

Wai-inu Beach Settlement
Monitoring Programme
Annual Report
2013-2014
Technical Report 2014-08

ISSN: 0114-8184 (Print)
ISSN:1178-1467 (Online)
Document: 1349391 (Word)
Document: 1367700 (Pdf)

Taranaki Regional Council
Private Bag 713
STRATFORD

July 2014

Executive summary

The South Taranaki District Council (STDC) operates a sewage treatment system located at the Wai-inu Beach Settlement, in the Waitotara catchment. This report for the period July 2013-June 2014 describes the monitoring programme implemented by the Taranaki Regional Council to assess the STDC's environmental performance during the period under review, and the results and environmental effects of STDC's activities.

The STDC hold one resource consent in relation to the sewage treatment system, which includes a total of six conditions setting out the requirements that the STDC must satisfy.

The Council's monitoring programme for the year under review included three site inspections, along with bacteriological sampling of seawater.

Inspections of the site showed that, apart from a few weeds on the sand filters, the treatment system was well maintained during the period under review. Any issues with pooling of water on the sand filters were dealt with immediately by STDC staff. Bacteriological sampling did not indicate faecal contamination of seawater as a result of the treatment system.

During the 2013-2014 monitoring year, the STDC demonstrated a high level of compliance with the resource consent and environmental performance in relation to the consent. During the year there were no unauthorised incidents or any adverse effects on the receiving environment in relation to Consent 3769-3.

This report includes recommendations for the 2014-2015 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 2013-June 2014 by the Taranaki Regional Council describing the monitoring programme associated with a resource consent held by the South Taranaki District Council (STDC). The STDC operate a wastewater treatment system situated at the Wai-inu Beach Settlement in South Taranaki.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consent held by the STDC that relate to the discharge of treated sewage effluent to groundwater in the Waitotara catchment. This is the 21st report to be prepared by the Taranaki Regional Council to cover the STDC water discharge and its effects.

1.1.2 Structure of this report

Section 1 of this report is a background section. It sets out general information about compliance monitoring under the Resource Management Act and the Council's obligations and general approach to monitoring sites through annual programmes, the resource consents held by STDC, the nature of the monitoring programme in place for the period under review, and a description of the activities and operations conducted in the Wai-inu beach settlement.

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

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

Section 4 presents recommendations to be implemented in the 2014-2015 monitoring year.

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

1.1.3 The Resource Management Act (1991) and monitoring

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

- (a) the neighbourhood or the wider community around a discharger, and may include cultural and socio-economic effects;
- (b) physical effects on the locality, including landscape, amenity and visual effects;
- (c) ecosystems, including effects on plants, animals, or habitats, whether aquatic or terrestrial;
- (d) natural and physical resources having special significance (eg, recreational, cultural, or aesthetic);

(e) risks to the neighbourhood or environment.

In drafting and reviewing conditions on discharge permits, and in implementing monitoring programmes, the Taranaki Regional Council is recognising the comprehensive meaning of 'effects' inasmuch as is appropriate for each discharge source. Monitoring programmes are not only based on existing permit conditions, but also on the obligations of the Resource Management Act to assess the effects of the exercise of consents. In accordance with section 35 of the Resource Management Act 1991, the Council undertakes compliance monitoring for consents and rules in regional plans; and maintains an overview of performance of resource users against regional plans and consents. Compliance monitoring, (covering both activity and impact) monitoring, also enables the Council to continuously assess its own performance in resource management as well as that of resource users particularly consent holders. It further enables the Council to continually re-evaluate its approach and that of consent holders to resource management, and, ultimately, through the refinement of methods, and considered responsible resource utilisation to move closer to achieving sustainable development of the region's resources.

1.1.4 Evaluation of environmental performance

Besides discussing the various details of the performance and extent of compliance by the consent holder(s) during the period under review, this report also assigns an overall rating. The categories used by the Council, and their interpretation, are as follows:

- a **high** level of environmental performance and compliance indicates that essentially there were no adverse environmental effects to be concerned about, and no, or inconsequential (such as data supplied after a deadline) non-compliance with conditions.
- a **good** level of environmental performance and compliance indicates that adverse environmental effects of activities during the monitoring period were negligible or minor at most, or, the Council did not record any verified unauthorised incidents involving significant environmental impacts and was not obliged to issue any abatement notices or infringement notices, or, there were perhaps some items noted on inspection notices for attention but these items were not urgent nor critical, and follow-up inspections showed they have been dealt with, and any inconsequential non compliances with conditions were resolved positively, co-operatively, and quickly.
- **improvement required (environmental) or improvement required (administrative compliance)** (as appropriate) indicates that the Council may have been obliged to record a verified unauthorised incident involving measurable environmental impacts, and/or, there were measurable environmental effects arising from activities and intervention by Council staff was required and there were matters that required urgent intervention, took some time to resolve, or remained unresolved at the end of the period under review, and/or, there were on-going issues around meeting resource consent conditions even in the absence of environmental effects. Abatement notices may have been issued.

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

1.2 Process description

The Wai-inu Beach Settlement treatment system was designed to service a population of approximately 420 persons. Communal septic tanks of 3600 litre capacity treat wastes from a maximum of four residential sections per septic tank. Effluent from the septic tanks is gravity fed to an underground dosing chamber of sufficient storage to allow the alternative dosing, via pumps, of two sand filter beds. The pumps are operated automatically by float switches and provide a dose volume of approximately 14m³ to the surface of one or other of the filter beds. These filter beds are about 15.6 m in diameter and comprise of layers of coarse sand, pea gravel and graded stone chip. The filter media provides a limited amount of biological filtration of the effluent prior to discharge to groundwater.

This is a simple and effective treatment system; provided the septic tanks receive regular maintenance to prevent gross solids from clogging the filter system and the filter beds are not overloaded. The filter beds are essentially an aerated treatment device and when saturated for long periods, anaerobic conditions can occur causing excessive and pungent odour. Weed growth on top of the sand filter beds also needs to be monitored and removed on a regular basis.

The shallow groundwater receiving the treated effluent flows more than 200 m toward the beach, the measurement of coastal seawater quality allows the effectiveness of the effluent treatment system to be assessed. The Wai-inu beach settlement is supplied from a bore (45 m deep) to the west of the settlement as there are no users of shallow groundwater in the area.

1.3 Resource consents

1.3.1 Water discharge permit

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

STDC holds water discharge permit **3769** to cover the discharge of up to 84 cubic metres/day of treated domestic wastewater from the Wai-inu Beach Settlement via seepage to groundwater in the Waitotara catchment. This permit was issued by the Taranaki Regional Council on 29 July 1992 under Section 87(c) of the Resource Management Act. It was reissued in November 2003 and is due to expire on 1 June 2022.

There are six special conditions attached to this consent.

Condition 1 relates to the exercise of the consent being carried out in accordance with the information supplied in support of the application.

Condition 2 requires the consent holder to adopt the best practicable option to prevent or minimise any actual or potential effect on the environment.

Condition 3 relates to the proper and effective maintenance and operation of the treatment system, in particular the septic tank and filter beds.

Condition 4 requires monitoring of the treatment system and coastal waters.

Condition 5 requires the consent holder to provide the Council with a contingency plan.

Condition 6 deals with reviews of the consent.

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

1.4 Monitoring programme

1.4.1 Introduction

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

The Taranaki Regional 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-inu Beach Settlement site consisted of three primary components.

1.4.2 Programme liaison and management

There is generally a significant investment of time and resources by the Taranaki Regional 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 Wai-inu beach settlement site was visited three times during the monitoring year. With regard to consents for the abstraction of or 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.



Figure 1 Location of bacteriological sampling sites and treatment system

1.4.4 Bacteriological sampling

The Taranaki Regional Council typically undertakes sampling of coastal waters at two sites on three occasions annually, in conjunction with site inspections during the monitoring period. Figure 1 shows the location of the two main sampling sites in relation to the twin filter beds. During the 2013-2014 monitoring period, although the total number of samples did not alter (6), the sampling protocol differed from usual, as described in Section 2.1.

Each sample was analysed for faecal coliforms, enterococci and conductivity. In 2003 MfE developed the *Guidelines for recreational water quality* to assess the safety of water for contact recreation. The guidelines use enterococci as the preferred indicator for the microbiological quality of marine waters. Alert mode occurs when a single sample maximum is greater than 140 enterococci cfu/100ml. Action mode occurs when two consecutive samples are greater than 280 cfu/100ml.

Table 1 Marine recreational bathing guidelines (2003)

Mode	Acceptable (green)	Alert (amber)	Action (red)
Marine (enterococci/100mls)	≤140	141-280	>280 (two consecutive samples)

2. Results

2.1 Water

2.1.1 Inspections

Three scheduled compliance monitoring inspections were performed during the year under review in relation to the wastewater treatment system at Wai-inu Beach Settlement.

24 December 2013: At the time of the inspection effluent was bubbling up through the sand filters (Photograph 1). Sewage odours were detectable. During the inspection an STDC staff member attended to the issue by adjusting the pump onsite (Photograph 2). Sewage did not appear to be overflowing from the sand filters. The camp was busy, with approximately 50 people, 10 cars and 20 caravans/campervans onsite. The campground was checked for dumping of greenwaste following issue of an abatement notice in March 2012, unrelated¹ to Consent 3769-3. The campground remained free from rubbish and the two signs instructing no dumping were present (Photograph 3).

18 February 2014: Operation of the sand filters and pump station appeared satisfactory at the time of inspection. There were a few weeds on top of the sand filters and a very faint organic odour. The camp was busy, with approximately 80 people (including a school fieldcourse), 30 cars and 30 buses/caravans/campervans onsite. The campground remained free from rubbish. The two signs instructing no dumping were present and no further green waste had been dumped. Four seawater samples were collected during the inspection. In addition to the two usual sites either end of the beach (SEA907093, SEA907098), samples from the ponded groundwater at the top of the shore (no site code, Photograph 4) and the middle of the beach (SEA907095, Photograph 5) were also taken for faecal indicator bacteria analysis.

24 March 2014: A few weeds were present on top of the sand filters, but there was no ponding of water. A slight sewage odour was detectable close to the filters. The camp was busy with 4 cars and 41 campervans. Seawater samples were taken.

¹ Note that the abatement notice, issued in March 2012 as a result of dumping of green waste and domestic rubbish, was not related to Consent 3769-3. As a result, the abatement notice did not affect the rating of STDC in relation to environmental performance of the sewage treatment system at Wai-inu (Consent 3769-3) which was 'high' for the 2011-2013 monitoring period.



Photo 1 Ponding of water on top of the sand filters during the December 2014 inspection



Photo 2 Adjustment of the pump station during the December 2014 inspection



Photo 3 Sign instructing no dumping of waste



Photo 4 Poned groundwater seepage at the top of Wai-inu Beach, sampled to establish if leaching occurs from the septic system



Photo 5 Monitoring of site SEA907095 during the February 2014 inspection

2.1.2 Bacteriological monitoring

During two of the inspections (February and March 2014), seawater samples were collected at two coastal sites located at either end of Wai-inu Beach (SEA907093 and SEA907098). These bacteriological results for 2013-2014, along with a statistical summary of data between 1992 and 2013, are presented in Table 2. Low faecal indicator bacteria counts (<1 cfu/100ml) were obtained for all samples collected at these two sites during the 2013-2014 season.

Table 2 Bacteriological monitoring at Wai-inu Beach Settlement 2013-2014, including a summary of data between 1992 to 2013

Site	Western end of beach – SEA907093			Eastern end of beach – SEA907098		
Date	Faecal coliform (cfu/100ml)	Enterococci (cfu /100 ml)	Conductivity (mS/m)	Faecal coliform (cfu/100ml)	Enterococci (cfu/100 ml)	Conductivity (mS/m)
18-Feb-14	<1	<1	4740	<1	<1	4570
24-Mar-14	<1	<1	4580	<1	<1	4730
No of samples	64	62	56	64	62	56
Minimum	<1	<1	4020	<1	<1	3990
Maximum	300	310	4880	1000	1400	4920
Median	3	3	4640	3	3	4600

In order to establish if there was leaching from the septic treatment system, additional samples were taken from the groundwater pond (Photograph 4) and the middle of the beach (SEA907095, Photograph 5) on 18 February 2014. Low faecal indicator bacteria counts (≤ 1 cfu/100ml) were obtained for the sample collected from

SEA907095. Elevated counts were obtained from the groundwater pond (320 enterococci/100ml and 350 faecal coliforms/100ml, conductivity 58.6 mS/m @20°C). These counts are typical of a stagnant water body potentially influenced by birds. Much higher counts would be expected if contamination from the wastewater treatment system was occurring.

2.2 Investigations, interventions, and incidents

The monitoring programme for the two years 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 eg 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 Taranaki Regional Council operates and maintains a register of all complaints or reported and discovered excursions from acceptable limits and practices, including non-compliance with consents, which may damage the environment. The Unauthorised Incident Register (UIR) includes events where the consent holder 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 consent holder is indeed the source of the incident (or that the allegation cannot be proven).

During the 2013-2014 monitoring period it was not necessary for the Council to undertake significant additional investigations and interventions. In addition to this the Council did not record incidents in association with STDC's conditions in the resource consent in relation to the Consent Holder's activities.

3. Discussion

3.1 Discussion of site performance

The three inspections conducted during the 2013-2014 summer period of the Wai-inu beach camp and receiving waters did not indicate any serious problems with the wastewater treatment system. Inspections showed that, apart from a few weeds on the sand filters, the treatment system was well maintained during the period under review. Any issues with pooling of water on the sand filters were dealt with immediately by STDC staff.

3.2 Environmental effects of exercise of consents

Routine bacteriological monitoring showed that faecal indicator bacteria counts were low (<1 cfu/100ml) in all samples taken at the three coastal sites during the February and March 2014 inspections. Although elevated counts were obtained from the groundwater pond (320 -350 cfu/100ml), these counts are typical of a stagnant water body potentially influenced by birds. Much higher counts would be expected if contamination from the wastewater treatment system was occurring.

Wai-inu Beach is monitored every three years in relation to the Council’s State of the Environment Marine Bathing monitoring programme to assess suitability for bathing/contact recreation. The beach was sampled during the 2012-2013 summer (TRC Technical Report 2013-17). All 13 enterococci counts obtained for the 2012-2013 bathing season (Figure 1) were well below MfE (2003) guideline levels (<140 cfu/100ml).

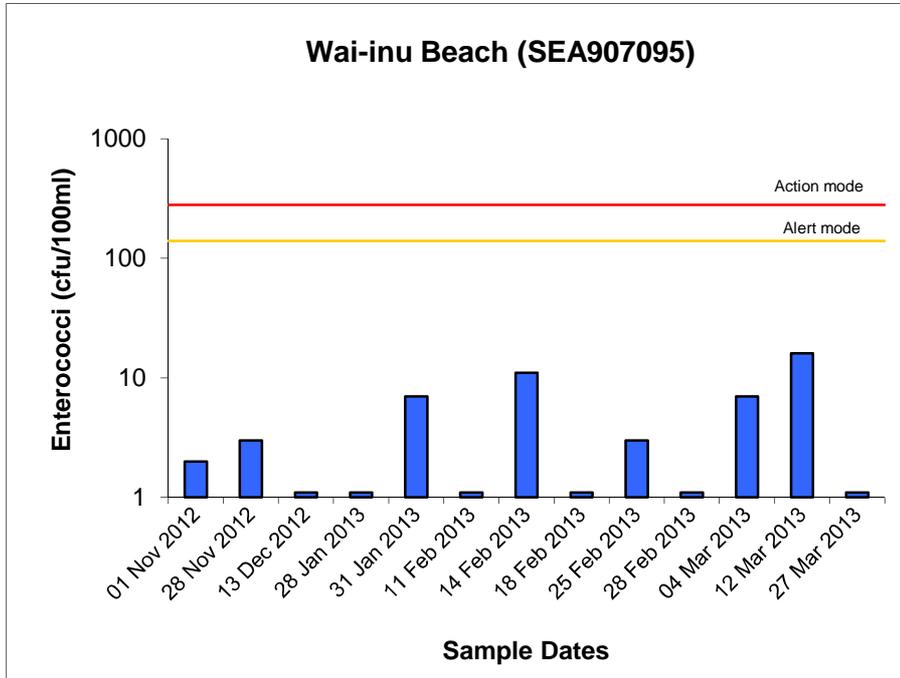


Figure 2 Enterococci counts for the 13 SEM samples at Wai-inu Beach 2012-2013

3.4 Evaluation of performance

A summary of the consent holder's compliance record for the two years under review is set out in Table 3.

Table 3 Summary of performance for Consent 3769 to discharge 84 cubic metres of treated domestic wastewater to groundwater from the Wai-inu Beach Settlement

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Exercise of consent to be carried out in accordance with information supplied	Site inspections of system and receiving waters	Yes
2. Consent holder to adopt best practicable option to minimise effects on the environment	Bacteriological sampling and site inspections	Yes
3. Consent holder shall maintain and operate the treatment system	Site inspections	Yes
4. Consent holder in conjunction with the Council to undertake monitoring of coastal waters	Bacteriological samples taken throughout the summer high use period	Yes
5. Contingency plan to be provided to the satisfaction of Chief Executive	Updated July 2012	Yes
6. Optional review provision re environmental effects	Next due in 2016 if required	N/A
Overall assessment of consent compliance and environment performance in respect of this consent		High

N/A = not applicable

During the year, the STDC demonstrated a high level of environmental performance and compliance with the resource consent. There were no breaches of consent conditions and bacteriological sampling of the receiving waters showed no adverse effects caused by the treatment system.

3.5 Recommendations from the 2011-2013 Biennial Report

In the 2011-2013 Annual Report, it was recommended:

THAT monitoring of discharges from Wai-inu Beach Settlement wastewater treatment system in the 2013-2014 year continue at the same level as in 2011-2013.

This recommendation was implemented during the year under review.

3.6 Alterations to monitoring programmes for 2014-2015

In designing and implementing the monitoring programmes for air/water discharges in the region, the Taranaki Regional Council has taken into account the extent of information made available by previous authorities, its relevance under the Resource Management Act, the obligations of the Act in terms of monitoring emissions/discharges and effects, and subsequently reporting to the regional community, the scope of assessments required at the time of renewal of permits, and the need to maintain a sound understanding of industrial processes within Taranaki emitting to the atmosphere/discharging to the environment.

It is proposed that for 2014-2015, the monitoring programme for the Wai-inu Beach Settlement remains unchanged on the grounds that there were no significant adverse effects on the receiving environment. A recommendation to this effect is attached to this report.

4. Recommendation

1. THAT monitoring of discharges from Wai-inu Beach Settlement wastewater treatment system in the 2014-2015 year continues at the same level as in 2013-2014.

Glossary of common terms and abbreviations

The following abbreviations and terms are used within this report:

'Action' mode	two consecutive single samples greater than 280 enterococci/100ml
'Alert' mode	single sample greater than 140 enterococci/100ml
Bacteriological	micro-organisms selected as indicators of faecal material indicators
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
cfu	colony forming units. A measure of the concentration of bacteria usually expressed as per 100 millilitre sample
Condy	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
Enterococci	an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre of sample
Faecal coliforms	an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre sample
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
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 and subsequent amendments
Temperature	measured in °C (degrees Celsius)
UI	Unauthorised Incident
UIR	Unauthorised Incident Register – contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan

Water quality the bacteriological condition of a water body as it relates to human health, measured using indicator bacteria

*an abbreviation for a metal or other analyte may be followed by the letters 'As', to denote the amount of metal recoverable in acidic conditions. This is taken as indicating the total amount of metal that might be solubilised under extreme environmental conditions. The abbreviation may alternatively be followed by the letter 'D', denoting the amount of the metal present in dissolved form rather than in particulate or solid form.

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

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Appendix I

**Resource consent held by
South Taranaki District Council
Wai-inu Beach Settlement**



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

CHIEF EXECUTIVE
PRIVATE BAG 713
47 CLOTEN ROAD
STRATFORD
NEW ZEALAND
PHONE 06-765 7127
FAX 06-765 5097

Please quote our file number
on all correspondence

Name of
Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA

Consent Granted
Date: 26 November 2003

Conditions of Consent

Consent Granted: To discharge up to 84 cubic metres/day of treated domestic wastewater from Waiinu Beach settlement via seepage to groundwater in the Waitotara catchment at or about GR: R22:595-473

Expiry Date: 1 June 2022

Review Date(s): June 2010, June 2016

Site Location: Waiinu Beach Settlement, Waiinu Beach Road, Waitotara

Legal Description: Road Reserve Waiinu Beach Settlement Waitotara

Catchment: Waitotara

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

Consent 3769-3

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 exercise of this consent shall be carried out generally in accordance with the information supplied in support of the application.
2. The consent holder shall adopt the best practicable option or options [as defined in section 2 of the Resource Management Act 1991] to prevent or minimise any actual or potential effect on the environment arising from the exercise of this consent
3. The consent holder shall properly and effectively maintain and operate the treatment system with particular emphasis on septic tank and filter bed maintenance.
4. The consent holder shall, in conjunction with the Taranaki Regional Council, undertake such monitoring of the treatment system and coastal waters as deemed necessary by the Chief Executive, Taranaki Regional Council.
5. The consent holder shall provide a contingency plan to the satisfaction of the Chief Executive, Taranaki Regional Council, outlining septic tank maintenance and measures to be undertaken in the event of a failure of the components of the treatment system, within six months of granting this consent.
6. 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 2010 and/or June 2016, 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 26 November 2003

For and on behalf of
Taranaki Regional Council



Director-Resource Management