

Pacific Natural Gut String Company Limited
Monitoring Programme
Annual Report
2012-2013

Technical Report 2013-92

ISSN: 0114-8184 (Print)
ISSN: 1178-1467 (Online)
Document: 1304712 (Word)
Document: 1313849 (Pdf)

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March 2014

Executive summary

The Pacific Natural Gut String Company Limited operates a natural gut processing plant located on SH45 west of Manaia, in the Kaupokonui River catchment. The Company holds a resource consent to allow it to discharge wastewater directly into the Tasman Sea. This report for the period July 2012-June 2013 describes the monitoring programme implemented by the Taranaki Regional Council to assess the Company's environmental performance during the period under review, and the results and effects of the Company's activities.

The resource consent includes seven special conditions setting out the requirements that the Company must satisfy.

The Council's monitoring programme included two inspections, and two water samples collected from the wastewater discharge for physicochemical analysis.

The monitoring showed that the wastewater discharge met the consent conditions and as such is not expected to cause any adverse effects on the receiving marine environment. The quality of the wastewater discharge continued at a similar level to previous years. Several issues regarding factory housekeeping and stormwater management became apparent during the inspections, however some of these were in the process of being resolved by the consent holder.

During the year, the Company demonstrated a good level of environmental performance and compliance with the resource consent.

This report includes recommendations for the 2013-2014 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 the Annual Report for the period July 2012-June 2013 by the Taranaki Regional Council describing the monitoring programme associated with resource consents held by Pacific Natural Gut String Company Limited (Pacific Natural Gut). The Company operates a natural gut string processing factory situated west of Manaia.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consent held by Pacific Natural Gut authorising discharges of wastewater by direct marine outfall to the Tasman Sea. This is the twenty-fourth Annual Report to be prepared by the Taranaki Regional Council to cover Pacific Natural Gut's water discharges and their effects.

1.1.2 Structure of this report

Section 1 of this report is a background section. It sets out general information about 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 Pacific Natural Gut, the nature of the monitoring programme in place for the period under review, and a description of the activities and operations conducted at the Pacific Natural Gut Factory.

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

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

Section 4 presents recommendations to be implemented in the 2013-2014 monitoring year.

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

1.1.3 The Resource Management Act (1991) and monitoring

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

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

- (d) natural and physical resources having special significance (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, including impact monitoring, also enables the Council to continuously assess its own performance in resource management as well as that of resource users particularly consent holders. It further enables the Council to continually re-evaluate its approach and that of consent holders to resource management, and, ultimately, through the refinement of methods, to move closer to achieving sustainable development of the region's resources.

1.1.4 Evaluation of environmental performance

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

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

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

For reference, in the 2012-2013 year, 35% of consent holders in Taranaki monitored through tailored compliance monitoring programmes achieved a high level of environmental performance and compliance with their consents, while another 59% demonstrated a good level of environmental performance and compliance with their consents.

1.2 Process description

The Company began its operation in 1976, with processing activities at the factory consisting of the production of high quality natural gut strings for tennis, squash and badminton racquets. The factory was once a dairy processing plant with an outfall to the cliff.

Although the Company's operation is sited on the banks of the Kaupokonui River (Figure 1) it neither takes water from, nor discharges water to, this river.

In October 1992 the Company was bought by Pacific Entermark GmbH, a sports goods marketing company based in Reichenbach, Germany. However the consent remains in the name of Pacific Natural Gut String Company Limited.

The Company receives fresh or frozen beef threads (intestine casings) which they clean through a series of soaking and rinsing, using soda ash (sodium carbonate), Ecoteric LA8N (a biodegradable surfactant), a 50% hydrogen peroxide solution, EDTA (ethylenediamine tetraacetic acid), and District Council water supply.

Table 1 indicates the types and quantities of process chemicals that are discharged. These absolute quantities vary from week-to-week depending on the level of production. The concentration in the effluent also varies depending on the current level of rainfall runoff. There are also minute quantities of other chemicals that are used from time-to-time for research purposes.

Table 1 Pacific Natural Gut wastewater composition (approximate)

Component	Quantity used per month	Weight of chemical discharged kg/month	Percentage of process effluent	g/m ³ of process effluent	Percentage of total discharge	g/m ³ of total discharge
District Council water (m ³)	1000	1 000	99.9598%		49.9799%	
Soda ash (kg)	120	120	0.0120%	120	0.0060%	60
Ecoteric LA8N (kg)	203	203	0.0203%	203	0.0101%	101
Hydrogen peroxide 50% solution (kg)	175	0	0.0000%	0	0	0
EDTA (kg)	79	79	0.0079%	79	0.0040%	40

Component	Quantity used per month	Weight of chemical discharged kg/month	Percentage of process effluent	g/m ³ of process effluent	Percentage of total discharge	g/m ³ of total discharge
Total effluent (kg)		1 000 402				
Rainwater runoff (rough estimate)		1 000 000				
Total discharge to sea		2 000 402				

The Company's best estimate of rainwater runoff accounts for between half and two thirds of the total yearly discharge. This is due to the fact that much of the runoff from the factory roof, plus additional amounts from the car park and road enter the wastewater system.



Figure 1 Location of the factory and marine outfall

A very small quantity of the District Council supplied water is used for the personal needs of the staff, and is disposed of through the septic system.

The hydrogen peroxide is totally exhausted during the process; therefore the amount shown is based on input and is reduced to nil by the time of discharge.

The discharge also contains materials extracted from the beef threads during processing. These predominantly include minute amounts of animal fats and oils, water-soluble proteins, and carotenoids.

Previously the discharge occurred once daily or more frequently, depending on the process activity and rainfall. However, in 2001, the results of a marine ecological inspection indicated the discharge might be having an indirect effect on reef ecology. As a result, discharge is now only permitted within one hour of high tide, unless heavy rainfall causes the storage capacity of the holding tank to be exceeded.

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.

Pacific Natural Gut holds water discharge permit **0934-3** to cover the discharge of wastewater and stormwater from a natural gut string processing factory into the Tasman Sea in 'batches' from a holding tank. This permit was issued by the Taranaki Regional Council on 1 December 2011 as a resource consent under Section 87(e) of the Resource Management Act. It is due to expire on 1 June 2016.

There are seven special conditions attached to the consent. Conditions 1 and 2 relate to the volume and timing of the discharges.

Conditions 3 to 5 deal with the pH of the discharge, and testing and recording of this.

Condition 6 deals with effects of the discharge in the receiving waters.

Condition 7 requires the Company to produce a report evaluating all reasonable alternatives to discharging to the sea.

A copy of the permit is attached to the 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 Pacific Natural Gut 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, or new consents, advice on the Council's environmental management strategies and the content of regional plans, and consultation on associated matters.

1.4.3 Site inspections

The Pacific Natural Gut site was visited twice during the monitoring period. With regard to the consent for 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. Sources of data being collected by the consent holder were identified and accessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council. The neighbourhood was surveyed for environmental effects.

1.4.4 Chemical sampling

The Taranaki Regional Council undertook sampling of the wastewater discharge from the site on two occasions, with the samples being analysed for pH, alkalinity/acidity and conductivity.

2. Results

2.1 Inspections

Officers of the Council undertook two monitoring inspections at the Pacific Natural Gut factory during the period under review.

2.1.1 6 September 2012

The factory was tidy at the time of the inspection. Raw materials on site included 9 empty drums of alcohol ethoxylate, 7 bags of EDTA, 13 bags of soda ash, and 2 bags of caustic soda. The chemicals were banded and the area was tidy. At the time of the inspection the roof on the outside chemical storage area was being fixed in order to prevent future leaks. The banded area contained 13 x 25kg carboys of hydrogen peroxide. The moss/algae previously growing within this bund had been removed and the integrity of the bund appeared fit for purpose. The holding tank was over half full and was about to be discharged at high tide. There was little foaming on the surface. A new cover had been fitted on the holding tank (fitted July 2012, Photograph 1), replacing the old ripped cover. The pump shed floor was dry and there were no leaks at the time of inspection. There was a small trickle of discharge from the outfall pipe at the time of inspection. Foam was clearly visible on the cliff below the outfall (Photograph 2) and at the base of the cliff. This foam was attributable to Ecoteric LA8N surfactant. The surfactant is biodegradable and therefore not expected to have an adverse biological effect on the receiving environment. The extent of foam is likely to have resulted from cleaning of the factory the day before combined with a strong persistent on-shore westerly wind. Access to a suitable location to inspect the end of the outfall pipe was difficult.



Photograph 1 New cover on the effluent holding tank



Photograph 2 Foam around point of discharge

2.1.2 17 April 2013

Since the previous inspection, the factory had been relatively inactive, with only two weeks of consent related activity occurring since Christmas 2012. On the day of inspection the factory was tidy and the majority of chemicals were banded. During the inspection there were a number of issues associated with heavy rainfall occurring on the day.

Certain areas of the factory were not waterproof, including the chemical storage area within the main building. Rainwater was pouring out of some banded areas (containing empty drums only). Although waterproof covers had been placed over the EDTA and soda bags, a small volume of water was seeping through. Raw materials in the main building included: 5 bags EDTA, 11 bags soda ash, ~70 tins of Lusterthane 988 and 2 bags of unlabelled white powder. Numerous empty chemical containers (including some which had previously contained poisonous and hazardous substances) were being stored onsite including 9 drums of isopropyl alcohol, 1 drum of Lutensol A089, 16 containers of Supaflo Acrylic Thinner and 4 drums of Teric LA8N. It was recommended that the empty containers and unused chemicals be removed by a professional waste service.

The roof on the outside chemical storage area had been replaced in order to prevent leaks. The new cover fitted on the holding tank was in place. Due to heavy rain, the holding tank was overflowing onto the bank and into the river at the time of inspection. As the factory was inactive at the time, the tank contained stormwater only. There was no foam on the surface of the tank.

The pump shed floor was damp and there were minor leaks at the time of inspection. A sample was collected. The use of 'manual' and 'automatic' settings on the pump was discussed. The outfall pipe was not checked during this inspection due to access issues combined with extreme weather conditions.

The following action was to be taken: Every effort was to be taken to store chemicals in a waterproof (bunded) area. Unused and empty chemical containers were to be removed from site using a professional waste management company. Even when the factory is inactive, overtopping of the tank into the river should be avoided due to risk of contaminated stormwater entering the water body.

2.2 Results of discharge monitoring

During the inspections, a sample was collected from the bleed-off valve in the outlet pipe in the pump shed. Results of the water quality analysis are presented in Table 2, including a summary of previous years' results.

Table 2 Results of wastewater sampling at Pacific Natural Gut during the period under review, together with a summary of previous results since March 1988

Parameter	Unit	Date		Number	Range	Median
		06 Sep 2012	17 Apr 2013			
Alkalinity	g/m ³ CaCO ₃	68	74	45	25 - 850	104
Conductivity	mS/m	16.2	11.5	42	7.2 – 920	31.3
pH		9.0	9.1	45	7 – 11.5	9.6
Temperature	°C	12.8	17.0	35	8.5 – 25.5	14.6

The pH of the samples collected during the period under review were within the consent limits of 6.5 – 11.0. The results of all other parameters were within the ranges of previous results and similar to historical medians (Table 2).

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 holders. During the year matters may arise which require additional activity by the Council e.g. provision of advice and information, or investigation of potential or actual causes of non-compliance or failure to maintain good practices. A pro-active approach, that in the first instance avoids issues occurring, is favoured.

The 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 company concerned has itself notified the Council. The register contains details of any investigation and corrective action taken.

Complaints may be alleged to be associated with a particular site. If there is potentially an issue of legal liability, the Council must be able to prove by investigation that the identified company is indeed the source of the incident. (Or that the allegation cannot be proven).

In the 2012-2013 period, it was not necessary for the Council to undertake significant additional investigations and interventions, or record incidents in association with Pacific Natural Gut's conditions in resource consents or provisions in Regional Plans in relation to the Company's activities during the monitoring period.

3. Discussion

3.1 Discussion of plant performance

The natural gut processing factory was generally well managed during the monitoring period. However, there were some issues in regards to stormwater control in and around chemical storage areas. The discharge was sampled on two occasions and found to be in compliance with conditions of the resource consent.

3.2 Environmental effects of exercise of consents

The wastewater discharge meets the conditions of Consent 0934-3, and the quality of the wastewater discharge continued at a similar level to previous years.

3.3 Evaluation of performance

A summary of the Company's compliance record for the year under review is provided in Table 3.

Table 3 Summary of performance for Consent 0934-3 to discharge untreated wastewater over a cliff to the Tasman Sea

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Discharge in batches not exceeding 44m ³ , daily total not to exceed 100m ³	Company self monitoring	Yes
2. Discharge within one hour of high tide	Company self monitoring	Yes
3. pH range 6.5 – 11.0	Samples and company self monitoring	Yes
4. Discharge tested prior to release	Company self monitoring	Yes
5. Results of testing provided to TRC	Results provided	Yes
6. Effects not to arise in receiving waters	Site inspections	Yes
7. Report on alternatives to ocean outfall	Due December 2015	N/A
Overall assessment of consent compliance and environment performance in respect of this consent		High

N/A = not applicable

During the year, the Company demonstrated a good level of environmental performance and compliance with the resource consent defined in Section 1.3.1. Whilst the consent holder complied with consent conditions, several issues in regards to general housekeeping and stormwater control were noted, these having the potential to lead to adverse effects if not addressed.

3.4 Recommendations from the 2011-2012 Annual Report

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

THAT monitoring of discharges from Pacific Natural Gut String Company Limited in the 2012-2013 year continue at the same level as in 2011-2012.

This recommendation was implemented.

3.5 Alterations to monitoring programmes for 2013-2014

In designing and implementing the monitoring programmes for 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 discharges and effects, and subsequently reporting to the regional community, the scope of assessments required at the time of renewal of permits, and the need to maintain a sound understanding of industrial processes within Taranaki discharging to the environment.

It is proposed that for 2013-2014, the programme remains unchanged from that of 2012-2013. A recommendation to this effect is attached to this report.

4. Recommendations

1. THAT monitoring of discharges from Pacific Natural Gut String Company Limited in the 2013-2014 year continue at the same level as in 2012-2013.

Glossary of common terms and abbreviations

The following abbreviations and terms are used within this report:

bund	a wall around a tank to contain its contents in the case of a leak
Condy	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 20°C and expressed in mS/m
g/m ³	grams per cubic metre, and equivalent to milligrams per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures
incident	an event that is alleged or is found to have occurred that may have actual or potential environmental consequences or may involve non-compliance with a consent or rule in a regional plan. Registration of an incident by the Council does not automatically mean such an outcome had actually occurred
intervention	action/s taken by Council to instruct or direct actions be taken to avoid or reduce the likelihood of an incident occurring
investigation	action taken by Council to establish what were the circumstances/events surrounding an incident including any allegations of an incident
l/s	litres per second
mS/m	millisiemens per metre
mixing zone	the zone below a discharge point where the discharge is not fully mixed with the receiving environment. For a stream, conventionally taken as a length equivalent to 7 times the width of the stream at the discharge point.
pH	a numerical system for measuring acidity in solutions, with 7 as neutral. Numbers lower than 7 are increasingly acidic and higher than 7 are increasingly alkaline. The scale is logarithmic i.e. a change of 1 represents a ten-fold change in strength. For example, a pH of 4 is ten times more acidic than a pH of 5.
Physicochemical	measurement of both physical properties (e.g. temperature, clarity, density) and chemical determinants (e.g. metals and nutrients) to characterise the state of an environment
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
Temp	temperature, measured in °C (degrees Celsius)
UI	Unauthorised Incident
UIR	Unauthorised Incident Register – contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan

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

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Appendix I

**Resource consent held by
Pacific Natural Gut String Company Ltd**



Coastal 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
www.trc.govt.nz

Please quote our file number
on all correspondence

Name of
Consent Holder: Pacific Natural Gut String Co. Limited
P O Box 74
MANAIA 4641

Decision Date: 1 December 2011

Commencement
Date: 1 December 2011

Conditions of Consent

Consent Granted: To discharge wastewater and stormwater from a natural
gut string processing factory into the Tasman Sea in
'batches' from a holding tank at or about (NZTM)
1692948E-5618745N

Expiry Date: 1 June 2016

Site Location: Lower Glenn Road, Kaupokonui

Legal Description: Lot 2 DP 18172 Blk VI Waimate SD [Discharge source]
Sec 42 Blk VI Waimate SD [Discharge site]

Catchment: Tasman Sea
Kaupokonui

General condition

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

Special conditions

1. Discharges shall be in discrete batches not in exceeding 44m³ and the total daily discharge shall not exceed 100m³.
2. The discharge shall only occur within one hour of high tide at all times, except where heavy rainfall would cause the storage capacity of the holding tank to be exceeded.
3. The pH of the discharge shall be within the range pH 6.5 to 11.0 at all times.
4. Batch discharges shall be pH tested and recorded prior to any discharge being released.
5. The consent holder shall provide records for each batch detailing the date and time, pH and volume of each discharge as well as the time of high tide. The record shall also detail any discharges that do not occur at high tide. Records collected shall be provided to the Taranaki Regional Council monthly.
6. The discharge of wastewater and stormwater shall not give rise to all or any of the following effects in the receiving waters after a reasonable mixing zone extending 10 metres from the discharge point:
 - a. *The production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials*
 - b. *Any conspicuous change in the colour or visual clarity*
 - c. *Any emission of objectionable odour*
 - d. *The rendering of fresh water unsuitable for consumption by farm animals*
 - e. *Any significant adverse effects on aquatic life.*
7. Before 1 December 2015 the consent holder shall provide to the Chief Executive, Taranaki Regional Council a report that evaluates all reasonable alternatives to discharging to the sea, and identifies the best alternative.

Signed at Stratford on 1 December 2011

For and on behalf of
Taranaki Regional Council



Chief Executive