Wai-iti Beach Retreat Monitoring Programme Annual Report 2016-2017

Technical Report 2017-38

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Taranaki Regional Council
Private Bag 713
STRATFORD

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Executive summary

Wai-iti Motor Camp Limited operates the Wai-iti Beach Retreat, located in North Taranaki. The consent holder holds resource consents to discharge septic tank treated sewage to groundwater via soakage trenches and to erect, place and maintain a rock wall along the front of the accommodation on the Wai-iti Beach foreshore. This report for the period July 2016 to June 2017 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess the consent holder's environmental and consent compliance performance during the period under review. The report also details the results of the monitoring undertaken and assesses the environmental effects of the consent holder's activities.

The two resource consents that the consent holder holds include a total of 24 conditions setting out the requirements that the consent holder must satisfy.

During the monitoring period, the consent holder demonstrated a level of environmental performance that required improvement.

The Council's monitoring programme for the year under review included three routine inspections of the wastewater system, one inspection of the rock wall, and routine bacteriological water sampling of the Wai-iti Stream and Wai-iti Beach on one occasion.

Two additional bacteriological water sampling rounds were also undertaken, to monitor any impacts of the unnamed tributary on the Wai-iti Stream, following recommendations made in the 2015-2016 monitoring report. Further bacteriological water sampling of the unnamed tributary was carried out in conjunction with an additional site inspection in July 2017, in response to concerns raised around elevated faecal indicator bacteria counts in the lower reaches of the Wai-iti Stream.

Monitoring indicated that the camp's effluent system continued to contaminate the tributary and the Wai-iti Stream in 2016-2017. These results were reinforced when the consent holder discovered the reoccurrence of a ruptured effluent soakage trench in the vicinity of the waterbodies, which has since been repaired. Ongoing monitoring will continue to shed light on the potential influence of the campsite's soakage trenches on the water quality of the Wai-iti Stream.

An inspection of the rock wall found that the structure remained in good repair, and that it was not causing any significant environmental effects.

An improvement in the consent holder's environmental performance is required in relation to the exercise of resource consent 1971-3. It is noted however that the consent holder is working with the Council to address the issues identified. A high level of environmental and administrative performance was demonstrated in relation to the exercise of resource consent 6462-1.

For reference, in the 2016-2017 year, 74% 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 21% 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 during the period under review was below that seen in previous periods.

This report includes recommendations for the 2017-2018 year.

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1 Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is for the period July 2016 to June 2017 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by the consent holder for the Wai-iti Beach Retreat. The Wai-iti Beach Retreat is situated on Beach Road in North Taranaki (Photos 1 & 2).

The report includes the results and findings of the monitoring programme implemented by the Council in respect of the consents held by the consent holder that relate to the discharge of sewage effluent to groundwater and a boulder rip rap wall on the foreshore.

One of the intents of the *Resource Management Act 1991* (RMA) is that environmental management should be integrated across all media, so that a consent holder's use of water, air, and land should be considered from a single comprehensive environmental perspective. Accordingly, the Council generally implements integrated environmental monitoring programmes and reports the results of the programmes jointly. This report discusses the environmental effects of the consent holder's use of water, land and air, and is the 28th combined annual report by the Council for the consent holder.

Photo 1 Wai-iti Beach Retreat

Photo 2 Wai-iti Beach, 22 May 2017

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 consent holder;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted at the consent holder's site.

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 2017-2018 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 consent holder, 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 consent holder'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 interpretations, 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 2016-2017 year, 74% 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 21% demonstrated a good level of environmental performance and compliance with their consents.

1.2 Process description

1.2.1 Sewage treatment system

All wastewaters from the camping ground enter a septic tank of 143 m^3 capacity. The effluent is then pumped via a 50 mm alkathene pipe across the Wai-iti Stream and into soakage trenches situated on a wooded hillside approximately 30 m from the stream (Figure 1).

These multiple soakage trenches work on a rotational basis and were first commissioned in 1991 in response to inadequate treatment of the effluent by the previous system.

When previous proprietors took over the property in 1986-1987, the disposal system consisted of a seepage ditch situated near the base of the wooded hillside. Monitoring found that this trench system was not a suitable means of disposal, resulting in high faecal coliform counts at the mouth of the Wai-iti Stream. This inadequate treatment led to the development of the new multiple soakage trench system.

Figure 1 Location of sewage treatment system and sampling sites at the Wai-iti Beach Retreat

1.2.2 Rock wall

Over the summer and autumn months of 2004, rough seas combined with high tides reached the beach toe of the coastal banks and sand dunes that front the beach camp. Fresh erosion scarps were cut into these banks for nearly the full beach frontage where no system of protection existed (Photo 3).

In 2005 an application was received for a resource consent to provide boulder rip rap protection, over a total distance of 293 m, from the stream at the south end of Wai-iti Beach to an area of existing large boulder protection in the north. This consent was granted in July 2005. To mitigate any possible end effects, the area between the public entrance and the river was also protected using the boulder rip rap method.

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 consent holder holds water discharge permit 1971-3 to cover the discharge of up to 27 m^3 per day of septic tank treated sewage effluent via soakage trenches to groundwater in the vicinity of the Wai-iti Stream.

This permit was first issued by the Council on 21 August 1991 and was renewed in 28 March 2003 under Section 87(c) of the RMA. It is due to expire on 1 June 2021.

There are five special conditions attached to the consent.

Condition 1 requires bacteriological monitoring of the coastal waters of the foreshore and Wai-iti Stream.

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 for the site.

Condition 5 deals with review of the consent.

Photo 3 Erosion on Wai-iti foreshore prior to construction of the rock wall

1.3.2 Coastal structure

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

The consent holder holds coastal permit 6462-1 to erect, place and maintain a boulder rip rap toe protection in the coastal marine area on the Wai-iti Beach foreshore. This permit was issued in July 2005 under section 87(c) of the RMA. It is due to expire on 1 June 2021.

There are nineteen special conditions attached to the consent.

Conditions 1 to 16 deal with various aspects of the construction of the seawall.

Condition 17 deals with monitoring of the wall.

Condition 18 requires the structure to be removed if it is no longer required.

Condition 19 deals with review of consent conditions.

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

This summary of consent conditions may not reflect the full requirements of each condition. The consent conditions in full can be found in the resource consents which are appended to this report.

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 Wai-iti Beach Retreat 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 consent reviews, renewals or new consent applications;
- advice on the Council's environmental management strategies and content of regional plans; and
- consultation on associated matters.

1.4.3 Site inspections

The Wai-iti Beach Retreat was visited four times during the monitoring period. Three of these visits were routine site inspections and the fourth was an additional site inspection conducted in response to concerns around elevated faecal indicator bacteria (FIB) counts in the lower reaches of the Wai-iti Stream. 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, including contaminated stormwater and process wastewaters. Air inspections focused on plant processes with associated actual and potential emission sources and characteristics, including potential odour, dust, noxious or offensive emissions. The neighbourhood was surveyed for environmental effects.

In addition, the rock wall was checked for any end effects, or further erosion of the banks behind and in front of the wall.

1.4.4 Bacteriological sampling

Samples were collected at six sites during the routine sampling round, after the second inspection; three from the Wai-iti Stream, one from the tributary at the base of the slope and two from coastal sites either side of the stream mouth (Table 1; Figure 1; Photo 4). Two additional, reduced sampling rounds were conducted during the first and third inspections, as recommended in the 2015-2016 annual report; two samples were collected from the Wai-iti Stream and a third was collected from the unnamed tributary. Bacteriological samples were also collected from the tributary during a follow-up inspection in July 2017, downstream (Site 6) and upstream of the soakage trenches. The results of the latter site are not interpreted in this report, as the water source is likely to have been a groundwater spring and therefore unrelated to this investigation. Results of the bacteriological and chemical analyses performed on these samples are presented in Table 1A (Appendix II).

Sites, 1, 3, 4 and 5 have been monitored since 1994. Site 2, located approximately 50 m downstream of the tributary, was selected during the 1999-2000 monitoring period to assess the influence of the tributary on water quality in the Wai-iti Stream. Site 6 was proposed in the 2015-2016 annual report to determine whether there are any other sources of contamination in the tributary and is included for the first time in this the 2016-2017 annual report (TRC, 2016).

Table 1 Locations of bacteriological sampling sites at the Wai-iti Beach Retreat

Site	Location	Site code	GPS
1*	Wai-iti Stream upstream of beach camp	WIT000420	1727999-5690544
2*	Wai-iti Stream approx. 50 m d/s of tributary	WIT000460	1727896-5690572
3	Wai-iti Stream adjacent beach entrance	WIT000490	1727686-5690533
4	Sea coast approx. 75 m north of stream mouth	SEA900060	1727667-5690609
5	Sea coast approx. 30 m south of stream mouth	SEA900063	1727555-5690516
6*	Tributary at base of slope	WIT000446	1727911-5690562

* Sites also sampled in the two reduced sampling rounds

Samples were analysed for temperature, conductivity and the FIB, enterococci and *Escherichia coli*. The FIB were monitored to provide an indication of potential contamination of the water by animal and/or human excreta.

Water quality is of significant interest at this site as Wai-iti Beach receives moderate recreational use over the bathing season. 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 these bacteria have the ability to survive in marine water, providing the closest correlation with health effects in New Zealand coastal waters (MfE, 2003). For freshwater the MfE 2003 guidelines use *E. coli* as the preferred indicator (Table 2). 'Alert' and 'Action' guideline levels are summarised in Table 2 and are based on keeping illness risk associated with recreational use to less than approximately 2 % of uses.

Table 2 Marine 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

Photo 4 Taken at the coastal Site 4 at Wai-iti Beach, looking towards Site 5, with the Wai-iti Stream entering from center-left

2 Results

2.1 Inspections

15 December 2016

Conditions were overcast with recent rain and a moderate north-westerly wind, although the camp was reasonably sheltered. There were no odours or visual issues at the pump station or at the old drain during the inspection. The camp manager reported that the septic tank pump had recently failed. This had been replaced prior to any overflow of sewage, however, and the sewerage system had been checked weekly in order to identify any issues prior to the busy weekends.

The camp had been full over the past few weekends and was scheduled to be full during the upcoming weekend and over the holiday period. The camp appeared empty at the time of the inspection.

It was reported that the notable odours that used to be detected downwind of the trenches following periods of pumping had ceased since the repair of the soakage trench. It was also reported that, following the recent pump failure, the replacement pump operated for approximately two hours, discharging wastewater to the trenches in order to reduce the volume in the tank. There were no odours or visual issues at the disposal field during that time.

The banks of the old drain had been cleared of blackberry and planted with flaxes. Sections of the drain had been filled in with piles of tree debris. The clearing of the blackberry uncovered the drain bed prior to its confluence with the Wai-iti Stream.

Three water samples were collected; one from within the drain behind the golf course green, one from the Wai-iti Stream at the first golf course footbridge upstream of the camp and one from the stream approximately five metres downstream of the confluence with the drain. There was a moderate volume of surface water in the drain due to the rain which preceded the inspection. The stream was more turbid and had a greater flow than on previous occasions.

The sea wall was not inspected on this occasion.

Overall, the camp appeared to be operating in compliance with its resource consent at the time of the inspection. The repairs to the wastewater system seemed to have resolved the previously identified issue, whereby a rupture of the soakage trench was located.

30 January 2017

There was a light mist of rain and no wind at the time of the inspection. The camp managers were not present. There were no odours or visual issues at the pump station.

At the soakage field, sewage odours were detected within five metres of the distribution tank (the vessel which receives wastewater from the pump station and then feeds the trenches). No odours were detected beyond five metres from the tank. A large tree was found lying across the soakage field, east of the distribution tank. The tree, which looked like it initially grew up the hill from the track, had now gouged into the track. There were no obvious signs of damage to any trenches during the inspection, although a more thorough examination may be required to confirm this.

Water samples were collected during the inspection. The results indicated that wastewater may still be reaching the tributary and entering the Wai-iti Stream.

3 March 2017

Conditions were overcast with no wind. There had been no rain in the week preceding the inspection, according to the camp manager.

The camp manager reported that there had been no issues with the wastewater system since the previous inspection. He had inspected the fallen tree, and was confident that it could not have caused any damage to the underground soakage trenches. The camp had remained intermittently busy over the summer, although it was relatively quiet at the time of the inspection. It was noted that four of the baches had been permanently inhabited over the past year.

No odours or visual issues were found at the soakage field. A slight odour was detected from the gate of the pump station compound, however no visual issues were observed.

Three water samples were collected.

The seawall was also inspected during the visit. No obvious end effects were found. Neither the wall nor the land behind it appeared to be suffering from any obvious erosion or degradation. Sand had been pushed right up the shore at the northern end of the beach.

7 July 2017

Council staff, including an inspection officer, met with the owner and camp managers of the Wai-iti Beach Retreat in relation to concerns raised in the 2016-2017 monitoring period around the performance of the camp's sewerage treatment system. The soakage trenches, septic tank and pump station were inspected for any bogging, odours or visible issues. No issues were identified during the inspection.

Water samples were collected from the tributary draining directly beneath the soakage trenches, upstream and downstream of the trenches, for bacteriological and chemical analyses. High FIB counts were recorded in the tributary, downstream of the soakage trenches.

Wai-iti staff informed the Council that another rupture had been identified and repaired in the soakage trench that was previously damaged during the 2015-2016 monitoring year. The tap to the trench had subsequently been turned off and had not been in use for three weeks prior to the inspection. The trench has since been reinstated.

The campsite owner informed Council staff that bacteriological monitoring of the tributary draining beneath the soakage trenches will be conducted monthly, going forward.

Records of daily effluent volumes discharged to the soakage trenches were requested during the inspection.

2.2 Results of bacteriological monitoring

A summary of historical bacteriological results from January 1993 to January 2016 is presented in Table 3. Median *E. coli* counts are historically higher at the sites monitored downstream of the camp, particularly at the site located 50 m downstream of the unnamed tributary. These higher FIB counts are typically not reflected at the coastal sites, where a high degree of mixing and dilution occurs where the stream meets the Tasman Sea.

Table 3 Summary of previous bacteriological results, measured in cfu/100 ml (1993-2016)

	Upstream WIT000420		50 m d/s tributary WIT000460		Stream at beach WIT000490		Coast 75 m N SEA900060		Coast 30 m S SEA900063	
	E. coli	**Ent**	***E. coli***	**Ent**	***E. coli***	**Ent**	***E. coli***	**Ent**	***E. coli***	**Ent**
Number of samples	21	22	14	15	20	22	21	24	21	23
Minimum	150	130	230	100	210	130	1	<1	<1	<1

	Upstream WIT000420		50 m d/s tributary WIT000460		Stream at beach WIT000490		Coast 75 m N SEA900060		Coast 30 m S SEA900063	
	E. coli	**Ent**	***E. coli***	**Ent**	***E. coli***	**Ent**	***E. coli***	**Ent**	***E. coli***	**Ent**
Maximum	2,700	3,100	3,100	3,200	2,700	2,900	260	210	120	140
Median	535	590	885	680	760	605	8	9	8	5

The results of the routine bacteriological monitoring undertaken during the 2016-2017 summer monitoring period, as well as the results of the reduced sampling rounds undertaken in December 2016 and March 2017, are presented in Table 4. The results of additional monitoring conducted in the unnamed tributary, during a follow-up inspection in July 2017, are also shown.

Table 4 Bacteriological monitoring results (2016-2017)

Site	Date	Conductivity (mS/m @ 20°C)	*E. coli* (cfu/100 ml)	Enterococci (cfu/100 ml)
Upstream WIT000420	Dec-16	17.9	1,600	1,200
	Jan-17	18.1	520	420
	Mar-17	17.5	540	930
50 m d/s tributary WIT000460	Dec-16	18.0	1,000	930
	Jan-17	18.1	420	900
	Mar-17	17.5	710	1,000
Tributary WIT000446	Dec-16	32.6	200	1,500
	Jan-17	33.6	930	3,300
	Mar-17	32.3	540	4,100
	Jul-17	41.6	860	7,000
Stream at beach WIT000490	Jan-17	19.0	550	600
Coast 75 m N SEA900060	Jan-17	4,700	2	10
Coast 30 m S SEA900063	Jan-17	4,750	8	8

Relative to the site located further upstream, FIB counts were typically higher in, and downstream of, the tributary, in 2016-2017. This trend is now reflected in the historical data, with median counts of *E. coli* and

enterococci both greater at the two sites located downstream of the confluence than at the upstream site (Table 3). The highest *E. coli* count recorded during the camp's busy season, in January 2017, was at the tributary.

E. coli counts exceeded the MfE 'Alert' guideline level in all freshwater samples except for the sample collected from the tributary in December 2016. The high count detected at the upstream site in December 2016, relative to the downstream site, was most likely due to agricultural surface runoff from the rains preceding sampling.

Enterococci counts were considerably higher at the confluence with the tributary than at the sites located in the Wai-iti Stream during the monitoring year, and were also found to increase at the tributary with each monitoring round. Both of the coastal sites recorded enterococci counts below the MfE 'Alert' guideline level during the monitoring year. The comparatively low enterococci counts at the coastal sites are likely due to the high degree of mixing and dilution where the stream meets the Tasman Sea.

Water conductivity was consistently higher at the tributary, when compared with water samples from the other three freshwater sites monitored during the period under review. Sewage contamination is known to increase the electrical conductivity of water, due to an influx of phosphate and nitrate ions, suggesting that faecal contamination may be occurring in the tributary (Tsai, 1973).

2.3 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, 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 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 2016-2017 period, the Council was required to undertake a significant additional investigation in association with resource consent 1971-3.

Elevated FIB counts recorded in the Wai-iti Steam during the 2014-2015 summer survey led to an investigation into potential sources of faecal contamination, in the following monitoring period (TRC, 2016). During the 2015-2016 period, human faecal contamination was confirmed in the tributary which drains the area directly below the soakage trenches and a ruptured disposal field was identified as the likely cause of this contamination (TRC, 2016). Ongoing monitoring of the tributary was suggested for the 2016-2017 period, to ensure that faecal contamination was no longer occurring at this site.

Due to elevated FIB counts recorded at the downstream sites again in the 2016-2017 summer survey, the additional two reduced sampling rounds recommended in the 2015-2016 report were undertaken. Monitoring results suggest that ongoing faecal contamination may be occurring in the tributary, as the enterococci counts recorded at this site were found to increase with each sampling round (Table 4). The finding that the FIB counts at the site located downstream of the tributary were consistently intermediate to the counts recorded upstream of and at the confluence with the tributary indicates a dilution effect where

the tributary meets the stream (Table 4). This further suggests that the tributary may be contaminating the Wai-iti Stream, and is reflected in the historical medians (Table 3).

In reporting on the findings of the investigation, a number of reasons were presented to suggest that the camp's effluent soakage trench system is no longer performing at an acceptable standard and that effluent leachate is impacting on the Wai-iti Stream:

- Inadequacies in the previous system (a seepage ditch also near the base of the slope) resulted in high faecal indicator bacteria (FIB) counts at the stream mouth;
- The 1991 effluent system report predicted a decrease in performance over time as well as leachate eventually reaching the base of the slope;
- Key recommendations made in the 1991 report in order to optimise system performance and enable effective monitoring were not carried out;
- Results from this investigation provide evidence for ongoing faecal contamination in the tributary which drains the area directly below the soakage trenches;
- Of the three sites routinely monitored in relation to consent 1971-3, the site immediately downstream of the confluence of the tributary and the Wai-iti Stream displays the highest median *E. coli* count over a 24 year monitoring period.

In an effort to mitigate any subsequent faecal contamination, and as recommended in the 1991 effluent system report, the consent holder planted flaxes at the bottom of the hill and tributary during the 2016-2017 monitoring period.

After being informed of the results of the investigation, the consent holder inspected the soakage trenches and identified a rupture in one of the three trenches. The rupture was repaired and the trench had been disconnected for three weeks prior to a follow-up inspection conducted by the Council in July 2017. The trench has since been reinstated.

3 Discussion

3.1 Discussion of site performance

The pump station was inspected four times during the 2016-2017 monitoring period. The camp manager's regular monitoring and maintenance of the pump station appeared to have prevented any significant issues from arising here. However, a significant fault was discovered with the effluent soakage trenches, with one of the three having ruptured. It was unclear when the rupture had occurred.

The rock wall was found to be in good repair, with no obvious end effects or erosion occurring.

3.2 Environmental effects of exercise of consents

The exercise of resource consent 1971-3 appeared to have notable effects on the environment in the year under review. Consistent with recent monitoring years, the results from the sampling rounds in January and March 2017 found elevated counts of FIB at the two sites downstream of the confluence with the tributary, in comparison with the site further upstream. This pattern is reflected in the historical medians, indicative of water quality impacts downstream of the camp. There is reason to suspect that the camp's effluent soakage trench system is no longer performing at an acceptable standard and that effluent leachate is impacting on the Wai-iti Stream. The beach camp has expanded since the existing effluent system was constructed, with the addition of baches with permanent residents for example, which may be overloading the soakage trenches and resulting in wastewater leaching to the drain. The 1991 effluent system report also forecast that the soakage trenches would eventually reach a saturation level, which would ultimately contaminate the Wai-iti Stream.

The area in which the soakage trenches are located is also heavily vegetated, where the passage of tree roots and subsidence associated with windfall can create preferential flow paths for effluent migration. These flow paths allow effluent to bypass the soil structure rapidly, reducing effluent residence time and the level of treatment provided by percolation systems. These issues would also be exacerbated by the steep gradient of the hillside to which effluent is discharged, and the proximity of the unnamed tributary.

The pathogens that occur in human faecal matter present a significant health risk. Although the stream is not thought to be commonly bathed in, the presence of eels attracts people to the stream banks, and it is often crossed where it runs out over the beach. These considerations further highlight the importance of maintaining effluent treatment and disposal systems in the vicinity of such waterbodies. The reoccurrence of a ruptured soakage trench and elevated FIB counts in the 2016-2017 monitoring period indicate that the sewerage system at the Wai-iti Beach Retreat may still be influencing the water quality of the Wai-iti Stream. Ongoing investigation is necessary to conclusively identify the source of contamination in the unnamed tributary, and will continue to shed light on the potential environmental effects of the campsite's sewage treatment system.

No significant environmental effects resulted from the exercise of resource consent 6462-1 in the year under review. Inspections of the rock wall found no notable end effects, and neither the wall nor the land behind it appeared to be suffering from any obvious erosion or degradation

3.3 Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Tables 7 and 8.

Table 5 Summary of performance for Consent 1971-3

Purpose: ***To discharge up to 27 cubic metres/day of septic tank treated sewage effluent via soakage trenches to groundwater in the vicinity of the Wai-iti Stream***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Bacteriological sampling to be undertaken in the Wai-iti Stream and the coastal waters	Council's bacteriological sampling at five sites	Yes
2. Consent holder to ensure maintenance of septic tanks, pumps and soakage trenches is undertaken	Site inspections	**No – the consent holder has since repaired an identified fault**
3. Consent holder to provide records of daily effluent volumes discharged to the soakage trenches	Records were requested from the consent holder	**No – Council awaiting records**
4. Contingency plan to be provided	An updated contingency plan received June 2009	Yes
5. Optional review provision re environmental effects	Not required	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**Improvement required** **High**

N/A = not applicable

Table 6 Summary of performance for Consent 6462-1

Purpose: *To erect, place and maintain a boulder rip rap toe protection in the coastal marine area on the Wai-iti Beach foreshore*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Notification period before construction or maintenance begins		N/A
2. Structure to be constructed and maintained in accordance with the engineering plans	Site inspections	Yes
3. Landward position of seawall is to be determined by survey to satisfaction of Council		N/A
4. Crest of structure to be no higher than reduced level plus 7.5m	Site inspections	Yes
5. Maximum size of boulders to be used	Site inspections	Yes
6. Structure to have minimum slope of 2 to 1	Site inspections	Yes
7. No refuelling of machinery within coastal marine area		N/A
8. Construction to comply with noise standards as defined in the coastal plan		N/A
9. No work to be undertaken during weekends and holiday periods		N/A
10. No maintenance to be undertaken during weekends or the summer holiday period	No maintenance work has had to be undertaken as yet	N/A
11. Sufficient signage to be in place during construction		N/A
12. In situ beach materials only to be used for foreshore reinstatement purposes		N/A
13. Area and volume of disturbance to be minimised and reinstated	Site inspections	Yes

Purpose: *To erect, place and maintain a boulder rip rap toe protection in the coastal marine area on the Wai-iti Beach foreshore*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
14. Works to cease if any archaeological remains are found		N/A
15. Structure to be constructed within 12 months of issuing of consent		Yes
16. Area behind rock wall to be planted in sand binding plants	Grasses planted	Yes
17. Annual monitoring programme to be developed for integrity of the wall	An annual inspection is incorporated with the monitoring for the wastewater treatment system at the Wai-iti Beach Camp. Further monitoring (structure survey) may be required in future	Yes
18. Structure to be removed and reinstated if no longer required		N/A
19. Optional review provision re. environmental effects	Not required	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **High**

N/A = not applicable

An improvement in the consent holder's environmental performance is required in relation to the exercise of resource consent 1971-3. During the year under review, results from routine monitoring and additional bacteriological sampling rounds indicated that the camp's effluent system was contaminating an unnamed tributary and the Wai-iti Stream. These results were confirmed with the discovery of a ruptured effluent soakage trench. The ongoing performance of the effluent treatment system at the site remains a concern.

The consent holder demonstrated a high level of environmental and administrative performance in relation to the exercise of resource consent 6462-1. No adverse environmental effects were observed as a result of the rock wall structure.

Environmental ratings are defined in Section 1.1.4.

3.4 Recommendations from the 2015-2016 Annual Report

In the 2015-2016 Annual Report, it was recommended:

1. THAT the routine monitoring of the sewage discharge system at the Wai-iti Beach Retreat in 2016-2017 is adjusted to increase the number and frequency of samples collected. The full sampling run will be increased from five sites to six, with the additional sample collected from the tributary at the base of the slope (if there is water in it). This will still only be carried out in conjunction with one of

the three inspections during the monitoring period. Reduced sampling runs will be incorporated into the remaining two inspections. These runs will consist of samples being collected at three of the sites monitored in the full run. These sites include the tributary (if there is water in it) and the Wai-iti Stream sites upstream and downstream of the confluence with this tributary.

2. THAT an annual inspection is undertaken of the rock wall to assess the integrity of the structure, end effects and any erosion occurring as a result of the rock wall. This inspection will be undertaken in conjunction with the sewage discharge inspection.

These recommendations were implemented.

3.5 Alterations to monitoring programmes for 2017-2018

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 2017-2018, the programme remains unaltered from that for 2016-2017. It is proposed that if no further issues are detected after two summers of monitoring, then the additional sampling runs will no longer be included in the programme.

4 Recommendations

1. THAT monitoring of consented activities at the Wai-iti Beach Retreat in the 2017-2018 year continues at the same level as in 2016-2017.
2. THAT inspections of the entire effluent treatment and disposal system, including the pipework, pumps and soakage trenches, be conducted.
3. THAT the consent holder initiates investigations of treatment system improvement options, including alternative system designs, in the event that monitoring indicates that system performance does not improve following the reinstatement of the ruptured soakage trench.
4. That a flow meter is installed within the wastewater treatment system, in order to comply with Condition 3 of Consent 1971-3.

Glossary of common terms and abbreviations

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

'Action' mode	Marine: two consecutive single samples >280 enterococci/100ml. Freshwater: single sample >550 *E. coli*/100ml.
'Alert' mode	Marine: single sample 141-280 enterococci/100ml. Freshwater: single sample 261-550 *E. coli*/100ml.
Bathers	Those who enter the water, and either partially or fully immerse themselves.
Bathing season	Generally the bathing season extends between 1 November and 31 March.
Beach	The shore or any access point to the sea.
BODCF	Biochemical oxygen demand of a filtered sample
cfu	Colony forming units. A measure of the concentration of bacteria usually expressed as per 100 ml sample.
Conductivity	An indication of the level of dissolved salts in a sample, usually measured at 20°C and expressed in mS/m.
Contact recreation	Recreational activities that bring people physically in to 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 ml of sample.
Ent	Enterococci, an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 ml of sample.
FC	Faecal coliforms, An indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 ml of sample.
FIB	Faecal Indicator Bacteria – in this report it refers collectively to *E. coli*, enterococci and faecal coliforms.
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.
Incident Register	The Incident Register contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan.
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 the circumstances/events surrounding an incident, including any allegations of an incident.
Median	Central value when values are arranged in order of magnitude.
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* including all subsequent amendments.
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 consent holder

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

Discharge Permit

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

Name of Consent Holder:	Wai-iti Motor Camp Limited C/- 538 Carrington Road R D 1 NEW PLYMOUTH
Consent Granted Date:	28 March 2003

Conditions of Consent

Consent Granted:	To discharge up to 27 cubic metres/day of septic tank treated sewage effluent via soakage trenches to groundwater in the vicinity of the Waiiti Stream at or about GR: Q18:379-523
Expiry Date:	1 June 2021
Review Date(s):	June 2009, June 2015
Site Location:	Beach Road, Waiiti
Legal Description:	Pt Lot 2 DP 13368 Waiiti 54B3 54B2 Blk X Mimi SD
Catchment:	Waiiti

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, in conjunction with the Taranaki Regional Council, undertake such bacteriological monitoring of the Waiiti Stream 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.

Transferred at Stratford on 5 December 2003

For and on behalf of
Taranaki Regional Council

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Chief Executive

Coastal Permit

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

Name of Consent Holder:	Wai-iti Motor Camp Limited 538 Carrington Road R D 1 NEW PLYMOUTH
Consent Granted Date:	12 July 2005

Conditions of Consent

Consent Granted:	To erect, place and maintain a boulder rip rap toe protection in the coastal marine area on the Wai-iti Beach foreshore at or about GR: Q18:379-523
Expiry Date:	1 June 2021
Review Date(s):	June 2009, June 2015
Site Location:	Beach Road, Urenui
Legal Description:	Pt Lot 2 DP 13368 Blk X Mimi SD
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 notify the Chief Executive, Taranaki Regional Council, in writing at least 48 hours prior to commencement, and upon completion of initial construction, and again at least 48 hours prior to, and upon completion of, any subsequent maintenance works.

2. The structure authorised by this consent shall be constructed and subsequently maintained in accordance with the engineering plans submitted in support of application 3319 and to ensure the conditions of this consent are met. Any variation to these plans will be subject to the approval of the Chief Executive, Taranaki Regional Council. In the case of any contradiction between the documentation submitted in support of application 3319 and the conditions of this consent, the conditions of this consent shall prevail.

3. The landward position of the seawall is determined by survey to the satisfaction of the Chief Executive, Taranaki Regional Council prior to the commencement of works.

4. The crest of the structure shall not exceed a maximum height of reduced level plus 7.5 metres.

5. The maximum diameter of boulders utilised within the structure shall be no more than 0.8 metres.

6. The structure shall have a minimum seaward slope of 2 horizontal to 1 vertical.

7. There shall be no refuelling of construction machinery within the coastal marine area.

8. The construction, use, maintenance and removal of the structure authorised by this consent shall comply with the noise standards as outlined within section 4.4.3 of the Regional Coastal Plan for Taranaki.

9. During construction of the structure no work shall be undertaken during school holidays, public holidays and weekends without the approval of the Chief Executive, Taranaki Regional Council.

10. All practicable measures shall be undertaken to ensure maintenance of the structure shall not occur on weekends, public holidays or between 1 December and 31 January.

11. During construction and maintenance periods the area subject to works shall have sufficient signage to ensure public safety of any potential safety hazards.

12. In situ beach material shall be used only for foreshore reinstatement purposes seaward of the structure, and shall not be used for construction purposes.

13. The consent holder shall ensure that the area and volume of foreshore disturbance shall, so far as practicable, be minimised and any areas which are disturbed shall, so far as practicable, be reinstated.

14. In the event that any archaeological remains are discovered as a result of the exercise of this consent, the works shall cease immediately at the affected site. The Ngati Mutunga Iwi Authority and the Chief Executive of the Taranaki Regional Council shall be notified immediately, and be invited to inspect the site.

15. The structure authorised by this consent shall be constructed within twelve months of the granting of this consent. Upon completion of construction the consent holder shall submit as built plans of the structure if different to those submitted in support of application 3319.

16. The consent holder shall undertake all practicable measures to ensure the development of healthy functioning flax, spinefex and other native sand binding plants immediately behind the rock revetment wall to the satisfaction of the Chief Executive, Taranaki Regional Council.

17. An annual monitoring programme will be developed for the integrity of the rock wall , erosion of the beach and for any end effects of the surrounding environment. All costs associated with the monitoring will be met by the consent holder.

18. The structure authorised by this consent shall be removed and the area reinstated, if and when the structure is no longer required. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least 48 hours prior to the structures removal and reinstatement.

19. 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.

Footnote:

i. The structure is proposed to be constructed on New Plymouth District Council esplanade reserve. The New Plymouth District Council takes no responsibility for the maintenance of the structure or effects it might have on the beach or neighbouring properties.

Signed at Stratford on 12 July 2005

For and on behalf of
Taranaki Regional Council

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Director-Resource Management

Appendix II

Faecal contamination investigation results
7 July 2017

Table 1A Chemical and bacteriological analyses of water and sewage samples collected from the unnamed tributary (upstream and downstream of the soakage trenches) and the campsite's septic tank respectively, in connection with the faecal contamination investigation at the Wai-iti Beach Retreat (7 July 2017)

		Site		
Parameter	**Unit**	**Sewage**	**Upstream (WIT000445)**	**Downstream (WIT000446)**
Alkalinity Total	g/m^3 $CaCO_3$	235.00	150.00	46.00
BODCF	g/m^3	74.00	0.80	1.00
Bromide	g/m^3	N/D	0.07	0.03
Calcium	g/m^3	18.60	16.50	17.40
Chloride	g/m^3	76.30	49.20	87.30
Dissolved reactive phosphorus	g/m^3 P	5.25	0.01	0.16
E. coli	cfu/100 ml	1800000	<1	860
Ent	cfu/100 ml	25000	<1	7000
FC	cfu/100 ml	2000000	<1	860
Potassium	g/m^3	12.80	2.90	5.70
Magnesium	g/m^3	9.80	17.60	11.40
Sodium	g/m^3	76.50	29.90	48.90
Un-ionised ammonia	g/m^3	0.04	0.00	0.00
Ammoniacal nitrogen	g/m^3 N	32.30	1.42	0.08
Nitrite/nitrate nitrogen	g/m^3 N	0.05	0.02	3.96
pH	pH	6.60	6.60	6.80
Sulphate	g/m^3	14.50	6.80	14.90

		Site		
Parameter	**Unit**	**Sewage**	**Upstream (WIT000445)**	**Downstream (WIT000446)**
Total nitrogen	g/m^3 N	62.90	2.04	7.77
Total phosphorus	g/m^3 P	8.10	0.03	0.66