

STDC Wai-inu Beach Settlement
Monitoring Programme
Annual Report
2016-2017

Technical Report 2017-43

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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 2016 to June 2017 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess STDC's environmental performance during the period under review. The report also details the results of the monitoring undertaken and assesses the environmental effects of STDC's activities.

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

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

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

The monitoring showed that the wastewater treatment system was well maintained during the period under review. As in previous years, the monitoring indicated that the exercise of resource consent 3769-3 was not having an adverse effect on the environment.

During the 2016-2017 monitoring year, STDC demonstrated a high level of environmental and administrative compliance with their resource consent.

For reference, in the 2016-2017 year, consent holders were found to achieve a high level of environmental performance and compliance for 74% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 21% of the consents, a good level of environmental performance and compliance was achieved.

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

This report includes recommendations for the 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) describing the monitoring programme associated with a resource consent held by the South Taranaki District Council (STDC). STDC operates 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 24th report to be prepared by the Council to cover the 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:

- consent compliance monitoring under the *Resource Management Act 1991* (RMA) and the Council's obligations;
- the Council's approach to monitoring sites through annual programmes;
- the resource consent 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 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 STDC, 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 STDC'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 was 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, consent holders were found to achieve a high level of environmental performance and compliance for 74% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 21% of the consents, a good level of environmental performance and compliance was achieved.

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 3,600 L 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 14 m³ to the surface of one or other of the filter beds. These filter beds are about 15.6 m in diameter and are comprised 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 (Figure 1). The Wai-inu beach settlement is supplied from a bore (45 m deep) to the west of the settlement as there are no other users of shallow groundwater in the area.



Figure 1 Location of coastal bacteriological sampling sites and treatment system at Wai-inu Beach Settlement

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.

STDC holds water discharge permit **3769-3** to cover the discharge of up to 84 m³ per 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 Council on 29 July 1992 under Section 87(c) of the RMA. 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.

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 consent which is 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 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 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-inu Beach Settlement site was inspected three times during the monitoring year. With regard to the consent 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.

1.4.4 Bacteriological monitoring

The Council undertook routine sampling of the coastal waters at two sites on three occasions during the monitoring year (Figure 1).

Each sample was analysed for faecal coliforms, enterococci and conductivity. 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 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/100 ml. Action mode occurs when two consecutive samples are greater than 280 cfu/100 ml.

Table 1 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

2 Results

2.1 Inspections

13 December 2016

Conditions were fine with a moderate north westerly breeze. There had been recent showers. The camp was reasonably quiet during the inspection, with nine camping parties on site. There was moderate coverage of weed growth on the western filter bed and low coverage on the eastern bed (Photo 1). Although damp patches were visible, neither filter bed had any ponding at the time of the inspection. A slight sewage odour was detected less than 10 m downwind of the beds. No rubbish appeared to have been dumped since the previous inspection (green waste or otherwise), and the signs were in good condition. Two seawater samples were collected.



Photo 1 Moderate weed growth on the western filter bed at Wai-inu Beach Settlement (13 December 2016)

11 January 2017

Conditions were fine with a moderate westerly wind. It had rained in the catchment in the two days preceding the inspection. The camp was reasonably quiet during the inspection, with seven camping parties present on site. There was no weed coverage on the western filter bed and low coverage on the eastern bed. There was a small amount of ponding on the western bed (<5% of the surface) and no ponding on the eastern bed. There was a noticeable sewage odour detected less than 10 m downwind of the beds, and a very slight sewage odour greater than 10 m downwind of the beds. No rubbish appeared to have been dumped since the previous inspection (green waste or otherwise). The signs were in good condition. Two seawater samples were collected.

24 February 2017

Conditions were fine with a light south easterly wind. The inspection was undertaken with Vikki Kuyl from STDC. The camp was reasonably quiet during the inspection, with four camping parties present on site. There was a moderate level of weed cover on the western filter bed (<10%). There was no ponding on this bed. The eastern bed was receiving wastewater at the time of the inspection. There was a low cover of weeds on this bed (<5%). Moderate sewage odours were detected less than 10 m downwind of the compound. Slight sewage odours were detected 20 m downwind of the compound. No rubbish appeared to have been dumped since the previous inspection (green waste or otherwise). The signs were in good condition.

An extended sampling regime was carried out during the inspection in relation to the impending wastewater treatment system upgrade. Filter bed influent and effluent samples were collected. Four seawater samples were collected; three at Wai-inu Beach and one at Waverley Beach.

2.2 Results of bacteriological monitoring

During each inspection, seawater samples were collected at two coastal sites located at either end of Wai-inu Beach (Figure 1). These bacteriological monitoring results for 2016-2017, along with a statistical summary of data between 1992 and 2016, are presented in Table 2. Faecal coliform and enterococci counts were low across all samples collected during the year under review. Over the course of the monitoring period, all of the samples analysed had enterococci counts below the MfE 'Alert' guideline level (Table 1). The low faecal indicator bacteria counts recorded in the 2016-2017 monitoring year were well within the ranges of historical data, and were similar to the historical median values.

Table 2 Bacteriological monitoring results from the two coastal sites at Wai-inu Beach, including a summary of previous data from 1992 to 2016

Site	Western end of beach – SEA907093			Eastern end of beach – SEA907098		
Parameter	Faecal coliforms	Enterococci	Conductivity	Faecal coliforms	Enterococci	Conductivity
Unit	cfu/100 ml	cfu/100 ml	mS/m @ 20°C	cfu/100 ml	cfu/100 ml	mS/m @ 20°C
Summary statistics						
Minimum	<1	<1	4020	<1	<1	3990
Maximum	300	310	4880	1000	1400	4920
Median	3	3	4640	3	2	4600
Number	73	71	65	73	71	65
2016-2017 monitoring results						
13-Dec-2016	3	4	4620	13	36	4600
11-Jan-2017	4	1	4350	4	15	4650
24-Feb-2017	5	1	4750	15	13	4700

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 STDC. 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 causes of non-compliance or failure to maintain good practices. A pro-active approach that in the first instance avoids issues occurring is favoured.

The Council operates and maintains a register of all complaints or reported and discovered excursions from acceptable limits and practices, including non-compliance with consents, which may damage the environment. The incident register 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 company is indeed the source of the incident (or that the allegation cannot be proven).

In the 2016-2017 period, the Council was not required to undertake significant additional investigations and interventions, or record incidents, in association with STDC's conditions in their resource consent or provisions in Regional Plans.

3 Discussion

3.1 Discussion of site performance

Mild to moderate sewage odours were detected over 10 m downwind of the filter beds during the inspections conducted on 11 January and 24 February 2017. STDC are currently planning to redesign the wastewater treatment system, in response to odour complaints received from the local community. The upgrade aims to mitigate the odour issues associated with the beds. The Council assisted STDC with an extended sampling regime during the final site inspection of the monitoring year, in relation to the impending wastewater treatment system upgrade.

3.2 Environmental effects of exercise of consents

Operation of the wastewater treatment system at the Wai-inu Beach Settlement was not found to have any adverse effects on water quality at the Wai-inu Beach during the monitoring period. Overall, routine bacteriological monitoring has continued to return low FIB counts.

Although objectionable odours from the wastewater treatment system have had some impact on the neighbourhood community, STDC has responded to these complaints promptly and effectively by initiating a future system upgrade.

3.3 Evaluation of performance

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

Table 3 Summary of performance for Consent 3769-3

Purpose: To discharge 84 cubic metres per day 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 June 2015	Yes
6. Optional review provision regarding environmental effects	Next due in 2022 if required	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A = not applicable

During the year under review, STDC demonstrated a high level of environmental and administrative performance with the resource consent as defined in Section 1.1.4. In summary, there were no breaches of consent conditions and bacteriological sampling of the coastal waters failed to detect any contamination that could be linked to the operation of the wastewater treatment system.

3.4 Recommendations from the 2015-2016 Annual Report

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

1. THAT monitoring of discharges from the Wai-inu Beach Settlement wastewater treatment system in the 2016-2017 year continues at the same level as in 2015-2016.

This recommendation was implemented in full.

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 monitoring programme for the Wai-inu Beach Settlement remains unchanged on the grounds that there were no significant adverse effects on the receiving environment during the 2016-2017 monitoring period. A recommendation to this effect is attached to this report.

4 Recommendations

1. THAT monitoring of discharges from the Wai-inu Beach Settlement wastewater treatment system in the 2017-2018 year continues at the same level as in 2016-2017.

Glossary of common terms and abbreviations

The following abbreviations and terms may be 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
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
Incident Register	the Unauthorised Incident Register – contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan
Median	central value when values are arranged in order of magnitude
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)
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 STDC

(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: 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

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