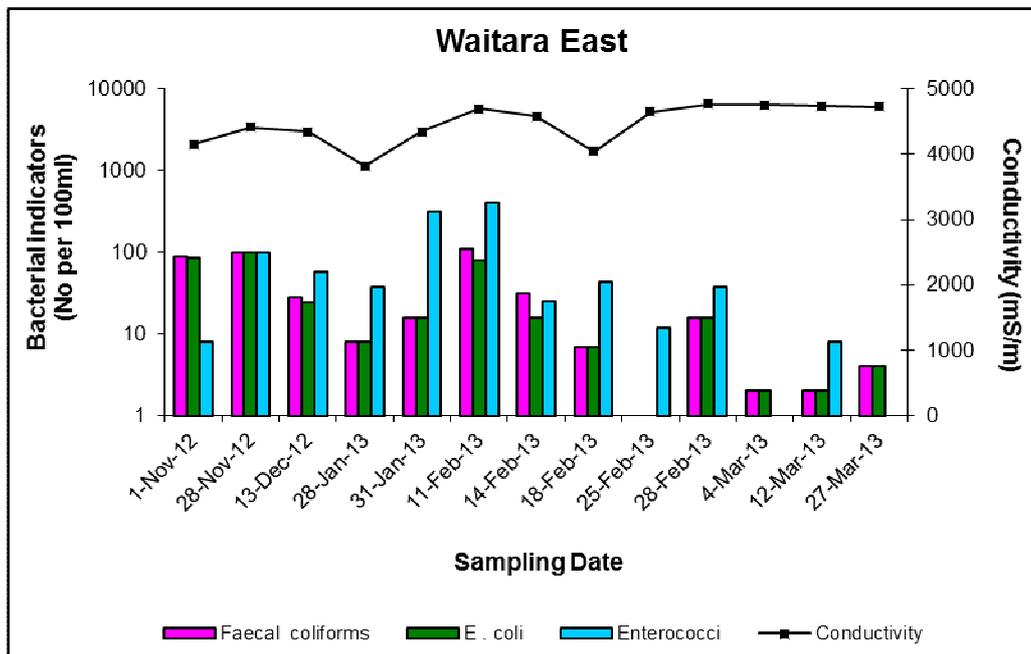


Figure 3 Bacteriological results at Waitara East Beach

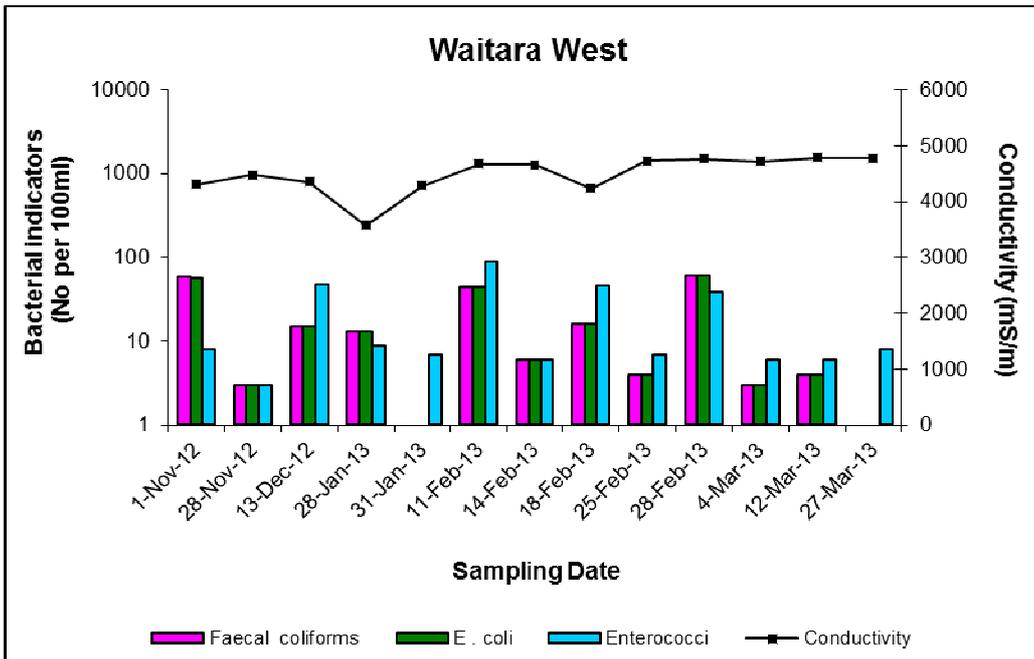


Figure 4 Bacteriological results at Waitara West Beach

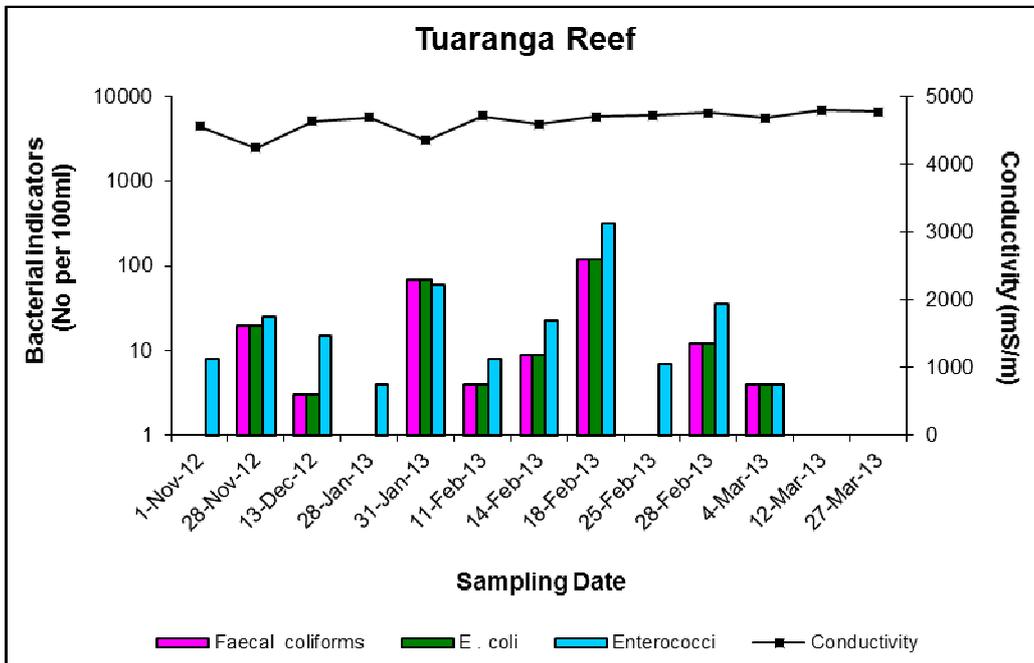


Figure 5 Bacteriological results at Tuaranga Reef

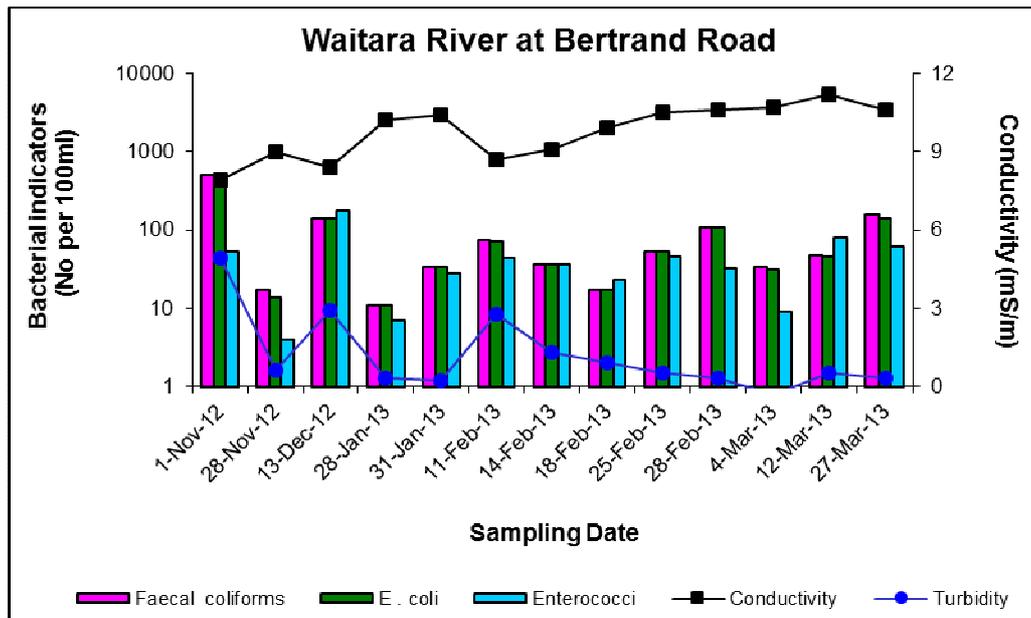


Figure 6 Bacteriological results at Bertrand Road, Waitara River

The Waitara East and Tuaranga Reef sites (Figures 3 and 5) had occasional higher counts (>100 cfu/100ml) of faecal indicator bacteria; however only the high count at the Waitara East site and a higher turbidity level present at the Waitara River at Bertrand Road on 11 February 2013 coincided with elevated flows in the days preceding sampling

Faecal indicator bacteria counts were generally low (<100 cfu/100 ml) on all sampling dates at the Airedale Reef and Waitara West Beach sites (Figures 2 and 4).

At the Waitara River, Bertrand Road site there were a few higher faecal indicator bacteria counts (>100 cfu/100ml) during the monitoring season (Figure 6). Most of these higher bacteria counts coincided with turbid river conditions following freshes.

Note that the Waitara East site had samples that exceeded the 'Action' guideline within the 2003 MfE microbiological water quality guidelines on 31 January and 11 February 2013; while Tuaranga Reef exceeded the 'Action' guideline on 18 February 2013 (Section 2.1.3.).

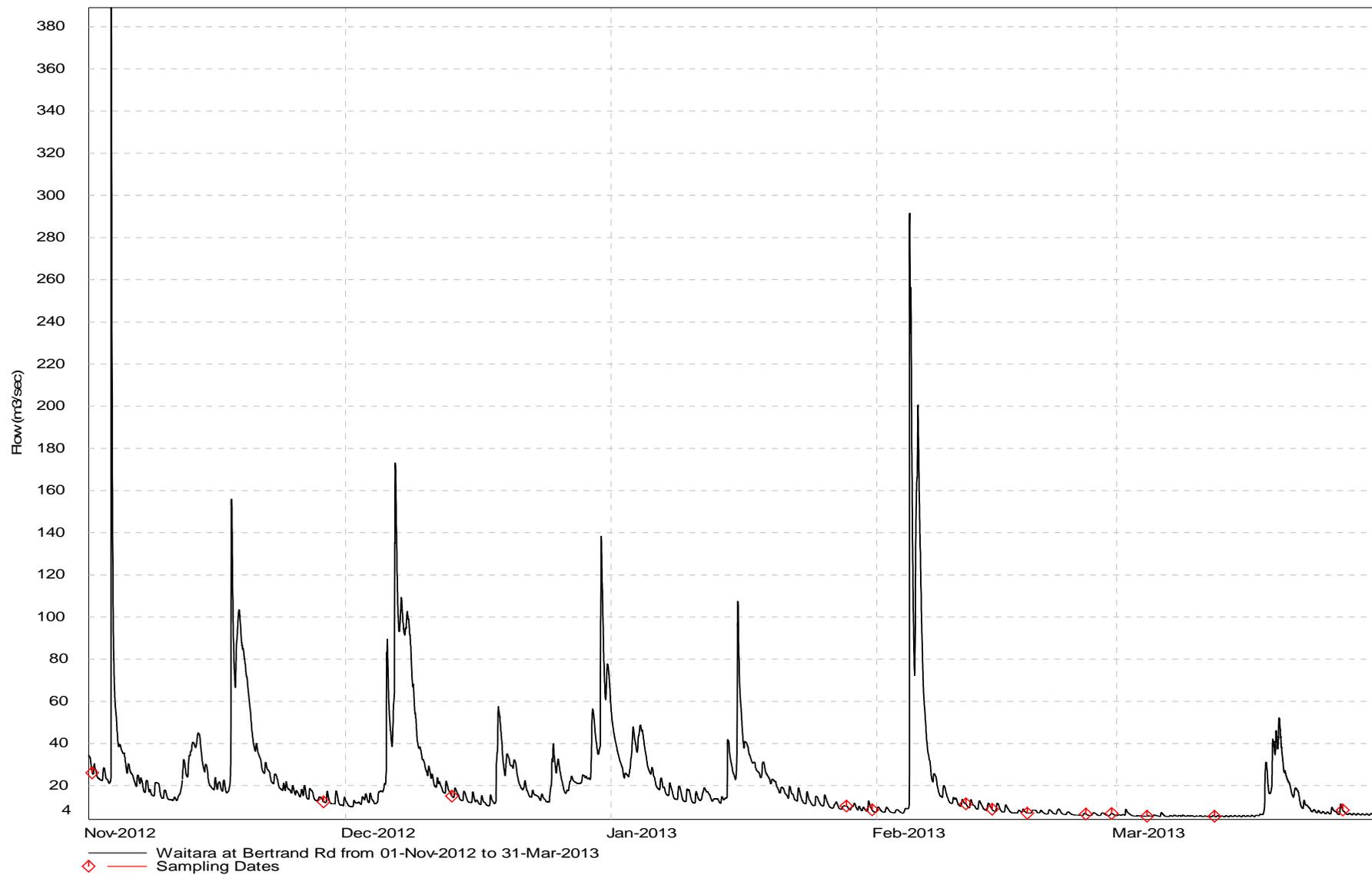


Figure 7 Waitara River flow at Bertrand Road (1 November 2012 – 31 March 2013)

2.1.2 Influence of Waitara River on shoreline bacteriological results

Linear regression analysis was used to assess the influence of the Waitara River on shoreline bacteriological counts. Regression analysis was performed on the 'rate faecal indicator bacteria were discharged from the Waitara River at the Bertrand Road site' (river flow x faecal indicator bacteria count) against the 'faecal indicator bacteria counts at the shoreline sites'. Both parameters were \log_{10} transformed because bacteriological data are generally not normally distributed.

Table 4 provides the coefficient of determination (r^2) values for each regression analysis performed. This value indicates the strength of the linear relationship between the two values (i.e. an r^2 value close to 1 implies a strong relationship).

Table 4 R^2 values for linear regression analyses of 'faecal indicator bacteria rate of discharge from the Waitara River' against 'coastal faecal indicator bacteria counts' for 2012-2013 summer

FIB rate of discharge from Waitara River \log_{10} (flow rate x bacterial count)	Coastal Site \log_{10} (FIB count)			
	Airedale Reef	East Beach	West Beach	Tuaranga Reef
Faecal coliforms	0.3402	0.1910	0.0337	0.0494
<i>E. coli</i>	0.3136	0.1956	0.1533	0.1192
Enterococci	0.2034	0.0073	0.1512	0.0739

Note: R^2 values are expressed as % values below, e.g. 0.3402 = 34%

In previous monitoring reports, the results from bacteriological monitoring conducted between 1990 and 1995 were pooled to perform a regression analysis. These analyses demonstrated that the Waitara River had a major influence on faecal indicator bacteria at all of the coastal sites sampled during periods of high flow. As a result, the sampling programme was revised in the 1996-1997 monitoring period to exclude wet weather conditions and high river flows in the Waitara River.

The regression analyses performed using the 2012-2013 data indicated that under dry weather conditions, the influence of the Waitara River bacterial discharge on the Waitara Embayment bacterial counts was generally pretty low. Out of all the four coastal sites, the influence from the Waitara River was most evident at the Airedale Reef site to the north east of the river mouth (Table 4), indicating some embayment circulation patterns may have been contributing to these results. At the Airedale Reef site the regression analysis showed the influence from the Waitara River on bacterial counts was 34% for faecal coliforms and 31% for *E. coli*. However, compared to previous years' monitoring results the influence from the Waitara River is low. The weakest influence occurred at East Beach (a typical contribution of 0.7% enterococci), the site to the east of the Waitara River mouth. In general, the results indicate that although bacterial discharge from the Waitara River accounted for some of the variability in bacterial counts at the coastal sites (between 0.7-34%), there were other factors influencing faecal contamination, particularly at the sites further away from the river mouth. In order to assess the level of this contamination, it is useful to interpret faecal indicator counts in relation to existing water quality guidelines (MfE 2003).

2.1.3 Comparison with 2003 MfE water quality guidelines

Bacteriological results from the Waitara Embayment, collected during the 2012-2013 monitoring period, were assessed for compliance with the 2003 MfE microbiological water quality guidelines (Figures 8 to 11).

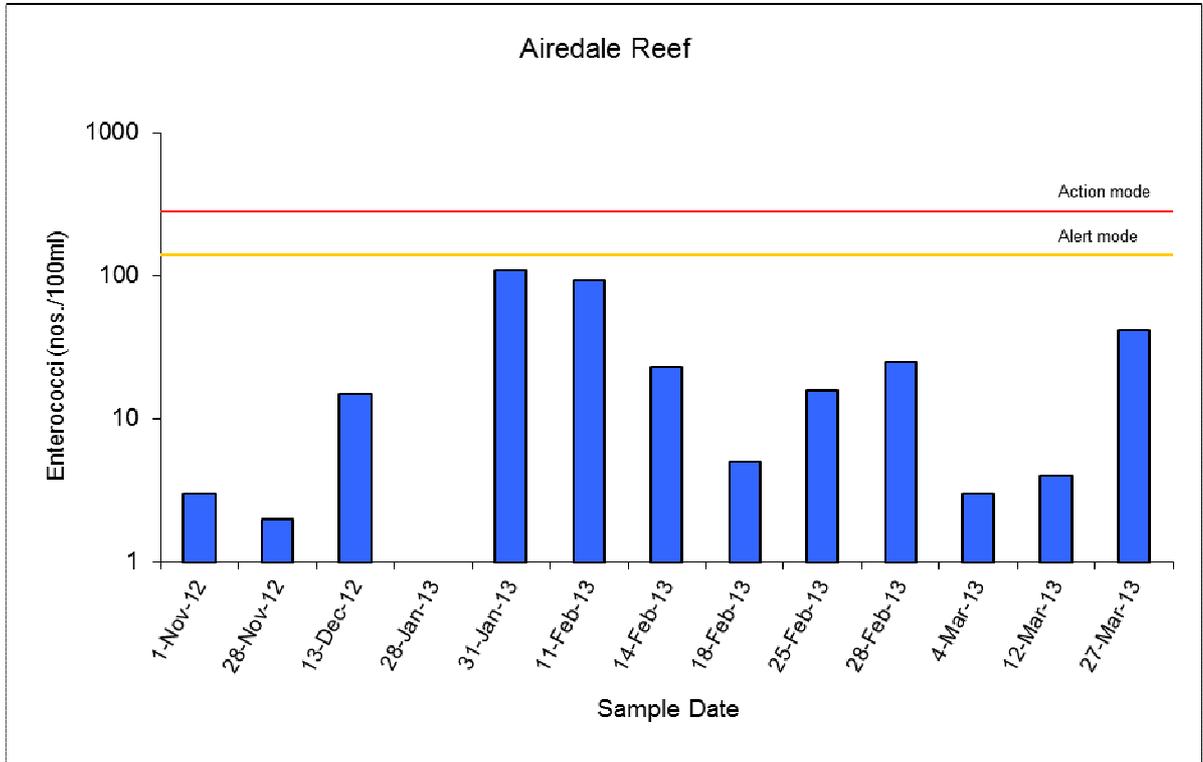


Figure 8 Enterococci counts at Airedale Reef

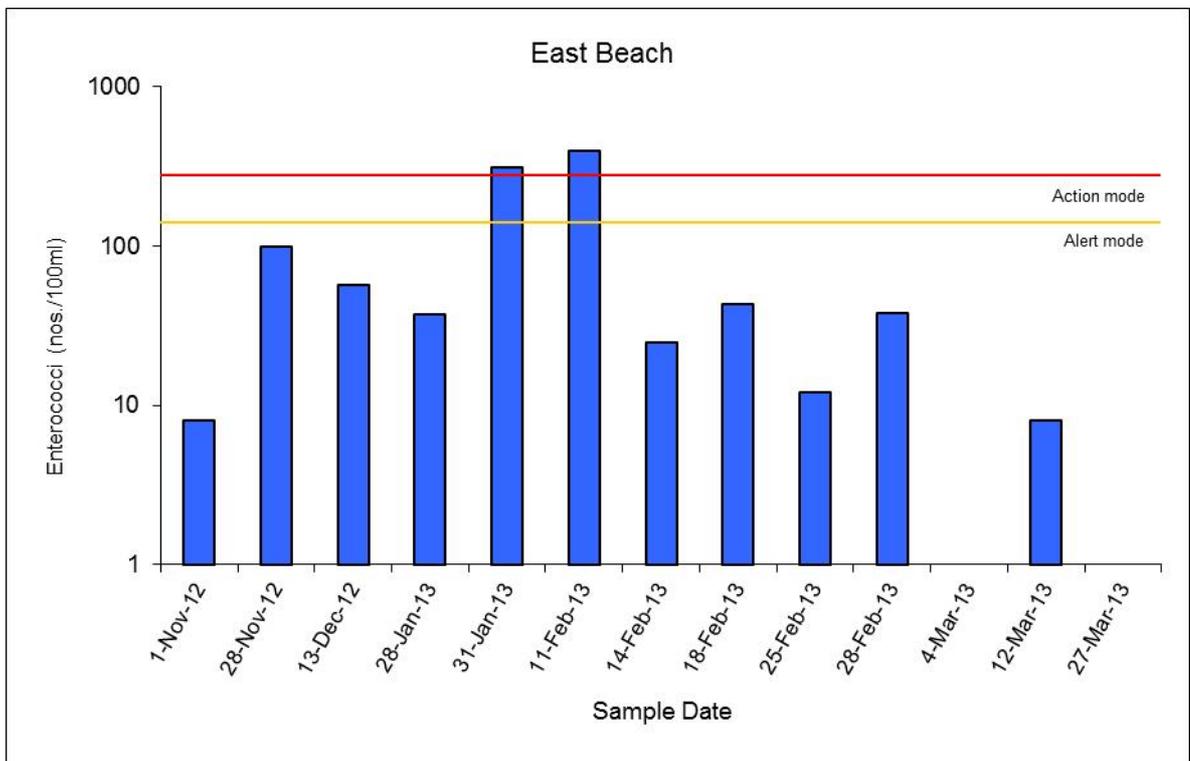


Figure 9 Enterococci counts at Waitara East Beach

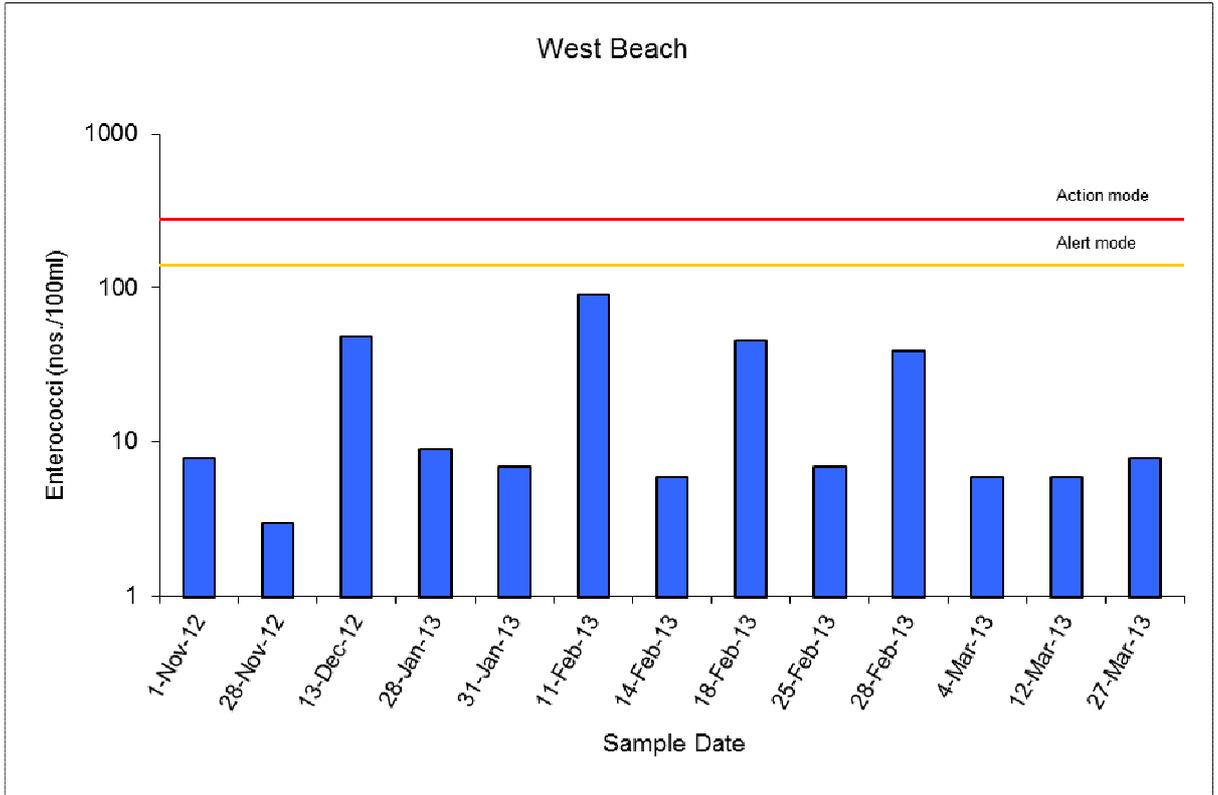


Figure 10 Enterococci counts at Waitara West Beach

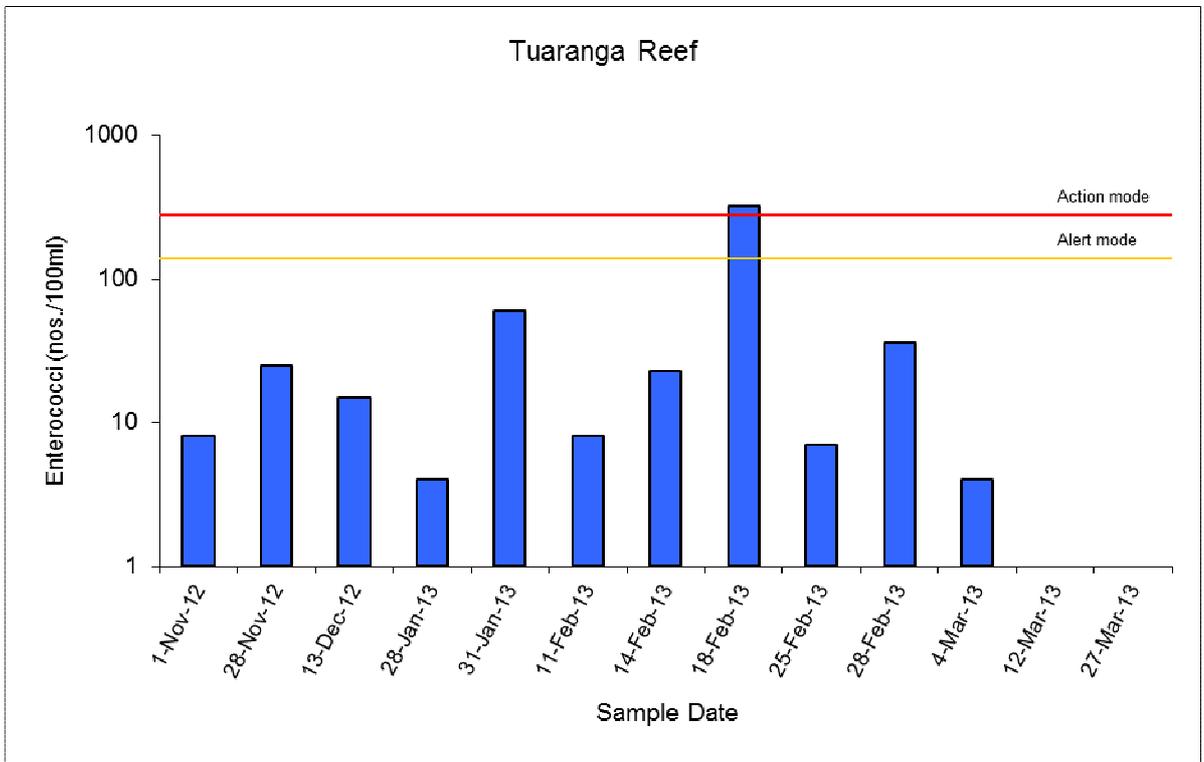


Figure 11 Enterococci counts at Tuaranga Reef

Enterococci counts at Airedale Reef remained below the guideline levels throughout the 2012-2013 season (Figure 8). At East Beach, although enterococci counts were

generally low throughout the season (Figure 9); 'Alert' mode was reached on 31 January 2013 (310 cfu/100ml) and 11 February 2013 (400 cfu/100ml). Both of these sampling results were unexplained as there was negligible rainfall >5 days prior to sampling, however sampling results on 11 February 2013 correlated with elevated Waitara River flows a week preceding sampling (Figure 7). Conductivity results were high at the time of sampling indicating no freshwater influence (Figure 3).

At Turanga Reef, 'Alert' mode was reached on 18 February (320 cfu/100ml, Figure 11); again this result was unexplained and did not coincide with any elevated Waitara River flows during the days preceding (Figure 7).

Enterococci counts at Airedale Reef and West Beach remained below both the guideline levels throughout the 2012-2013 season (Figures 8 and 10).

2.1.4 Comparison of 2012-2013 results with previous summer surveys

Seasonal median faecal indicator bacteria counts from 1990-1991 to 2012-2013 are presented in Figures 12-14. It must be noted that the sampling methodology has changed significantly during the twenty-one year period, as the result of changes in national standards and guidelines for microbiological water quality, and to reduce the confounding effect of the Waitara River on shoreline water quality monitoring.

Prior to the 1996-1997 summer season, the sampling methodology involved taking sets of five samples over a period of not more than 30 days, irrespective of weather conditions or tide. This was to enable direct comparison with 30-day median values for faecal coliforms, as required under the previous Water and Soil Conservation Act (1967) SB standard, of which a large database had been compiled.

It was found that the resultant seasonal median bacterial counts were influenced largely by the Waitara River during periods of high river flow, and that these events masked any effects of the outfall on faecal indicator bacteria levels. There were elevated shoreline coliform counts in summer 1991-1992 (Figure 12), when partially treated municipal wastewater was diverted to the river while the marine outfall was refurbished.

In 1996-1997, the sampling programme was revised to bring it into line with the regional state of the environment monitoring (SEM) programme for marine bathing beaches, which had commenced the previous year. Wet weather conditions and high river flows were excluded by not sampling within two days of river freshes. This period has been extended to three days since 1998-1999.

Since 1996-1997, the median values of faecal coliforms, *E coli*, and enterococci have been relatively low, with two exceptions. In 1999-2000, enterococci and coliform counts at the Airedale Reef site and enterococci at East Beach site were elevated in comparison to previous results. Additional sampling was undertaken at three sites in the lower river throughout the following summer in an effort to establish the cause, but the high counts did not reoccur. A similar event happened in February/March 2009, when elevated enterococci and coliform counts were returned for West Beach – the event did not reoccur in 2010.

The 2012-2013 median bacterial results were low at the four coastal and Waitara River sites. The results obtained were generally lower than results from the 2011-2012 monitoring period.

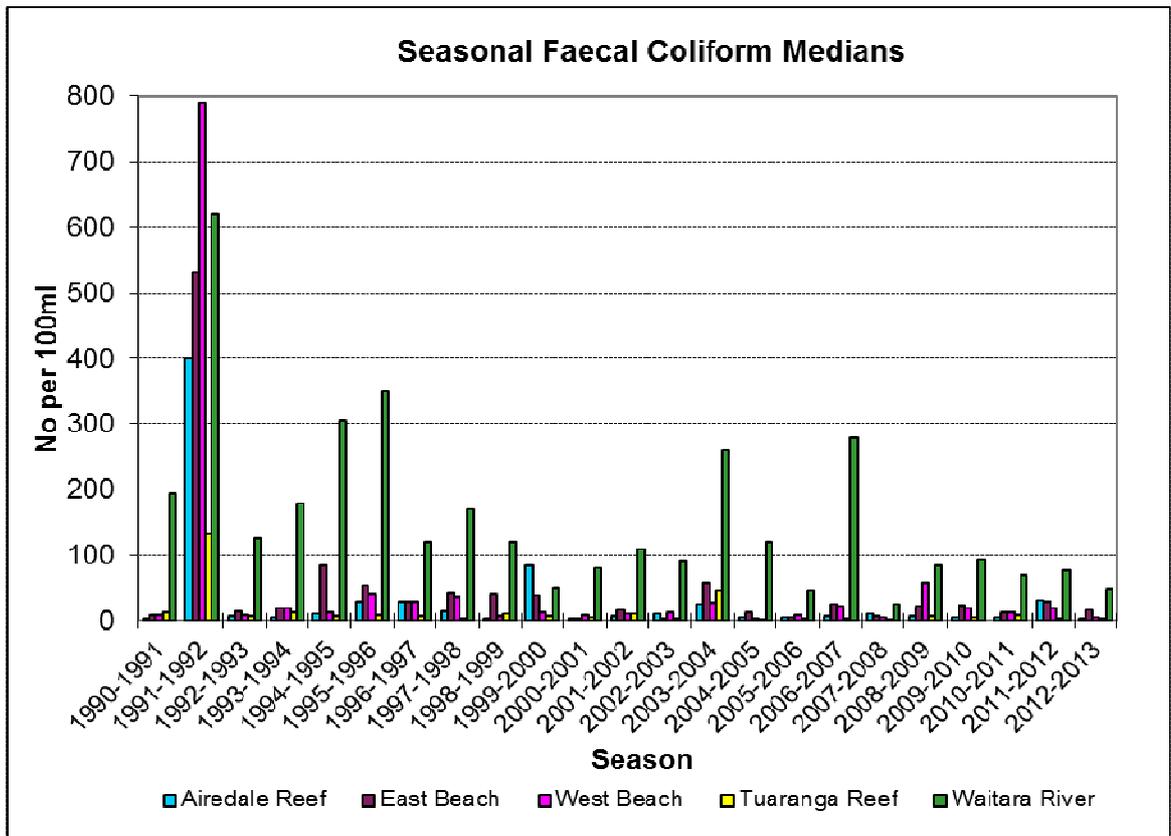


Figure 12 Seasonal median faecal coliform counts within the Waitara Embayment and the Waitara River (Bertrand Road site)

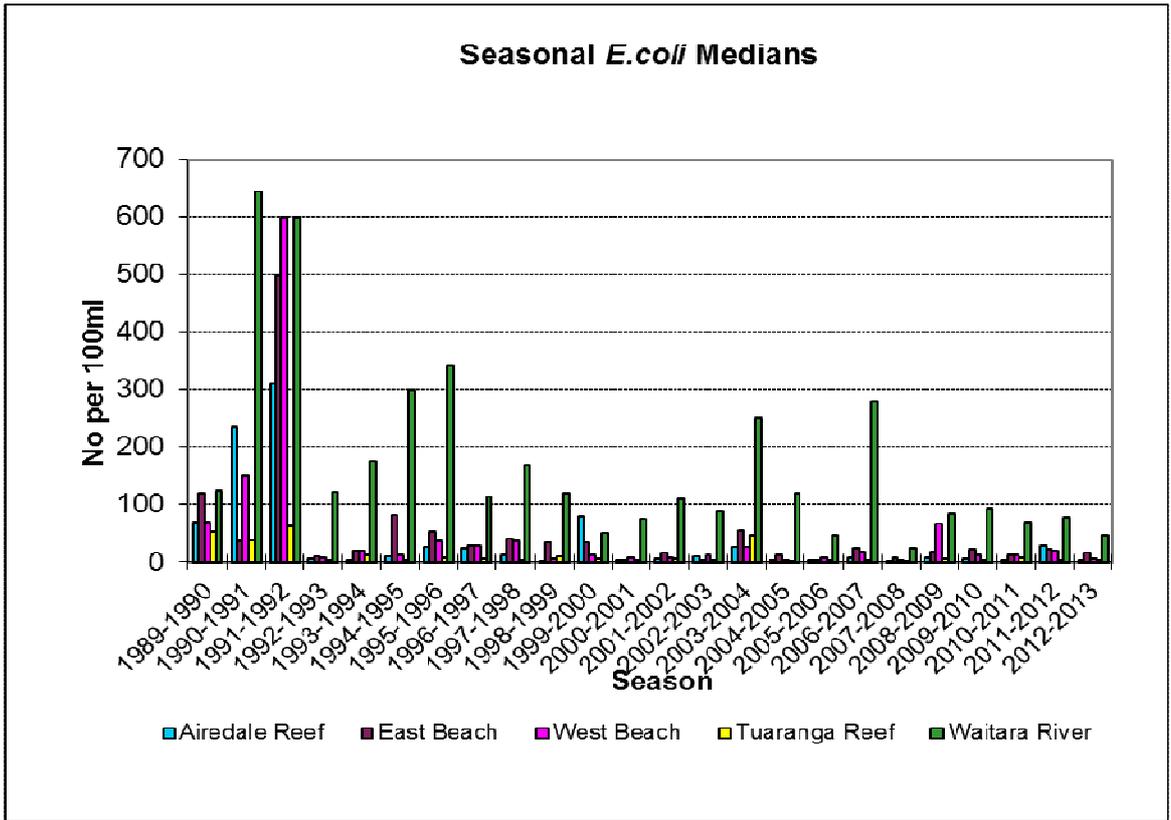


Figure 13 Seasonal median *E. coli* counts within the Waitara Embayment and Waitara River (Bertrand Road site)

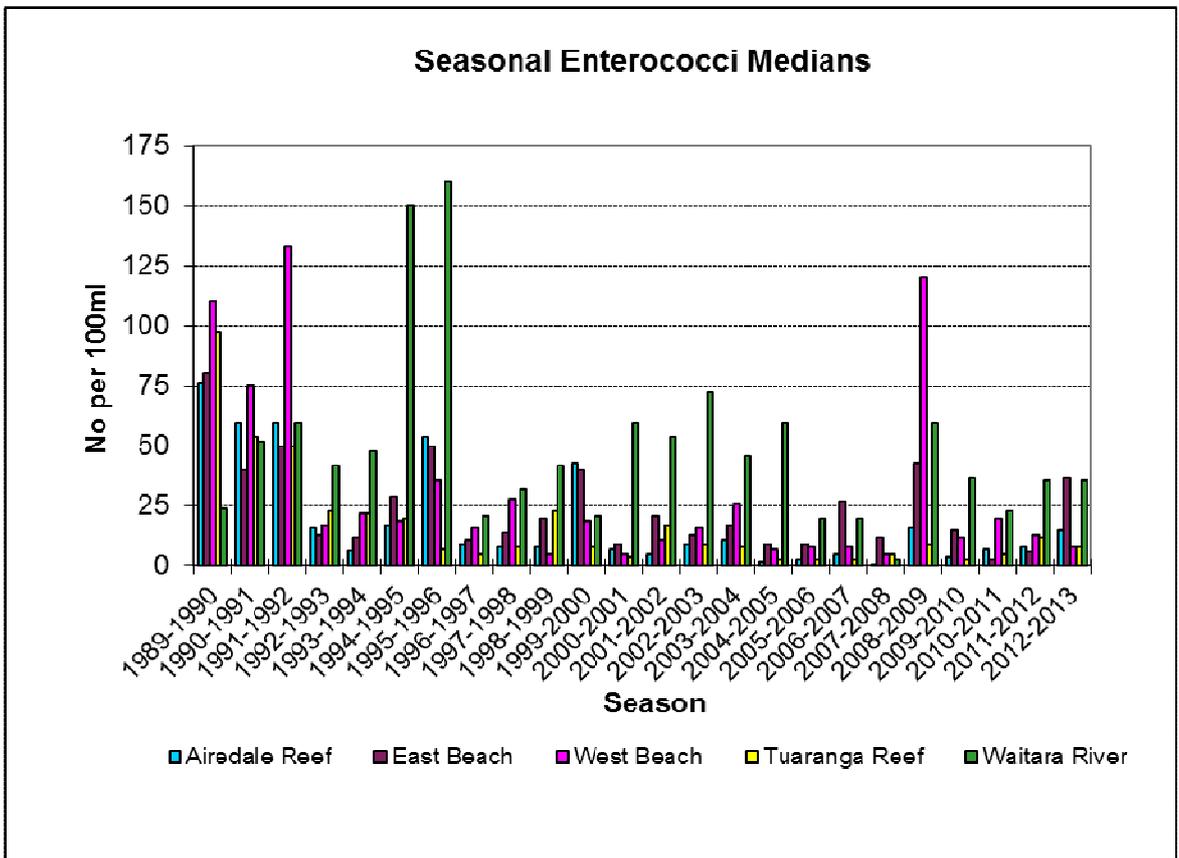


Figure 14 Seasonal median enterococci counts within the Waitara Embayment and the Waitara River (Bertrand Road site)

Concerns relating to the source(s) of faecal contamination in the lower Waitara River led the Council to undertake additional microbial source tracking (MST) using DNA marker techniques. The following four sites were sampled between November 2010 and April 2011 as part of the investigation: Bertrand Road, located approximately 8 km from the river mouth; the Town Wharf, located approximately 1.5 km from the river mouth; and true right and left bank sites, both approximately 200 m from the river mouth. These surveys were undertaken on five occasions: three under low flow, low tide conditions; one under low flow, high tide conditions and one following a river flood.

In summary, the main source of faecal contamination was from ruminants (sheep and cows), with DNA markers for these sources testing positive under all tidal and flow conditions. The detection of human markers tested indicated the presence of human faecal contamination as well, at certain sites (see below for details).

The upstream site (Bertrand Road) only tested positive for ruminant markers. At the Town Wharf site, ruminant markers tested positive on all sampling occasions, while human markers tested positive in samples collected under high tide and flood conditions. At both the true right and left bank sites, positive results were obtained for ruminant markers (all occasions), and wildfowl markers and human markers (occasional). The results indicated that there were sources of human faecal material entering the lower river. Further information on this additional work can be found in *Annual Report 11-01 Freshwater contact recreational water quality at selected Taranaki sites State of the Environment Monitoring Report 2010-2011*.

2.2 Investigations, interventions, and incidents

The monitoring programme for the year was based on what was considered to be an appropriate level of monitoring, review of data, and liaison with 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).

In the 2012-2013 monitoring year there were three incidents recorded by the Council that were associated with the Waitara Waste Water Treatment Plant and associated pump stations. Over the period covering this report, the level of overflow reporting to the Council by NPDC was 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 three 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 and that no follow up enforcement action was necessary.

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.

In the Waitara Municipal Wastewater Discharge Consent 3397-2 Annual Report provided by NPDC it is reported that the total time overflows occurred during the 2012-2013 monitoring period accounted for 0.1% of the total time the Waitara Waste Water Treatment Plant 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.

NPDC advised that a significant proportion of the overflows during the monitoring year was attributed to the 9 September 2012 overflows from the Waitara Outfall, Queen Street, McNaughton Street and Battiscombe Terrace pump stations. The overflows were a result of failure of the outfall pumps which extended over a weekend.

3. Discussion

3.1 Environmental effects of exercise of consents

The Waitara marine outfall bacteriological monitoring programme is undertaken to assess the effect of the Waitara outfall discharge on shoreline bacteriological water quality. The nearby Waitara River is also acknowledged as a significant potential source of shoreline bacteriological contamination, and therefore sampling of the Waitara River is undertaken.

Due to its large size, the Waitara River has been found to influence shore line bacterial counts for several days after fresh events. The Waitara River is the largest river in north Taranaki and drains not only the eastern slopes of Mount Taranaki but also the eastern hill country. As a consequence, the river can carry high sediment loads that take several days to subside. Oceanographic studies performed within the Waitara Embayment during the early 1980's found that the embayment extends for several kilometres offshore, where a complex circulation pattern exists. The marine outfall effluent plume is affected by stratification and onshore current patterns, indicating poor freshwater flushing within the embayment.

Bacteriological water quality at the four coastal sites was generally good during the sampling period, with occasional higher counts (>100 cfu/100ml) of faecal indicator bacteria recorded. Results of regression analysis indicate that although bacterial discharge from the Waitara River accounted for some of the variability in bacterial counts at the coastal sites (contributing between ~1-34%), there were other factors influencing faecal contamination. In order to assess the level of this contamination, enterococci counts were assessed in relation to existing water quality guidelines (MfE 2003). Of the 52 samples collected during the summer period, 94% of the samples were below the MfE 'Alert' level of 140 cfu/100ml, while two samples at East Beach and one sample at Tuaranga Reef exceeded the MfE 'Action level' of 280 cfu/100ml.

There was no evidence of failure in the disinfection at the Waitara wastewater treatment plant on the few occasions when higher faecal indicator bacteria counts were obtained. The results of DNA marker tracking investigations during the 2010-2011 monitoring period did provide evidence of intermittent human faecal contamination in the lower Waitara River. Positive results for human markers were obtained under dry conditions at low tide, indicating contamination was likely derived from a source within the lower river and not the outfall. On the basis of the results presented within this report, the Council finds no evidence to indicate that the discharge through the Waitara marine outfall resulted in any significant adverse effects on water quality within the Waitara Embayment.

3.2 Evaluation of performance

A summary of the consent compliance record for the year under review is set out in Tables 5-8. Details of the WWTP performance are reported in the Monitoring Report, Technical Report 2013-86.

Table 5 Summary of performance for Consent 3397-2 to discharge up to 11,950 m³/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 TRC	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	Not quite: 97.3% pH 6-12
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. Faecal coliforms in discharge not to exceed 50,000 cfu/100ml	Data submitted to Council in monthly and annual reports by NPDC	Yes
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 of signs	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

N/A = not applicable

Table 6 Summary of consent 3399-2 to discharge treated wastewater and stormwater from the Waitara Valley methanol plant into the Tasman Sea via the Waitara marine outfall

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Consent holder to adopt BPO to prevent or minimise adverse effects	Inspections (separate programme)	Yes
2. Consent holder to maintain a record of the volume of effluent discharged each day	Monthly reports received	Yes
3. Maximum daily discharge 5,000 m ³ day, 60 L/sec	Monthly reports received	Yes
4. Minimum initial dilution of effluent 100:1	Outfall designed to specific design and physical modelling was undertaken. Review of effluent data and volumes discharged was also undertaken	Yes
5. Maximum daily discharge of suspended solids 500 kg	Monthly reports	Yes
6. pH not to exceed range of 6 to 9	Monthly reports.	Yes
7. Limits on concentration of COD, hydrocarbons, methanol, ammonia, copper, nickel, zinc	Monthly reports	Yes
8. Allowable water treatment chemicals and volumes	Inspection and liaison with consent holder	Yes
9. Approval from Council required to discharge 'equivalent' chemical	Requested 14 June 2013, granted 29 July 2013	Yes
10. Definition of 'equivalent'		N/A
11. Discharge of equivalent chemical requires written request	Requested 14 June 2013, granted 29 July 2013	Yes
12. Conditions 5,6,7 and 8 apply to effluent prior to entry into outfall line		N/A
13. Limits in conditions 7 and 8 apply unless Council has given approval for a short term change	No approval given	N/A
14. Effects on receiving waters	Marine ecological surveys (different programme)	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
15. Consent holder to maintain contingency plan	Received in 2012	Yes
16. No domestic sewage in discharge after closure of Waitara Municipal Treatment Plant	Domestic sewage discharged to land	Yes
17. Consent holder to certify the structural integrity and dilution performance of outfall at least every five years	A commercial diver survey was undertaken to inspect the integrity of the outfall in 2011, next due before July 2016. A number of dives were undertaken during 2012-2013 to repair the outfall pipeline anchorages.	Yes
18. Consent holder to supply an annual report by 31 March each year	Report received	Yes
19. Lapse of consent		N/A
20. Review of consent	Next scheduled in 2015 if required	N/A
Overall assessment of consent compliance and environment performance in respect of this consent		High

Table 7 Summary of consent 3400-2 to discharge treated wastewater and stormwater from the Motunui methanol plant into the Tasman Sea via the Waitara marine outfall

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Consent holder to adopt BPO to prevent or minimise adverse effects	Inspections liaison and review of reported data	Yes
2. Consent holder to maintain a record of the volume of effluent discharged each day	Monthly reports provided	Yes
3. Maximum daily discharge 12,096 m ³ day, 140 L/sec	Monthly reports received	Yes
4. Minimum initial dilution of effluent 100:1	Outfall designed to specific design and physical modelling was undertaken. Review of effluent data and volumes discharged was also undertaken	Yes
5. Maximum daily discharge of suspended solids 500 kg	Review of analytical information provided in self-monitoring data and inter-laboratory comparison	Yes
6. pH not to exceed range of 6 to 9	Review of analytical information provided in self-monitoring data and inter-laboratory comparison. Four occasions when pH was outside consented range	No
7. Limits on concentration of COD, hydrocarbons, methanol, ammonia, copper, nickel, zinc	Review of analytical information provided in self-monitoring data and inter-laboratory comparison	Yes
8. Allowable water treatment chemicals and volumes	Liaison with consent holder and inspections. Variation granted July 2012 for increase in 'Spectrus CT1300' chemical	Yes
9. Approval from Council required to discharge 'equivalent' chemical	Permission for approval to replace two chemicals applied for 18 October 2012 and granted 1 November 2012	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
10. Definition of 'equivalent'	Discussed between Council and NPDC	Yes
11. Discharge of equivalent chemical requires written request	Not required	N/A
12. Conditions 5,6,7 and 8 apply to effluent prior to entry into outfall line		N/A
13. Limits in conditions 7 and 8 apply unless Council has given approval for a short term change	Not required	N/A
14. Effects on receiving waters	Marine ecological surveys	Yes
15. Consent holder to maintain contingency plan	Contingency plan received June 2012 and reviewed as satisfactory	Yes
16. No domestic sewage in discharge	Liaison with consent-holder domestic sewage is routed to the Waitara Wastewater Treatment Plant, not directly to the outfall	Yes
17. Consent holder to notify Council at least seven days before consent is first exercised	Notification on file	Yes
18. Consent holder to certify the structural integrity and dilution performance of outfall at least every five years	A commercial diver survey was undertaken to inspect the integrity of the outfall in 2011, next due before July 2016. Further discussions regarding the outfall were carried out in April 2013 between Methanex and Council Management	Yes
19. Consent holder to supply an annual effluent report by 31 March each year	Reports received monthly and reviewed as satisfactory	Yes
20. Lapse of consent		N/A
21. Review of consent	Next scheduled in 2015 if required	N/A
Overall assessment of consent compliance and environment performance in respect of this consent		Good

Table 8 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 July 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 by OCEL.	Yes
2. Notification prior to maintenance work	No maintenance undertaken	N/A
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

During the year, NPDC and Methanex demonstrated a good level of environmental performance and compliance with the resource consents relating to the Waitara wastewater plant and marine outfall. The only breach to consent conditions was in regards to pH of the discharge.

In respect of these conditions that relate to water quality for recreational use, there was a good level of compliance and performance (94% of the receiving environment samples met bathing water criteria).

3.3 Recommendation from the 2011-2012 Annual Report

In the 2011-2012 Annual Report, it was recommended:

1. THAT the microbiological monitoring programme in relation to the Waitara marine outfall in the 2012-2013 year continues at the same level as in 2011-2012.

This recommendation was followed.

3.4 Alterations to monitoring programmes for 2013-2014

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 Resource Management 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 marine outfall programme for 2012-2013 was unchanged from that for 2011-2012 on the grounds that no adverse change to water quality within the Waitara Embayment arose as a result of the wastewater discharge. It is now proposed that for 2013-2014, the programme should continue at its current residual level. A recommendation to this effect is attached to this report.

4. Recommendations

1. THAT the microbiological monitoring programme in relation to the Waitara marine outfall in the 2013-2014 year continues at the same level as in 2012-2013.

Glossary of common terms and abbreviations

The following abbreviations and terms are used within this report:

cfu	colony forming units. A measure of the concentration of bacteria usually expressed as per 100 millilitre sample
Conductivity	an indication of the level of dissolved salts in a sample, usually measured at 20°C and expressed in mS/m
<i>E.coli</i>	<i>Escherichia coli</i> , an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre sample
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
fresh	elevated flow in a stream, such as after heavy rainfall
g/m ³	grammes per cubic metre, and equivalent to milligrammes 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
l/s	litres per second
mS/m	millisiemens per metre
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
Temperature	measured in °C (degrees Celsius)
UI	Unauthorised Incident

UIR Unauthorised Incident Register – contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan

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

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Appendix I

Resource consents

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

Name of Consent Holder: Methanex Motunui Limited
Private Bag 2011
NEW PLYMOUTH 4342

Decision Date (Change): 29 July 2013

Commencement Date (Change): 29 July 2013 (Granted: 29 April 2008)

Conditions of Consent

Consent Granted: To discharge treated wastewater and stormwater from the Waitara Valley Methanol Plant into the Tasman Sea via the Waitara marine outfall

Expiry Date: 1 June 2021

Review Date(s): June 2015 and/or within 3 months of notification under special condition 11

Site Location: At or beyond 1250 metre offshore from Waitara Rivermouth

Grid Reference (NZTM) 1705615E-5684951N

Catchment: Tasman Sea

*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 consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
2. The consent holder shall maintain a record of the volume of effluent discharged each day to an accuracy of $\pm 5\%$ and make these records available to the Chief Executive, Taranaki Regional Council in a digital format compatible with Council software, no later than 20th of the following month.
3. The maximum daily discharge shall be 5000 cubic metres per day at a maximum rate of 60 litres per second.
4. The consent holder shall ensure that the minimum initial dilution of the effluent above the outfall diffuser shall be 100:1.
5. The maximum daily discharge of suspended solids shall be 500 kilograms.
6. The consent holder shall ensure that the pH of the effluent shall not exceed the range of pH6 to pH 9 unless it is to be combine with the line treated wastewater from the Waitara Wastewater Treatment Plant, in which case, it shall not exceed the range pH 6 to pH 11.
7. On the basis of 24-hour flow proportioned composite samples, constituents of the discharge shall meet the standards shown below:

<u>Constituent</u>	<u>Standard</u>
Chemical oxygen demand	concentration no greater than 200 gm ⁻³
Hydrocarbons	concentration no greater than 10 gm ⁻³
Methanol	concentration no greater than 15 gm ⁻³
Ammonia	concentration no greater than 200 gm ⁻³
Copper	concentration no greater than 0.5 gm ⁻³
Nickel	concentration no greater than 1.0 gm ⁻³
Zinc	concentration no greater than 2.0 gm ⁻³

8. Subject to condition 9, only the water treatment chemicals listed in Table 1 shall be discharged, and the daily quantity discharged shall not exceed the limits given Table 1 below.

Table 1: List of water treatment chemicals

Purpose	Trade name	Maximum Daily discharge (kg)
Corrosion control in high pressure boiler	Optisperse HTP 73301 & 73611	50
Corrosion control in medium pressure boiler	Optisperse PO5211A	15
Oxygen removal from boiler feed water	Control OS7780	300
pH control of steam/condensate to prevent corrosion.	Steamate NA0880	25
Corrosion control of re-circulating cooling water.	Gengard GN8020 Flogard MS6209	70 20
Biocidal dispersant	Spectrus BD1500	50
Corrosion control of re-circulating cooling water	Inhibitor AZ8104	30
Reduce foam formation of cooling water	Foamtrol AF2290	2
Coagulant	Klaraid PC 1192	150
Secondary biocide	Spectrus CT1300	5

9. In addition to the water treatment chemical listed in Table 1 (condition 8), water treatment chemicals considered to be ‘equivalents’ may be discharged as an alternative to those listed in Table 1, provided approval for the equivalent chemical has been given by the Chief Executive of Taranaki Regional Council in accordance with condition 11.
10. For the purpose of this consent an ‘equivalent’ is defined as a chemical that, when compared the chemical listed in Table 1, the Chief Executive of Taranaki Regional Council has determined that:
- a) it is of a similar nature and used for a similar purpose;
 - b) it has similar breakdown products; and
 - c) it has potential environmental effects that are similar.
11. Any discharge of an equivalent chemical in accordance with condition 9, shall only occur after a written request to discharge an equivalent chemical has been approved by Chief Executive Taranaki Regional Council. Any such request shall include:
- a) name of equivalent chemical;
 - a) proposed concentration of equivalent in the discharge; and
 - b) details of the nature of the chemical including its breakdown products; and
 - c) an assessment of the potential effects of the change on the receiving environment.
- Note that the Chief Executive of Taranaki Regional Council may take up to 20 days to consider the request.
12. Special conditions 5, 6, 7 and 8 apply to effluent prior to entry into the outfall line, at a designated sampling point approved by the Chief Executive of Taranaki Regional Council.

Consent 3399-2

13. The limits in special conditions 7 and 8 apply unless the Chief Executive of Taranaki Regional Council has given approval for a short term change for the purpose of routine maintenance including physical and chemical cleaning and catalyst changeouts, as per condition 11.
14. After allowing for reasonable mixing, being outside of a zone of 200 metres from the centreline of the outfall diffuser, the discharge shall not give rise to any of the following effects in the receiving waters:
 - a) the production of any 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;
 - d) any significant adverse effects on aquatic life, habitats or ecology;
 - e) any undesirable biological growths.
15. The consent holder shall maintain a comprehensive contingency plan, to be put into operation to prevent unauthorised discharge resulting from spillages, accidental discharges or pipeline failure. The plan shall be provided to the Chief Executive, Taranaki Regional Council no more than thirty (30) days after this consent is first exercised and thereafter reviewed at two yearly intervals.
16. There shall be no domestic sewage (human effluent) in the discharge authorised by this consent following the closure of the Waitara municipal wastewater treatment plant.
17. At the request of the Chief Executive, Taranaki Regional Council, but at intervals of no less than five years, the consent holder shall certify the structural integrity and dilution performance of the outfall.
18. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, an annual report on its waste treatment system discharges. The annual report shall include:
 - a) daily volumes;
 - b) results of any and all analyses undertaken by or on behalf of the consent holder; and
 - c) compliance with the consent.

This report shall be provided by the 31st March each year and covering the previous calendar year period.

19. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

Consent 3399-2

20. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2015 or within 3 months of receipt of notification 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, 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 29 July 2013

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Methanex Motunui Limited
Private Bag 2011
NEW PLYMOUTH 4342

Decision Date
[change]: 18 July 2012

Commencement
Date [change]: 18 July 2012 [Granted: 29 April 2008]

Conditions of Consent

Consent Granted: To discharge treated wastewater and stormwater from the Motunui methanol plant into the Tasman Sea via the Waitara marine outfall at or about (NZTM) 1705615E-5684951N

Expiry Date: 1 June 2021

Review Date(s): June 2015 and/or within 3 months of receiving notification under special condition 12

Site Location: At or beyond 1250 metres offshore from Waitara River mouth

Catchment: Tasman Sea

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

General condition

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

Special conditions

- 1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
- 2. The consent holder shall maintain a record of the volume of effluent discharged each day to an accuracy of $\pm 5\%$ and make these records available to the Chief Executive, Taranaki Regional Council in a digital format compatible with Council software, no later than 20th of the following month
- 3. The maximum daily discharge shall be 12,096 cubic metres per day at a maximum rate of 140 litres per second.
- 4. The consent holder shall ensure that the minimum initial dilution of the effluent above the outfall diffuser shall be 100:1.
- 5. The maximum daily discharge of suspended solids shall be 500 kilograms.
- 6. The consent holder shall ensure that the pH of the effluent shall at all times be within the range of pH 6 to pH 9.
- 7. On the basis of 24-hour flow proportioned composite samples, constituents of the discharge shall meet the standards shown below.

<u>Constituent</u>	<u>Standard</u>
Chemical oxygen demand	concentration no greater than 200 gm ⁻³
Hydrocarbons	concentration no greater than 10gm ⁻³
Methanol	concentration no greater than 15 gm ⁻³
Copper	concentration no greater than 0.5 gm ⁻³
Nickel	concentration no greater than 1.0 gm ⁻³
Zinc	concentration no greater than 1.0 gm ⁻³

- 8. Subject to condition 10, only the water treatment chemicals listed in Table 1 shall be discharged, and the daily quantity discharged shall not exceed the limits given in Table 1.

Table 1: List of water treatment chemicals

Purpose	Trade name	Maximum Daily discharge (kg)
Corrosion control in high pressure boiler	Optisperse HTP 7330 & 73611	120
Corrosion control in medium pressure boiler	Optisperse PO5211A	20
Oxygen removal from boiler feed water	Cortrol OS7780	400
pH control of steam/condensate to prevent corrosion.	Steamate NA0880	40
Corrosion control of recirculating cooling water.	Continuum AEC3109	300
Control biological activity in cooling water	Spectrus BD1500	200
Corrosion control of recirculating cooling water	Inhibitor AZ8104	300
Control biological activity in cooling water	Spectrus NX1100	50
Control biological activity in cooling water	Spectrus CT1300	20
Corrosion control of recirculating cooling water	Flogard MS6207	40
Reduce foam formation of cooling water	Foamtrol AF2290	40
Coagulant	Klaraid PC 1190P	600
Flocculant	Betzdearborn AE1115	60

9. The maximum daily limit of the water treatment chemical 'Spectrus CT1300' may be increased to 40kg/day in response to increased levels of the bacteria Legionella if detected by the consent holder, to minimise the risk to human health. The Consent holder must notify the Council within 24 hours if this increased dose is utilized.
10. In addition to the water treatment chemicals listed in Table 1, water treatment chemicals determined to be 'equivalents' may be discharged as an alternative to those listed in Table 1, provided approval for the equivalent chemical has been given by the Chief Executive of Taranaki Regional Council in accordance with condition 12.
11. For the purpose of this consent an 'equivalent' is defined as a chemical that, when compared the chemical listed in Table 1, the Chief Executive of Taranaki Regional Council has determined that:
 - a) it is of a similar nature and used for a similar purpose;
 - b) it has similar breakdown products; and
 - c) it has potential environmental effects that are similar.
12. Any discharge of an equivalent chemical in accordance with condition 10, shall only occur after a written request to discharge an equivalent chemical has been approved by Chief Executive Taranaki Regional Council. Any such request shall include:
 - a) name of equivalent chemical;
 - b) proposed concentration of equivalent in the discharge; and
 - c) details of the nature of the chemical including its breakdown products; and
 - d) an assessment of the potential effects of the change on the receiving environment.

Note that the Chief Executive of Taranaki Regional Council may take up to 20 days to consider the request.

13. Special conditions 5, 6, 7 and 8, apply to effluent prior to entry into the outfall line, at a designated sampling point approved by the Chief Executive of Taranaki Regional Council.
14. The limits in special conditions 7 and 8 apply unless the Chief Executive of Taranaki Regional Council has given approval for a short term change for the purpose of routine maintenance including physical and chemical cleaning and catalyst changeouts, as per special condition 12.
15. After allowing for reasonable mixing, being outside of a zone of 200 metres from the centreline of the outfall diffuser, the discharge shall not give rise to any of the following effects in the receiving waters:
 - a) the production of any 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;
 - d) any significant adverse effects on aquatic life, habitats or ecology;
 - e) any undesirable biological growths
16. The consent holder shall maintain a comprehensive contingency plan, to be put into operation to prevent unauthorised discharge resulting from spillages, accidental discharges or pipeline failure. The plan shall be provided to the Chief Executive, Taranaki Regional Council no more than 30 days after this consent is first exercised and thereafter reviewed two yearly intervals.
17. No discharge of domestic sewage [human effluent] shall be permitted under the exercise of this consent.
18. The consent holder shall notify the Chief Executive, Taranaki Regional Council at least seven days before this consent is first exercised.
19. The consent holder shall on request by the Chief Executive, Taranaki Regional Council, but at intervals of no less than five years, certify the structural integrity and dilution performance of the outfall.
20. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, an annual report on its waste treatment system discharges. The annual report shall include:
 - a) daily volumes;
 - b) results of any and all analyses undertaken by or on behalf of the consent holder;
 - c) compliance with the consent.

This report shall be provided by the 31st March each year and covering the previous calendar year period.

Consent 3400-2

21. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
22. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2015 or within 3 months of receipt of notification under special condition 12, 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 18 July 2012

For and on behalf of
Taranaki Regional Council

Director-Resource Management



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

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
2012-2013 Monitoring data

Airedale

Date	Time (NZST)	Conductivity @ 20°C (mS/m)	Bacteria			Temp (°C)
			<i>E. coli</i> (nos/100ml)	Enterococci (nos/100ml)	Faecal coliforms (nos/100ml)	
1-Nov-12	10:15	4320	42	3	44	16.1
28-Nov-12	10:00	4230	34	2	34	16.4
13-Dec-12	9:55	4210	15	15	15	18.4
28-Jan-13	10:56	4730	1	1	1	21
31-Jan-13	11:15	4470	110	110	110	21.9
11-Feb-13	9:50	4590	47	93	52	19.9
14-Feb-13	11:00	4760	1	23	1	18.2
18-Feb-13	14:00	4640	1	5	1	22.9
25-Feb-13	9:40	4710	1	16	1	18.3
28-Feb-13	10:05	4690	4	25	4	19.5
4-Mar-13	13:00	4690	3	3	3	20.1
12-Mar-13	10:06	4770	2	4	2	19
27-Mar-13	9:40	4640	23	42	23	19.8

Waitara East Beach

Date	Time (NZST)	Conductivity @ 20°C (mS/m)	Bacteria			Temp (°C)
			<i>E. coli</i> (nos/100ml)	Enterococci (nos/100ml)	Faecal coliforms (nos/100ml)	
1-Nov-12	10:30	4150	86	8	88	15.9
28-Nov-12	9:50	4410	100	100	100	16.1
13-Dec-12	9:45	4340	24	57	28	18
28-Jan-13	11:06	3810	8	37	8	21.3
31-Jan-13	11:25	4340	16	310	16	22.7
11-Feb-13	9:45	4690	80	400	110	20.1
14-Feb-13	11:15	4580	16	25	31	18.3
18-Feb-13	14:05	4040	7	43	7	20.7
25-Feb-13	9:50	4640	1	12	1	17.5
28-Feb-13	10:20	4760	16	38	16	19.6
4-Mar-13	13:10	4750	2	1	2	20.3
12-Mar-13	10:30	4730	2	8	2	19
27-Mar-13	9:30	4720	4	1	4	20.1

Waitara West Beach

Date	Time (NZST)	Conductivity @ 20°C (mS/m)	Bacteria			Temp (°C)
			<i>E. coli</i> (nos/100ml)	Enterococci (nos/100ml)	Faecal coliforms (nos/100ml)	
1-Nov-12	11:00	4310	56	8	58	16.1
28-Nov-12	9:24	4480	3	3	3	15.8
13-Dec-12	9:20	4350	15	48	15	18.2
28-Jan-13	11:48	3580	13	9	13	21.8
31-Jan-13	11:55	4280	1	7	1	22.5
11-Feb-13	9:25	4670	44	90	44	19.8
14-Feb-13	11:50	4660	6	6	6	18.6
18-Feb-13	14:30	4240	16	46	16	20.7
25-Feb-13	10:20	4730	4	7	4	18
28-Feb-13	10:40	4760	60	39	60	19.9
4-Mar-13	13:35	4720	3	6	3	20.1
12-Mar-13	11:08	4790	4	6	4	18.8
27-Mar-13	9:00	4770	1	8	1	19.9

Tuaranga Reef

Date	Time (NZST)	Conductivity @ 20°C (mS/m)	Bacteria			Temp (°C)
			<i>E. coli</i> (nos/100ml)	Enterococci (nos/100ml)	Faecal coliforms (nos/100ml)	
1-Nov-12	11:30	4560	1	8	1	16.4
28-Nov-12	9:04	4240	20	25	20	15.8
13-Dec-12	8:55	4630	3	15	3	18.1
28-Jan-13	12:10	4690	1	4	1	22.3
31-Jan-13	12:15	4350	69	60	69	22.6
11-Feb-13	9:00	4710	4	8	4	19.6
14-Feb-13	12:00	4590	9	23	9	19.6
18-Feb-13	14:45	4700	120	320	120	28.8
25-Feb-13	10:40	4720	1	7	1	18.5
28-Feb-13	11:00	4760	12	36	12	20.3
4-Mar-13	13:50	4680	4	4	4	20.6
12-Mar-13	11:25	4790	1	1	1	18.8
27-Mar-13	8:40	4780	1	1	1	18.9

Bertrand Road

Date	Time (NZST)	Conductivity @ 20°C (mS/m)	Bacteria			Temp (°C)
			<i>E. coli</i> (nos/100ml)	Enterococci (nos/100ml)	Faecal coliforms (nos/100ml)	
1-Nov-12	9:00	7.9	500	54	500	16.2
28-Nov-12	11:20	9	14	4	17	18.7
13-Dec-12	11:20	8.4	140	180	140	19.8
28-Jan-13	9:17	10.2	11	7	11	21.9
31-Jan-13	10:00	10.4	34	28	34	22.3
11-Feb-13	11:20	8.7	71	44	74	20.4
14-Feb-13	9:35	9.1	37	36	37	20.7
18-Feb-13	12:50	9.9	17	23	17	22
25-Feb-13	12:05	10.5	54	46	54	20.6
28-Feb-13	8:50	10.6	110	33	110	20.7
4-Mar-13	10:30	10.7	31	9	34	20.7
12-Mar-13	8:55	11.2	46	80	48	19.6
27-Mar-13	10:50	10.6	140	62	160	18.1

