Urenui and Onaero Beach Camps Monitoring Programme Annual Report 2015-2016

Technical Report 2016-108

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Executive summary

New Plymouth District Council (NPDC) operates the sewage disposal systems located at Urenui Beach Camp and Onaero Bay Holiday Park. NPDC holds resource consents to allow it to discharge septic tank treated sewage to groundwater via infiltration trenches at each of the motor camps. This report for the period July 2015 to June 2016 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess NPDC's environmental performance during the period under review. The report also details the results of the monitoring undertaken and assesses the environmental effects of the NPDC's activities.

NPDC holds one resource consent per beach camp, each of which has five special conditions setting out the requirements that NPDC must satisfy.

During the monitoring period, NPDC demonstrated an overall high level of environmental performance.

The Council's routine monitoring programme for the year under review included three inspections per motor camp during the Christmas holiday period. One of these inspections included bacteriological sampling at four sites at Urenui and five sites at Onaero. An additional sampling round was undertaken at Onaero as per recommendations outlined in the 2014-2015 monitoring report.

The water samples collected at Urenui failed to indicate any adverse environmental effects caused by the Urenui Beach Camp's sewage treatment system.

Results from the water samples collected at Onaero suggest that there may be a number of factors that are adversely affecting water quality in the lower reach of the Onaero River. Although there is little evidence to suggest otherwise, further monitoring is required to confidently rule out Onaero Bay Holiday Park's sewerage system as a contributing factor.

During the year, a high level of environmental performance and compliance was demonstrated by NPDC with regards to the resource consents for both the Urenui Beach Camp (2046-3) and Onaero Bay Holiday Park (1389-3), as indicated by site inspections and bacteriological monitoring of coastal and riverine waters.

For reference, in the 2015-2016 year, 71% 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 24% demonstrated a good level of environmental performance and compliance with their consents.

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

This report includes recommendations for the 2016-2017 year.

Table of contents

List of tables

List of figures

List of photos

1. Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is for the period July 2015 to June 2016 by the Taranaki Regional Council (the Council) describing the monitoring programme associated with resource consents held by New Plymouth District Council (NPDC) for the disposal of treated sewage at the Urenui and Onaero beach camps. NPDC operates the sewage treatment systems at each of the motor camps.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consents held by the NPDC that relate to discharges of septic tank treated sewage effluent to groundwater via soakage trenches. This is the 26th report to be prepared by the Council to cover the NPDC's 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:

- consent compliance monitoring under the RMA and the Council's obligations;
- the Council's approach to monitoring sites though annual programmes;
- the resource consents held by the NPDC for the two campgrounds;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted at the Urenui and Onaero beach camps.

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

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

Section 4 presents recommendations to be implemented in the 2016-2017 monitoring year.

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

1.1.3 The Resource Management Act 1991 and monitoring

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

(a) the neighbourhood or the wider community around an activity, and may include cultural and social-economic effects;
(b) physical effects on the locality, including landscape, amenity and visual effects;

(c) ecosystems, including effects on plants, animals, or habitats, whether aquatic or terrestrial;
(d) natural and physical resources having special significance (for example recreational, cultural, or aesthetic); and
(e) risks to the neighbourhood or environment.

In drafting and reviewing conditions on discharge permits, and in implementing monitoring programmes, the Council is recognising the comprehensive meaning of 'effects' inasmuch as is appropriate for each activity. Monitoring programmes are not only based on existing permit conditions, but also on the obligations of the RMA to assess the effects of the exercise of consents. In accordance with Section 35 of the RMA, the Council undertakes compliance monitoring for consents and rules in regional plans, and maintains an overview of the performance of resource users and consent holders. Compliance monitoring, including both activity and impact monitoring, enables the Council to continually re-evaluate its approach and that of consent holders to resource management and, ultimately, through the refinement of methods and considered responsible resource utilisation, to move closer to achieving sustainable development of the region's resources.

1.1.4 Evaluation of environmental and administrative performance

Besides discussing the various details of the performance and extent of compliance by the NPDC, this report also assigns them a rating for their environmental and administrative performance during the period under review.

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

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

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

Environmental Performance

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

- **Good:** Likely or actual adverse effects of activities on the receiving environment were negligible or minor at most. There were some such issues noted during

monitoring, from self reports, or in response to unauthorised incident reports, but these items were not critical, and follow-up inspections showed they have been dealt with. These minor issues were resolved positively, co-operatively, and quickly. The Council was not obliged to issue any abatement notices or infringement notices in relation to the minor non-compliant effects; however abatement notices may have been issued to mitigate an identified potential for an environmental effect to occur.

For example:

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

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

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

Administrative performance

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

- **Good:** Perhaps some administrative requirements of the resource consents were not met at a particular time, however this was addressed without repeated interventions from the Council staff. Alternatively adequate reason was provided for matters such as the no or late provision of information, interpretation of 'best practical option' for avoiding potential effects, etc.

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

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

For reference, in the 2015-2016 year, 71% 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 24% demonstrated a good level of environmental performance and compliance with their consents.

1.2 Process description

1.2.1 Urenui Beach Camp

The current sewage disposal system at Urenui Beach Camp has been in use since 1987. Prior to this, septic tank wastes were pumped to a nearby cliff top and discharged to the sea below. This was found to be unsatisfactory, as the septic tank retention time was about 21 hours during the peak summer usage period, resulting in inadequate treatment of sewage.

With the current disposal system the waste from the campsite receives primary treatment through a septic tank system and is then pumped to groundwater via soakage trenches located approximately 50 m from the edge of the cliff to the northeast of the camp and golf course. Regular maintenance ensures continued satisfactory performance of the system.

Photo 1 Urenui Estuary and beach camp

1.2.2 Onaero Bay Holiday Park

The current sewage disposal system at the Onaero Bay Holiday Park has been in use since 1984. Prior to this, wastes were collected in septic tanks and the overflow gravitated to a small pumping station on the northern side of the Onaero River. The wastes were then pumped to the top of a nearby ridge and into a soakage pit (approximately 4 x 2 x 3 m). This was found unsatisfactory during the peak summer usage period, resulting in inadequate treatment of sewage.

The current disposal system treats waste from the campsite in a similar manner to the Urenui Beach Camp sewage treatment system. Wastes receive primary treatment through a septic tank system and are then pumped to soakage trenches located on high ground approximately 300 m away. Regular maintenance ensures continued satisfactory performance of the system.

1.3 Resource consents

1.3.1 Water discharge permit

Section 15(1)(a) of the RMA stipulates that no person may discharge any contaminant into water, unless the activity is expressly allowed for by a resource consent or a rule in a Regional Plan, or by national regulations.

The NPDC holds water discharge permit **2046-3** to discharge up to 85 m^3/day of septic tank treated sewage effluent via soakage trenches to groundwater in the vicinity of the Urenui River. This consent was originally issued on 21 August 1991 as a water right under the Water and Soil Conservation Act 1967. This was re-issued by the Council on 6 December 2002 as a discharge permit under Section 386(1)(e)(ii) of the RMA. It is due to expire on 1 June 2021.

The discharge permit has five special conditions attached.

Condition 1 requires bacteriological monitoring of the coastal waters of the foreshore and the Urenui River.

Condition 2 requires the consent holder to ensure proper maintenance of the septic tank, pumping station and soakage trenches.

Condition 3 requires the consent holder to provide records of daily effluent volumes discharged.

Condition 4 requires the consent holder to provide a contingency plan.

Condition 5 deals with review of the consent.

The NPDC holds water discharge permit **1389-3** to discharge up to 17 m^3/day of septic tank treated sewage effluent via soakage trenches to groundwater in the vicinity of the Onaero River. This consent was originally issued on 21 August 1991 as a water right under the Water and Soil Conservation Act 1967. This was re-issued by the Council on 6 December 2002 as a discharge permit under Section 386(1)(e)(ii) of the RMA. It is due to expire on 1 June 2021.

The discharge permit has five special conditions attached.

Condition 1 of the consent requires bacteriological monitoring of the coastal waters of the foreshore and the Onaero River.

Condition 2 requires the consent holder to ensure proper maintenance of the septic tank, pumping station and soakage trenches.

Condition 3 requires the consent holder to provide records of daily effluent volumes discharged.

Condition 4 requires the consent holder to provide a contingency plan.

Condition 5 deals with review of the consent.

Copies of the permits are attached to this report in Appendix I.

1.4 Monitoring programme

1.4.1 Introduction

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

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

The monitoring programme for the Urenui and Onaero beach camps consisted of three primary components.

1.4.2 Programme liaison and management

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

- ongoing liaison with resource consent holders over consent conditions and their interpretation and application;
- in discussion over monitoring requirements;
- preparation for any reviews;
- renewals;
- new consents;
- advice on the Council's environmental management strategies and content of regional plans; and
- consultation on associated matters.

1.4.3 Site inspections

The Urenui and Onaero beach camps were both visited three times during the monitoring period. With regard to consents for the discharge to water, the main points of interest were plant processes with potential or actual discharges to receiving watercourses. The neighbourhood was surveyed for environmental effects.

1.4.4 Bacteriological sampling

The Council usually undertakes bacteriological sampling in conjunction with the first post-Christmas inspections in January. This year, sampling was carried out during the final inspection round due to the rainfall that preceded the second inspection round. Rainfall can lead to elevated counts of faecal indicator bacteria (faecal coliforms, *E. coli* and Enterococci bacteria: FIB) in streams within agricultural catchments due to runoff from land. Elevated background counts of FIB are unsuitable for these types of monitoring programmes as they can mask any wastewater contaminants in the streams or coastal waters.

Samples were collected at four sites in conjunction with the Urenui Beach Camp: two river and two coastal sites (Figure 1). Samples were collected at five sites in conjunction with the Onaero Bay Holiday Park: two river and three coastal sites (Figure 2). All samples were analysed for temperature, conductivity, faecal coliforms, *E. coli* and Enterococci bacteria. FIB were monitored to provide an indication of potential contamination of the water by animal and/or human excreta. An additional, modified round of sampling was carried out at the Onaero Bay Holiday Park in response to elevated counts of FIB in the Onaero River.

As the beaches and rivers around Urenui and Onaero beach camps are popular summer swimming areas, water quality at these sites is of particular interest. In 2003, the Ministry for the Environment (MfE) developed the Guidelines for Recreational Water Quality to assess the safety of water for contact recreation. The coastal guidelines focus on Enterococci as this indicator provides the closest correlation with health effects in New Zealand coastal waters. 'Alert' and 'Action' guideline levels are summarised in Table 1 and are based on keeping illness risk associated with recreational use to less than approximately 2%. For freshwater, the MfE 2003 guidelines use *E. coli* as the preferred indicator (Table 1).

Table 1 Recreational bathing guidelines (MfE 2003)

	Indicator	Mode		
		Surveillance	Alert	Action
Marine	Enterococci (cfu/100 ml)	No single sample >140	Single sample >140	Two consecutive single samples >280
Freshwater	*E. coli* (cfu/100 ml)	No single sample >260	Single sample >260	Single sample >550

In addition to water quality monitoring during inspections, bacteriological samples were also collected from the Urenui River mouth (URN000480) and in front of the Onaero Surf Club (SEA900085) as part of the Council's State of Environment Monitoring Programme during the 2015-2016 monitoring period. Results from this programme are available in the Council's 2015-2016 Bathing Beach Water Quality State of the Environment Monitoring Report.

Photo 2 Urenui Beach (8 January 2015)

Photo 3 Onaero Beach (8 January 2015)

2. Results

2.1 Urenui Beach Camp

2.1.1 Inspections

17 December 2015
Conditions were overcast with light spitting rain and a north westerly wind at the time of the inspection. The camp manager reported that there had been no issues with the sewerage pump station since the previous inspection. No odours were detected at the pump station, nor were there any visual issues. The campsite was relatively quiet at the time of the inspection.

5 January 2016
Conditions were fine with a light north westerly wind at the time of the inspection. The camp manager reported that there had been no issues with the camp sewerage system since the previous inspection. No visual issues were evident at the pump station during the inspection. Only a faint odour could be detected directly above the pump. The campsite was busy (near capacity) at the time of the inspection.

11 February 2016
Conditions were fine with a slight north easterly breeze. The inspection was made at approximately 0800 and so the camp reception was not yet open. The number of campers staying at the park appeared to have dropped since the previous inspection. No visual issues or odours were detected at the pump station at the time of the inspection.

Water samples were collected during the inspection.

Correspondence with the Camp Manager at the end of the monitoring period confirmed that there had been no issues with the wastewater water system since it was last discussed in January.

2.1.2 Receiving environment monitoring

The location of the four sampling sites is shown in Figure 1. A description of each site is provided in Table 2.

Table 2 Location of bacteriological sampling sites at Urenui Beach Camp

Site	Location	Site code	Map Reference
1	Urenui River SH3 bridge	URN000420	1721404 - 5682968
1a	Urenui River Footbridge	URN000440	1720608 - 5682914
2	Urenui River at mouth	URN000480	1720245 - 5683370
3	Sea coast approx. 200 m east of river mouth	SEA900072	1720582 - 5683563
4	Sea coast at east end of beach	SEA900070	1720803 - 5683667

The bridge on State Highway 3 (Site 1) had previously been used as the upstream sampling site, however, this site is no longer safe to sample from. The alternative site, 1 km downstream at the footbridge (Site 1a), has been used since 2001.

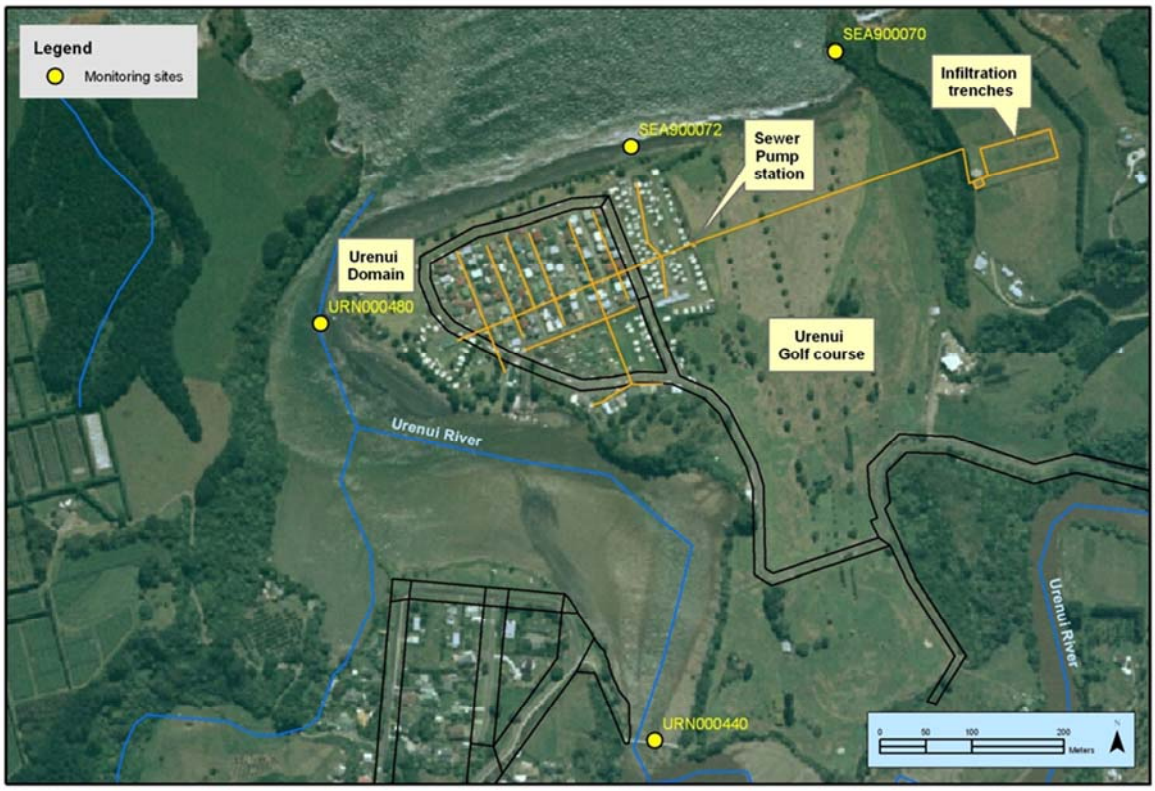

Figure 1 Location of sewage disposal system and sample sites, Urenui Beach Camp

FIB have been sampled at the Urenui Beach Camp since 1987. A summary of faecal coliform results from 1987 to 2015 is provided in Appendix II for comparative purposes (Tables 1A – 3A).

Bacteriological monitoring results for the 2015-2016 monitoring year are shown in Table 3. The E.coli count recorded at the footbridge was above the MfE 'Alert' level for freshwater (>260 cfu/100 ml). However, this count was only slightly higher than the historical median, and was well within the range of previous results. The E. coli count was lower at the river mouth, where it was below both the MfE 'Alert' level, and also the historical median recorded for that site. Enterococci counts were relatively low at the two coastal sites. The counts at both of these sites were below the MfE 'Alert' level for marine waters (>140 cfu/100 ml). The count from the centre of the beach (site 3, SEA900072) was below the historical median.

Table 3 Bacteriological results, Urenui, 11 February 2016

Parameter	Unit	Site 1a	Site 2	Site 3	Site 4
Conductivity @ 20°C	mS/m	3,240	3,740	4,550	4,610
E. coli	cfu/100 ml	300	110	1	15
Enterococci	cfu/100 ml	110	96	8	25
Faecal coliforms	cfu/100 ml	300	110	1	15

2.3 Onaero Bay Holiday Park

2.3.1 Inspections

17 December 2015
Conditions were overcast with a north westerly wind at the time of the inspection. Management staff had changed mid way through 2015. The previous manager was onsite during the inspection. He recalled that the pump had been malfunctioning frequently in the earlier stages of 2015. He was not aware of any overflow events and he said that the issue was eventually resolved by NPDC contractors. The new manager, who took over in July, stated that there had been no major issues since she had been at the camp. However, she recalled that the pump station alarm had been triggered twice back around July. No odours were detected at the pump station during the inspection, nor were there any visual issues. The camp was relatively quiet during the visit.

5 January 2016
Conditions were fine with a light north westerly wind at the time of the inspection. The other new manager reported that there had been no issues with the sewerage pump since the last visit. However, management had been receiving complaints regarding the odours generated from the pump station. An NPDC contractor had suggested that a filter may need replacing. During the inspection there were no visual issues at the pump station. Moderate sewage odours were detected downwind within five metres of the pump. No sewage odour was detected beyond this range. Management estimated the camp to be half full during the visit.

11 February 2016
Conditions were fine with a light southerly breeze at the time of the inspection. The inspection was made at approximately 0715 and so the camp reception was not yet open. No visual issues or odours were detected at the pump station at the time of the inspection. The number of campers staying at the park appeared to have dropped since the previous inspection.

Water samples were collected during the inspection.

Correspondence with the camp manager at the end of the monitoring period confirmed that there had been no further issues with the wastewater water system since it was last discussed in January. The odour issues that were noted on 5 January 2016 had shortly dissipated as the camp site emptied out. The recommendations made by the NPDC contractor regarding the pump filter had not been carried out, however management were aware that the filter may need replacing if further issues were to arise in the 2016-2017 peak holiday period.

2.3.3 Receiving environment monitoring

The location of each of the five sites is shown in Figure 2 and a description of each site is provided in Table 4.

Table 4 Location of bacteriological sampling sites at Onaero Bay Holiday Park

Site	Location	Site code	GPS
1	Onaero River SH3 bridge	ONR000450	1718296 - 5682687
2	Onaero River at domain pump station bridge	ONR000470	1718283 - 5682895
3	Sea coast on beach adjacent surf club	SEA900085	1718158 - 5683163
4	Sea coast beneath sewage infiltration cliff	SEA900083	1718216 - 5683212
5	Sea coast north of sewage infiltration cliff	SEA900081	1718296 - 5683239

FIB have been sampled for at the Onaero Bay Holiday Park since 1987. A summary of the faecal coliform results between 1987 and 2015 is provided in Appendix III for comparative purposes (Tables 4A – 6A).

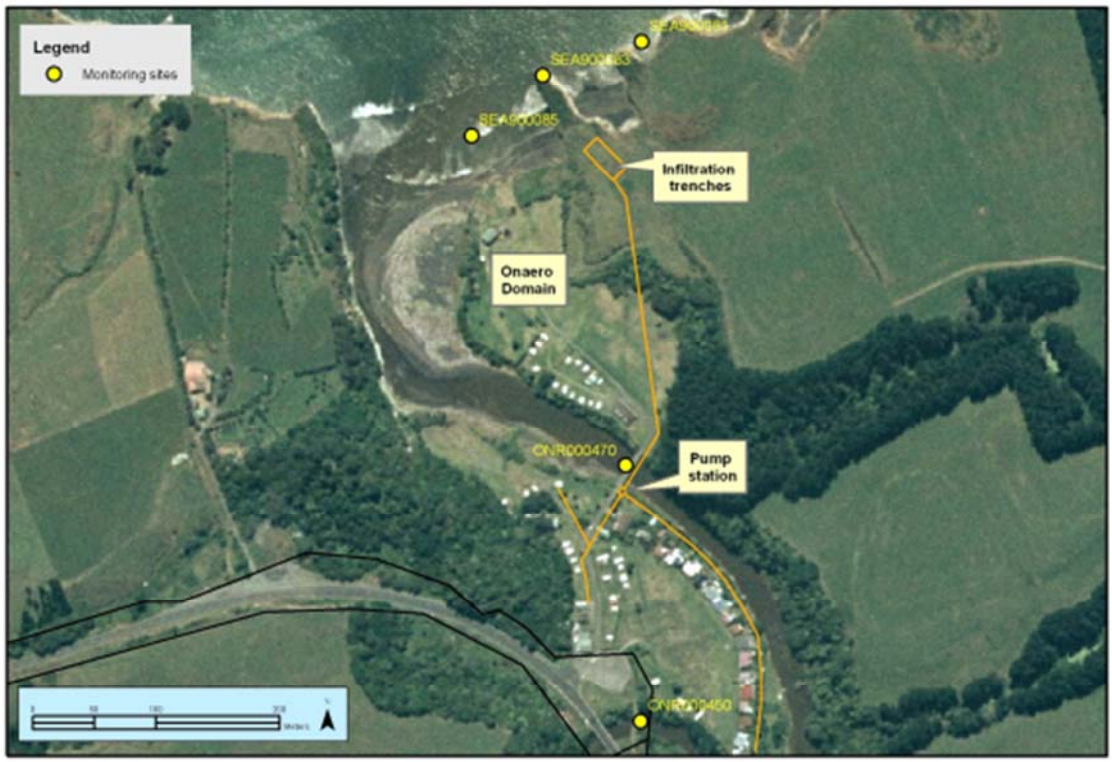

Figure 2 Location of sewage disposal system and sampling sites, Onaero Bay Holiday Park

Table 5 shows the results of bacteriological monitoring undertaken during the 2015-2016 monitoring year at five sites. The E. coli counts recorded at the two river sites were below the historical medians. Of the two sites, the E.coli count was slightly higher downstream of the pump station, where it exceeded the MfE 'Alert' level for freshwater (>260 cfu/100 ml). Enterococci counts were elevated at both of these sites and exceeded the historical medians and means. Enterococci counts recorded at the three coastal sites all exceeded historical medians. None of these sites exceeded the MfE 'Alert' level for marine waters (>140 cfu/100 ml), although the site in front of the surf

club was on the threshold (140 cfu/100 ml). E. coli counts at the coastal sites were comparable with previous results.

Table 5 Bacteriological results, Onaero, 11 February 2016

Parameter	Unit	Site 1	Site 2	Site 3	Site 4	Site 5
Conductivity @ 20°C	mS/m	1,030	1,420	4,560	4,200	4,600
E. coli	cfu/100 ml	210	290	62	90	24
Enterococci	cfu/100 ml	650	660	140	130	50
Faecal coliforms	cfu/100 ml	210	310	64	92	24

2.4 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 NPDC. During the year matters may arise which require additional activity by the Council, for example provision of advice and information, or investigation of potential or actual courses 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 Incident Register (IR) includes events where NPDC 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 2015-2016 period, the Council was required to undertake an additional investigation in association with NPDC's conditions in resource consent 1389-3.

Last year, concerns were raised over the elevated E. coli count at the downstream river site in relation to the upstream site (a pattern that is now reflected in the historical medians of the two sites). In addition to a dairy pond discharge and domestic septic tanks, the camp's sewage pump station is located on the edge of the river between these two sampling sites. Accordingly, further work has been required to ascertain the source of faecal contamination.

An investigation into these water quality issues was carried out on 1 April 2015, however the results were somewhat inconclusive. Following this, recommendations were made in the last monitoring report (TRC, 2015) to carry out another survey, this time employing the use of faecal source tracking technology.

On 1 April 2016, a follow up investigation was undertaken. The initial plan was to collect three river samples: two of which collected from the standard monitoring sites, and one collected from a site approximately 25 metres upstream of the pump station,

on the true left bank. Samples would be analysed by the Council for the same suite of parameters as tested for during the routine monitoring (Faecal coliforms, *E. coli*, enterococci, conductivity and temperature).

Samples were collected from four sites (Figure 3). Two of these sites were those routinely monitored as part of the monitoring programme (sites 1 and 3; Figure 3). Of these two sites, the downstream sample had to be collected from the true left bank due to gear failure with the bridge sampler. Another sampling site was located approximately 25 metres upstream of the sewage pump station, on the true left bank (site 2; Figure 3). The final site was a small tributary on the true right bank of the river, immediately upstream of the camp bridge (site 4; Figure 3). This site was not considered in the initial sampling plan as the tributary was only discovered at the time of the sampling.

Duplicate samples were collected from each site with the exception of site 4, as there were insufficient bottles. The first set of samples were collected for the analysis of temperature, conductivity and faecal indicator bacteria (FIB: *E. coli*, enterococci and faecal coliforms) at the Council's laboratory. The other set of samples were sent to The Institute of Environmental Science and Research (ESR) for preparation for the faecal source tracking (FST) analyses. This procedure was followed so that the initial counts of FIB could inform whether the second stage of the analyses should go ahead. Sufficiently high counts of FIB are required in order for FST to be worthwhile. In this instance, the FIB counts in the samples from sites 1, 2 and 3 were deemed inadequate to ensure that the FST would produce a meaningful result (Figure 3).

The results of this investigation continue to shed light on how different sources of faecal contamination (both potential and realised), may be affecting the water quality of the Onaero River. In particular, the newly discovered tributary appears to be having an obvious and direct effect (Photo 4). However, without the use of FST, the effect of the tributary and effluent ponds on the river cannot be conclusively differentiated from the potential contribution of the camp's sewage pump station or even the domestic septic tanks further upstream.

FST may be employed again during the 2016-2017 summer in conjunction with routine monitoring. A recommendation to this effect is included in section 4.

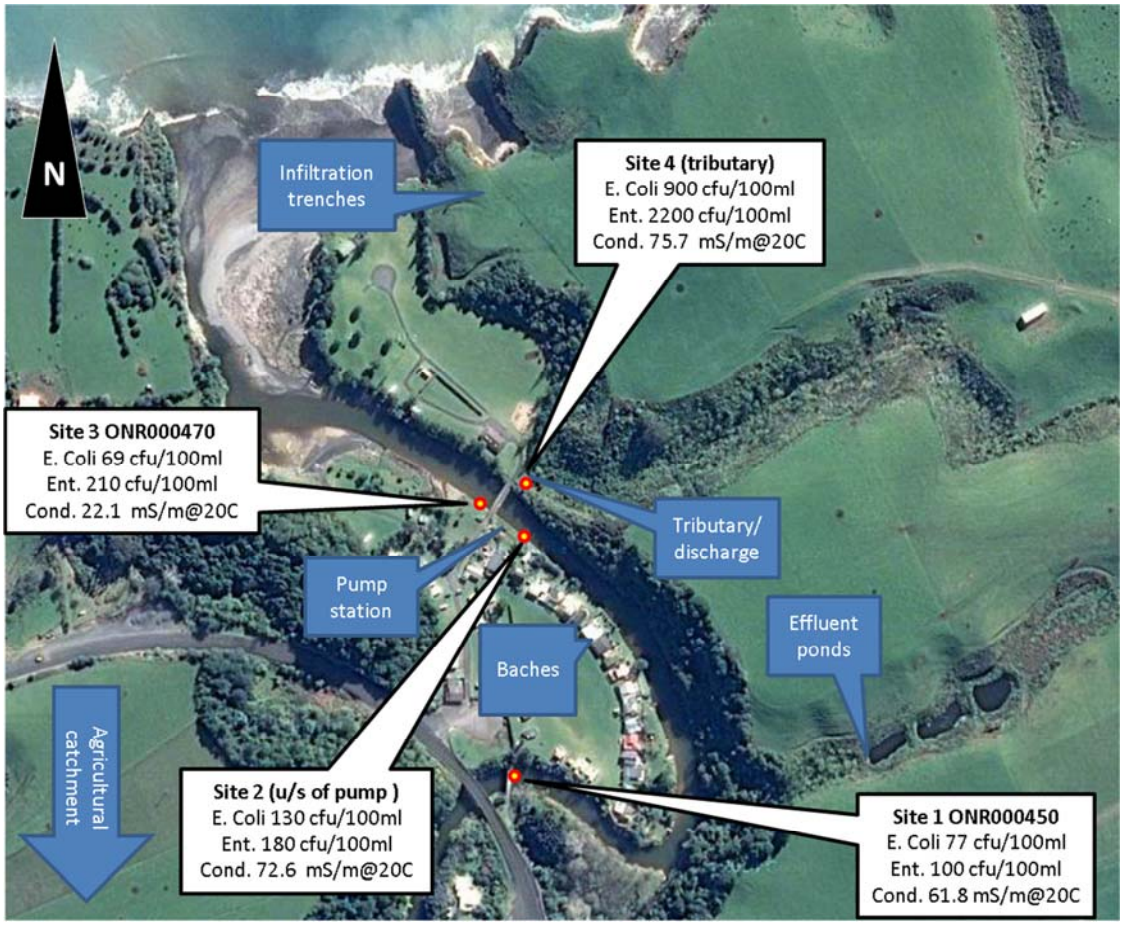

Figure 3 Map of sampling sites, other features of interest and results of initial analyses, from the investigation carried out on 1 April 2016

Photo 4 Location of the tributary / sampling site 4 in relation to the camp bridge

3. Discussion

3.1 Discussion of site performance

3.1.1 Urenui Beach Camp

Sewage odours were either slightly detectable or absent during each of the three inspections. No visual issues were noted during any of the inspections. There were no issues with the sewage treatment system reported by the camp manager over the 2015-2016 monitoring period.

The contingency plan for Urenui Beach Camp is now included in the NPDC Water and Wastes Incident Response Plan. Version 10.0 of this plan was received by the Council during January 2016. As there have been no significant changes at the camp, this plan is considered to be valid and active.

3.1.2 Onaero Bay Holiday Park

A moderate sewage odour was noticeable around the pump station during an inspection on the 5 January 2015. Although management had received odour complaints around this time, the issue was short lived and the odours dissipated as the camp site emptied out. No odours were detected during the final inspection and no visual issues were noted over the monitoring period.

The contingency plan for Onaero Bay Holiday Park is now included in the NPDC Water and Wastes Incident Response Plan. Version 10.0 of this plan was received by the Council during January 2016. As there have been no significant changes at the camp, this plan is considered to be valid and active.

3.2 Environmental effects of exercise of consents

Water quality monitoring was undertaken in the Urenui River and adjacent coastal waters during the period under review. The samples failed to detect any adverse effects caused by the Urenui Beach Camp's sewage treatment system.

Water quality monitoring was also undertaken in the Onaero River and adjacent coastal waters during the period under review. Although FIB counts were again higher downstream of the sewage pump station than they were at the upstream site, these results were insufficient to suggest that the pump station was the cause of the elevated counts. It should also be noted that the historical median *E. coli* count at this downstream site is now greater than that at the upstream site; lowering the likelihood that the results found in recent years are simply due to chance. Investigation efforts over the past two years have identified two real sources of faecal contaminants (the tributary at the camp bridge, and the effluent pond discharge further upstream), and two potential sources (the pump station and septic tanks). Additional monitoring is recommended for the upcoming summer in order to conclusively rule out the pump station as a source of contamination and better understand how the remaining sources might be affecting the river.

3.3 Evaluation of performance

A summary of the NPDC's compliance record for the year under review is provided in Tables 6 and 7.

Table 6 Summary of performance for Consent 2046-3

Purpose: ***To discharge of treated septic tank effluent in the vicinity of the Urenui River***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Bacteriological monitoring of Urenui River and coastal foreshore	Sample collection	Yes
2. Consent holder to maintain septic tank system as required	Site inspections, liason with camp management	Yes
3. Records of daily effluent volumes if requested	Not requested during period under review	N/A
4. Contingency plan	NPDC Water & Wastes IRP version 10.0 received Jan 2016	Yes
5. Optional review provision re environmental effects	No further provisions for review; expires 1 June 2021	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

N/A = not applicable

Table 7 Summary of performance for Consent 1389-3

Purpose: ***To discharge of septic tank sewage effluent at Onaero***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Bacteriological monitoring of Onaero River and coastal foreshore	Sample collection	Yes
2. Consent holder to maintain septic tank system as required	Site inspections, liason with camp management	Yes
3. Records of daily effluent volumes if requested	Not requested during period under review	N/A
4. Contingency plan	NPDC Water & Wastes IRP version 10.0 received Jan 2016	Yes
5. Optional review provision re environmental effects	No further provisions for review; expires 1 June 2021	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

NPDC demonstrated a high level of environmental and administrative performance and compliance with the resource consent for Urenui Beach Camp (2046-3), as indicated by site inspections and bacteriological monitoring of receiving waters.

Inspections and bacteriological monitoring also indicate a high level of environmental and administrative performance and compliance from NPDC with regards to the resource consent for Onaero Bay Holiday Park (1389-3).

3.4 Recommendations from the 2014-2015 Annual Report

In the 2014-2015 Annual Report, it was recommended:

1. THAT monitoring of discharges from Urenui Beach Camp in the 2015-2016 year continues at the same level as in 2014-2015.

2. THAT monitoring of discharges from Onaero Bay Holiday Park in the 2015-2016 year continues at the same level as in 2014-2015.

3. THAT faecal source tracking technology is employed at Onaero in the 2015-2016 monitoring period in addition to the routine monitoring programme in order to distinguish the source of faecal contamination.

These recommendations were implemented, however faecal source tracking technology could not be employed for reasons outside of the Council's control.

3.5 Alterations to monitoring programmes for 2016-2017

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

- the extent of information made available by previous authorities;
- its relevance under the RMA;
- its obligations to monitor emissions/discharges and effects under the RMA; and
- to report to the regional community.

The Council also takes into account the scope of assessments required at the time of renewal of permits, and the need to maintain a sound understanding of industrial processes within Taranaki emitting to the atmosphere/discharging to the environment.

It is proposed that for 2016-2017, the monitoring programmes for both camps remains unchanged from that of 2015-2016.

4. Recommendations

1. THAT monitoring of discharges from Urenui Beach Camp in the 2016-2017 year continues at the same level as in 2015-2016.

2. THAT monitoring of discharges from Onaero Bay Holiday Park in the 2016-2017 year continues at the same level as in 2015-2016.

3. THAT faecal source tracking technology is employed for the Onaero Bay Holiday Park in the 2016-2017 monitoring period in addition to the routine monitoring programme in order to distinguish the source of faecal contamination.

Glossary of common terms and abbreviations

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

cfu	Colony forming units. A measure of the concentration of bacteria usually expressed as per 100 millilitre sample.
Conductivity	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 20°C and expressed in mS/m.
Contact recreation	Recreation activities that bring people physically in contact with water, involving a risk of involuntary ingestion or inhalation of water.
E.coli	Escherichia coli, an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre sample.
Enterococci	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	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.
Incident	An event that is alleged or is found to have occurred that may have actual or potential environmental consequences or may involve non-compliance with a consent or rule in a regional plan. Registration of an incident by the Council does not automatically mean such an outcome had actually occurred.
Intervention	Action/s taken by Council to instruct or direct actions be taken to avoid or reduce the likelihood of an incident occurring.
Investigation	Action taken by Council to establish what were the circumstances/events surrounding an incident including any allegations of an incident.
Incident Register	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.
Median	Central value when values are arranged in order of magnitude.
NZDT	New Zealand Daylight Time, the addition of one hour to New Zealand Standard time (NZST) for daylight savings
Resource consent	Refer Section 87 of the RMA. Resource consents include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15).
RMA	*Resource Management Act* 1991 and including all subsequent amendments.
SEM	State of Environment Monitoring performed as part of Council obligations under the RMA
Temp	Temperature, measured in °C (degrees Celsius).
UI	Unauthorised Incident.
Water quality	The bacteriological condition of a water body as it relates to human health, measured using indicator bacteria

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

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Appendix I

Resource consents held by the New Plymouth District Council

Discharge 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
Consent Granted Date:	6 December 2002

Conditions of Consent

Consent Granted:	To discharge up to 17 cubic metres/day of treated septic tank sewage effluent via soakage trenches into groundwater in the vicinity of the Onaero River at or about GR: Q19:284-448
Expiry Date:	1 June 2021
Review Date(s):	June 2009, June 2015
Site Location:	Onaero Bay Motor Camp, State Highway 3, Onaero
Legal Description:	Sec 82 Urenui Dist Blk III Waitara SD Kaipikari Farm Sett Rec Res
Catchment:	Onaero

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 (hereinafter the Chief Executive), 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, in conjunction with the Taranaki Regional Council, undertake such bacteriological monitoring of the Onaero River and coastal waters of the foreshore as deemed necessary by the Chief Executive, Taranaki Regional Council.

2. The consent holder shall ensure proper maintenance of the septic tanks, pumping station and soakage trenches as required.

3. The consent holder shall provide records of daily effluent volumes discharged to the soakage trenches at the request of the Chief Executive, Taranaki Regional Council.

4. The consent holder shall provide a contingency plan to the satisfaction of the Chief Executive, Taranaki Regional Council, outlining measures to be undertaken in the event of power failure, pump breakdown, pipe blockage and failure of soakage trenches, within three months of granting this consent.

5. 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 6 December 2002

For and on behalf of
Taranaki Regional Council

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Director-Resource Management

Consent 2046-3

Discharge 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
Consent Granted Date:	6 December 2002

Conditions of Consent

Consent Granted:	To discharge up to 85 cubic metres/day of treated septic tank sewage effluent via soakage trenches into groundwater in the vicinity of the Urenui River at or about GR: Q19:310-452
Expiry Date:	1 June 2021
Review Date(s):	June 2009, June 2015
Site Location:	Urenui Beach Motor Camp, Beach Road, Urenui
Legal Description:	Lot 1 DP 15787 Blk III Waitara SD
Catchment:	Urenui

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 (hereinafter the Chief Executive), 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, in conjunction with the Taranaki Regional Council, undertake such bacteriological monitoring of the Urenui River and coastal waters of the foreshore as deemed necessary by the Chief Executive, Taranaki Regional Council.

2. The consent holder shall ensure proper maintenance of the septic tanks, pumping station and soakage trenches as required.

3. The consent holder shall provide records of daily effluent volumes discharged to the soakage trenches at the request of the Chief Executive, Taranaki Regional Council.

4. The consent holder shall provide a contingency plan to the satisfaction of the Chief Executive, Taranaki Regional Council, outlining measures to be undertaken in the event of power failure, pump breakdown, pipe blockage and failure of soakage trenches, within three months of granting this consent.

5. 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 6 December 2002

For and on behalf of
Taranaki Regional Council

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Director-Resource Management

Appendix II

Urenui Faecal Indicator Bacteria Results 1987-2015

Table 1A Faecal coliform results 1987 to 2015

Parameter	Site 1/1a	Site 2	Site 3	Site 4
No of samples	36	38	36	36
Median*	270	99	44	31
Mean*	640	345	220	177
Minimum*	<1	<1	<1	<1
Maximum*	3300	2100	1700	2200

* cfu per 100 ml

Table 2A Enterococci results 1993 to 2015

Parameter	Site 1/1a	Site 2	Site 3	Site 4
No of samples	23	23	23	23
Median*	80	46	23	16
Mean*	148	104	55	59
Minimum*	<1	<1	<1	1
Maximum*	540	340	250	400

* cfu per 100 ml

Table 3A *E. coli* results 1995 to 2015

Parameter	Site 1/1a	Site 2	Site 3	Site 4
No of samples	20	20	20	20
Median*	265	150	72	53
Mean*	581	401	287	267
Minimum*	8	4	<1	5
Maximum*	3300	2100	1700	2200

* cfu per 100 ml

Appendix III

Onaero Faecal Indicator Bacteria Results 1987-2015

Table 4A Faecal coliform results, 1987 to 2015

Parameter	Site 1	Site 2	Site 3	Site 4	Site 5
No of samples	38	40	38	35	30
Median*	485	570	57	54	44
Mean*	761	701	235	195	186
Minimum*	38	7	1	0.5	1
Maximum*	2400	2000	1600	2000	1800

* cfu per 100 ml

Table 5A Enterococci results, 1993 to 2015

Parameter	Site 1	Site 2	Site 3	Site 4	Site 5
No of samples	23	24	23	23	19
Median*	290	315	78	40	31
Mean*	362	382	125	109	93
Minimum*	38	60	1	3	1
Maximum*	930	1100	1100	1200	1000

* cfu per 100 ml

Table 6A *E. coli* results, 1995 to 2015

Parameter	Site 1	Site 2	Site 3	Site 4	Site 5
No of samples	20	21	20	20	16
Median*	575	660	65	57.5	56
Mean*	871	767	253	200	177
Minimum*	89	84	5	0.5	5
Maximum*	2400	2000	1500	1900	1700

* cfu per 100 m