Mangati Catchment Joint Monitoring Programme Annual Report 2014-2015

Technical Report 2015-119

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Executive summary

This report is the Annual Report for the period July 2014 to June 2015 by the Taranaki Regional Council (the Council) describing the monitoring programme associated with seventeen industries within the catchment of the Mangati Stream, Bell Block.

The Mangati catchment has, in the past, been heavily utilised for the disposal of stormwater and wastewaters from a large number of industrial sites. As a consequence of inadequate treatment and management of discharges and minimal dilution capacity in the past, the water quality and aquatic ecosystems of the stream were significantly impacted. The Mangati Stream catchment is listed in the Regional Freshwater Plan for Taranaki (Appendix 1B) as having been identified for enhancement of natural, ecological and amenity values, and life supporting capacity. The Council has addressed this by requiring consents for discharges from every industrial site within the catchment that has significant potential for contamination. A combined monitoring programme has been implemented by Council to monitor these discharges, and since the 2002-2003 year a holistic approach has been applied to the monitoring of abstractions and discharges to all media.

During the 2014-2015 monitoring period a total of one water abstraction consent, 17 non agricultural water discharge consents, five air discharge consents¹ and one discharge to land consent were held by industries in this catchment. During the period four renewed consents were granted, and one consent was varied. This report covers the results and findings during this monitoring period for these 24 consents, which contain a total of up to 237 special conditions that the consent holders must satisfy. It represents the eighteenth report produced by Council to cover water discharges by industries within the catchment and their effects, and is the tenth combined report to cover abstractions and discharges to all media.

Overall, a good level of environmental performance was achieved by the consent holders in the industrial area of the Mangati Stream catchment.

Monitoring during the year under review included 62 site inspections, discussions with site operators over site management, 117 samples from chemical surveys of discharges and the receiving water, macroinvertebrate surveys in the Mangati Stream, point source and ambient particulate monitoring and odour surveys. A number of modifications to processes or wastewater treatment have been instituted by site operators as a result of Council's investigations and requirements for remedial action to avoid, remedy or mitigate adverse environmental effects.

Monitoring in the 2014-2015 period found that, on the whole, the quality of most of the discharges is improving, as is the environmental performance and compliance with consent conditions for the consent holders in the catchment. There are, however some discharges that need further improvement. Also noted in this period were some transitory non-compliances in some discharges which upon re-sampling were found to have dropped back to normal levels.

¹ Additionally, McKechnie Aluminium Solutions Ltd (formerly MCK Metals Pacific Ltd) holds an air discharge permit that is reported on in combination with the Company's discharge to the Mangaone Stream in a separate report. For the 2014-2015 period, see TRC Technical Report 2015-88.

During the year, ABB Ltd demonstrated a high level of environmental performance and compliance with their resource consents and a high level of administrative performance.

During the period under review an improvement in BLM Feeds Ltd (BLM) environmental performance was required, however this improvement was achieved. Subsequently BLM is environmental performance is deemed as being good for the period under review. BLM made significant improvements during the latter part of the monitoring period to reducing dust emissions, tracking of product, and maintenance of treatment measures. An improvement in BLM's administrative performance is required as an updated stormwater management plan and contingency plan has not being submitted as requested.

An improvement in Greymouth Petroleum Acquisitions Company Ltd's (Greymouth) environmental performance was required, however this consent holder demonstrated a high level of administrative performance. During the period under review the stormwater sample collected exceeded resource consent limits for suspended solids. Currently an abatement notice is in place requiring Greymouth to comply with consent conditions.

An improvement in Halliburton New Zealand Ltd's (Halliburton) environmental performance is required, however this consent holder demonstrated a good level of administrative performance and compliance with their resource consents. Halliburton has recently being issued with an infringement notice in regards to exceedances in suspend solids in their discharge

During the year, McKechnie Aluminium Solutions Ltd (McKechnie) demonstrated a high level of environmental and a good level administrative performance and compliance with their resource consents. An update for McKechnie's stormwater and contingency plans is overdue.

During the year, New Plymouth District Council demonstrated a high level of environmental and administrative performance and compliance with their resource consent conditions.

During the year, Nexans New Zealand Ltd demonstrated a high level of environmental and administrative performance and compliance with the resource consents.

During the year, OMV New Zealand Ltd demonstrated a high level of environmental and administrative performance and compliance with their resource consents.

During the year, Schlumberger New Zealand Ltd demonstrated a good level of environmental and administrative performance and compliance with their resource consents.

During the year, Tasman Oil Tools Ltd demonstrated a good level of environmental performance and compliance with their resource consents and a good level of administrative performance.

During the year, the Tegel Foods Ltd (feed mill) demonstrated a good level of administrative performance. However an improvement was required in Tegel's level of environmental performance and compliance with their resource consents. During the period under review there were two non compliances in regard to the level of BOD in the concentrations in the stormwater discharges and there were product tracking issues noted at the site.

Overall, during the year, Tegel Foods Ltd (poultry processing plant) demonstrated a good level of environmental performance and a good of administrative performance and compliance with their resource consents. Some minor fugitive wastewater discharges were identified during the year, however no environmental effects were noted as a result.

During the year, TIL Freighting Ltd (TIL) required an improvement in their level of administrative performance and environmental performance and compliance with their resource consents. There were a number of breaches of this consent holder's biochemical oxygen demand limit, which on one occasion resulted in the issuing of an infringement notice. It also noted that updates to TIL's stormwater and contingency plans are overdue. TIL has recently been issued with an abatement notice requiring them to comply with resource consent conditions.

During the year, Vector Gas Ltd demonstrated a high level of environmental administrative performance and compliance with their resource consent.

During the year, W Abraham Ltd demonstrated a high level of environmental and high level of administrative performance and compliance with their resource consent.

Historically, chemical and biological monitoring results for the Mangati catchment have shown there to be a two-stage reduction in water quality, one below the main stormwater outlet from Tegel Foods poultry processing plant, the other below the industrial drain which joins the stream at the main highway. During the period under review, only moderate transitory reduction in the water quality of the stream was observed, on occasion, downstream of the industrial area.

In the period under review the instream dissolved zinc and copper concentrations met the appropriate USEPA acute or chronic exposure guidelines in 23 of 24 results. Suspended solids were found to be above median at all sites (including at the upstream control site) however in three of four surveys there was found be an overall improvement in suspended solids concentration between the upstream control site and the site immediately below New Plymouth District Council's (NPDC's) treatment ponds at the bottom of the industrial catchment. Concentrations of ammoniacal nitrogen were generally found to be above median values for most samples; however no significant overall increase in concentrations were noted when comparing the upstream control site and the site immediately below NPDC ponds. None of the 24 instream samples taken in period under review exceeded the 0.025 g/m³ guideline limit for the protection of aquatic ecosystems.

Statistical analysis of the macroinvertebrate data for the Te Rima Place monitoring site (MGT000520), as reported in the Fresh Water Macroinvertebrate Fauna Biological Monitoring Programme Annual State of the Environment Monitoring Reports for 2014-2015, have found that the trend in MCI scores indicated continued improvement coincident with better control and treatment of industrial point source discharges in the upper and midcatchment and wetland installation in mid catchment. This improvement has continued in recent years. The MCI scores were indicative that the shift from 'very poor' to 'poor' generic stream health has been maintained during these periods. This trend of improvement in stream 'health' at this site is much more pronounced than the trend at the site 1.5 km upstream.

There were a total of 17 substantiated unauthorised incidents recorded during the period under review, 12 of which were related to the consented companies monitored under this

catchment programme. One of the incidents was raised as a result of an investigation initiated by Council officers and this resulted in the closure of an illegal truck wash that was discharging nutrient rich effluent to the Mangati Stream system. The company, J Swap Ltd, was issued with 20 infringement fines to cover discharges that already occurred, and has now installed a sewer diverted truck wash.

For reference, in the 2014-2015 year, 75% 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 22% demonstrated a good level of environmental performance and compliance with their consents.

This report includes recommendations for the 2015-2016 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 2014 to June 2015 by the Taranaki Regional Council (the Council) on the monitoring programme associated with 24 resource consents held by companies within the Mangati catchment. It is the eighteenth report on the Mangati Stream Catchment Joint Monitoring Programme.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consents held by the companies that relate to abstractions and discharges of water within the Mangati catchment, and the air discharge permits held by the companies to cover emissions to air from the sites.

One of the intents of the *Resource Management Act 1991* (RMA) is that environmental management should be integrated across all media, so that a consent holder's use of water, air and land should be considered from a single comprehensive environmental perspective. Accordingly, the Council has been integrating its environmental monitoring programmes and reporting the results of the programmes jointly. Therefore since June 2002, a combined approach has been applied to the monitoring and reporting of the non-agricultural discharges in this industrial area of Bell Block across all media. This report discusses the environmental effects of the companies' use of both water and air, and is ninth combined annual report by the Council for the industries in the Mangati catchment.

The Mangati Stream has a narrow catchment that runs from south to north in the lowland between the Waiwhakaiho and Waiongana River systems (Figure 1). The total catchment area is approximately 6.1 km². The length of the catchment, from the headwaters between Paraite and Corbett Roads to the sea at Bell Block beach, is approximately 5 km.

The industrial area at Bell Block is situated mid-catchment predominantly on the western side of the stream. Upstream, land use is pastoral and horticultural. Downstream, the Mangati flows through the residential area of Bell Block. The Mangati Reserve, with its popular well maintained walkway, boarders the stream immediately below the industrial area (Photo 1). The beach at the mouth of the stream is also a popular recreational area (Photo 2).

The Mangati Stream has been the subject of numerous pollution incidents in past years, the large majority of which have related to water discharges from the industrial area. More than 150 unauthorised discharges have been investigated and reported on since 1986, three of which involved major fish kills.

The Council's response to the continued pollution of the Mangati Stream has been to require licensing of discharges of wastewater or stormwater from sites where there is the potential for contamination to occur. Thus, the Mangati Stream Catchment Monitoring Programme was implemented to ensure compliance with these consents and to determine the effects of the discharges on the water quality and biota of the stream.



Photo 1 Mangati Reserve at Parklands Avenue



Photo 2 Mangati Stream at the coast

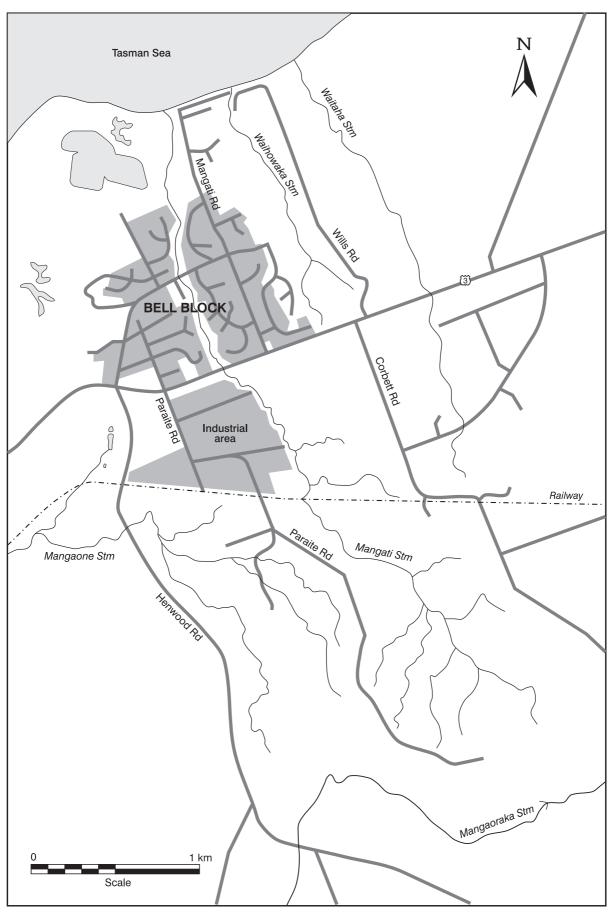


Figure 1 Mangati catchment

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 RMA and the Council's obligations and general approach to monitoring sites through annual programmes, a summary of the resource consents held by companies in the Mangati catchment, and the nature of the monitoring programme in place for the period under review. Aerial photographs and maps showing the location of the industries, their discharges and the Council's monitoring sites are also provided. Each company's activity is then discussed in detail in a separate section (Sections 2 to 16).

In each subsection (e.g. Section 2.1) there is a general description of the industrial activity and its discharges, and an outline of the matters covered by the company's permit/s.

Subsection 2 presents the results of monitoring of the company's activities during the period under review, including scientific and technical data, and any information on the Council's Register of Incidents.

Subsection 3 discusses the results, their interpretations, and their significance for the environment in the immediate vicinity of the site under discussion.

Subsection 4 presents recommendations to be implemented in the 2015-2016 monitoring year.

Section 17 presents the findings of inspections carried out at sites in the industrial area of the Mangati catchment that do not hold consents as they are permitted activities under the rules of the Council's regional plans.

Section 18 presents a summary of the information on file about unauthorised incidents logged on the Council's database in the Mangati catchment, or relating to the region wide mobile abrasive blasting consent that is monitored under this programme.

Section 19 presents information relating to monitoring of the combined discharges to the New Plymouth District Council wetland, and to the Mangati Stream. There is a discussion of the results, their interpretation, and their significance for the environment.

Section 20 discusses the results of the monitoring of the Mangati Stream, their interpretation and their significance.

Section 21 presents a summary of recommendations made in relation to the monitoring of each company's activities.

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* 1991 (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 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 (for example, 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 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 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 performance of resource users and consent holders. Compliance monitoring, including both activity and impact monitoring, enables the Council to continually re-evaluate its approach and that of consent holders to resource management and, ultimately, through the refinement of methods and considered responsible resource utilisation, to move closer to achieving sustainable development of the region's resources.

1.1.4 Evaluation of environmental and administrative performance

Besides discussing the various details of the performance and extent of compliance by the consent holders during the period under review, this report also assigns a rating as to each Company's environmental and administrative performance.

Environmental performance is concerned with actual or likely effects on the receiving environment from the activities during the monitoring year. Administrative performance is concerned with the Company's approach to demonstrating consent compliance in site operations and management including the timely provision of information to the 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 (i.e. a defence under the provisions of the RMA can be established) may be excluded with regard to the performance rating applied. For example loss of data due to a flood destroying deployed field equipment.

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

Environmental Performance

• **High:** No or inconsequential (short-term duration, less than minor in severity) breaches of consent or regional plan parameters resulting from the

activity; no adverse effects of significance noted or likely in the receiving environment. The Council did not record any verified unauthorised incidents involving significant environmental impacts and was not obliged to issue any abatement notices or infringement notices in relation to such impacts.

• Good: Likely or actual adverse effects of activities on the receiving environment were negligible or minor at most. There were some such issues noted during monitoring, from self reports, or in response to unauthorised incident reports, but these items were not critical, and follow-up inspections showed they have been dealt with. These minor issues were resolved positively, co-operatively, and quickly. The Council was not obliged to issue any abatement notices or infringement notices in relation to the minor noncompliant 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 compliance

- High: The administrative requirements of the resource consents were met, or any failure to do this had trivial consequences and were addressed promptly and co-operatively.
- Good: Perhaps some administrative requirements of the resource consents were not met at a particular time, however this was addressed without repeated interventions from the Council staff. Alternatively adequate reason was provided for matters such as the no or late provision of information, interpretation of 'best practical option' for avoiding potential effects, etc.
- **Improvement required:** Repeated interventions to meet the administrative requirements of the resource consents were made by Council staff. These

matters took some time to resolve, or remained unresolved at the end of the period under review. The Council may have issued an abatement notice to attain compliance.

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

For reference, in the in the 2014-2015 year, 75% 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 22% demonstrated a good level of environmental performance and compliance with their consents.

1.1.5 Investigations, interventions, and incidents

The monitoring programme for the period under review 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, 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 (IR) 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).

1.2 Resource consents

The resource consents covered by the Mangati Joint Monitoring Programme are outlined in Table 1 and their locations are shown in Figure 2 and Figure 3. The programme covered 25 consents during the 2014-2015 monitoring period. Seventeen consents license discharges to water (twelve via the NPDC ponds); six are for discharges to air; one is for a discharge to land and one is to take and use groundwater. There are a small number of other consented discharges in the catchment, such as agricultural discharges, which are not covered directly by this monitoring programme. Outlines of the companies' activities and the special conditions on their consents are presented in later sections, and copies of the full consents are given in alphabetical order in Appendix I.

 Table 1
 Resource consents in the Mangati catchment covered by this report

Consent holder	Resource consent	Purpose	Next review date	Expiry date
	2336-3	To discharge stormwater from a transformer manufacturing site into the Mangati Stream		1 June 2026
ABB Ltd (Transformer Division)	5435-1 / 5435-2	To discharge emissions into the air from dry steel grit blasting processes and associated activities. [Consent 5435-2 replaced 5435-1 on 12 February 2015]		1 June 2032
BLM Feeds Ltd	7707-1	To discharge stormwater into the Mangati Stream		1 June 2026
Greymouth Petroleum Acquisitions Company Ltd	4664-3	To discharge treated stormwater from a pipe yard used for the cleaning and storage of casing and drilling equipment, and the storage of hazardous substances, onto and into land in circumstances where it may enter the Mangati Stream		1 June 2026
Halliburton New Zealand Ltd	2337-3	To discharge stormwater from an industrial site, used for an oil field service operation, into the Mangati Stream J		1 June 2026
McKechnie Aluminium Solutions Ltd	3139-3	To discharge stormwater (including cooling water) from an industrial site into an unnamed tributary of the Mangati Stream		1 June 2026
New Plymouth District Council	4302-2	To discharge up to 5200 litres/second of stormwater from industrial sealed areas and roofs through piped stormwater systems into the Mangati Stream		1 June 2020
Nexans New Zealand Ltd	4497-3	To discharge stormwater and cooling water from an electric wire and cable manufacturing site into the Mangati Stream	June 2020	1 June 2026
	5417-1 / 5417-2	To discharge emissions into the air from an electric wire and cable manufacturing plant and associated activities [Consent 5417-2 replaced 5417-1 on 24 February 2015]	June 2020	1 June 2032
OMV New Zealand Ltd	3913-2	To discharge up to 125 litres/second of treated stormwater from a transport depot into an unnamed tributary of the Mangati Stream [Renewed consent granted after end of monitoring period]	-	1 June 2014
Schlumberger New Zealand Ltd	5987-1	To discharge treated stormwater from a synthetic liquid mud plant and storage site into the Mangati Stream	-	1 June 2020
	6032-1	To discharge treated wash water and stormwater from a storage and maintenance premises for oil field exploration equipment into the Mangati Stream	-	1 June 2020
Tasman Oil Tools Ltd	4812-2	To discharge up to 112 litres/second of stormwater including washdown water from a storage and maintenance yard for oil field drilling equipment into an unnamed tributary of the Mangati Stream	-	1 June 2020

Consent holder	Resource consent	Purpose	Next review date	Expiry date
Tegel Foods Ltd (Poultry Processing Plant) - Feed mill site	2335-4	To discharge stormwater from a stock/poultry feed manufacturing site to the NPDC stormwater drainage network	June 2017	1 June 2026
	4038-6	To discharge emissions into the air from the milling and blending of grain and/or animal meals together with associated activities	-	1 June 2020
TIL Freighting Ltd	6952-1 ²	To discharge stormwater from a truck depot into and onto land in the vicinity of the Mangaone Stream in the Waiwhakaiho catchment	-	1 June 2020
	7578-1	To discharge stormwater from a truck depot into the Mangati Stream	June 2020	1 June 2026
	3470-4	To discharge stormwater from a poultry processing plant site to the New Plymouth District Council drainage network	June 2017	1 June 2026
Tegel Foods Ltd (Poultry Plant)	4026-3	To discharge emissions into the air from the processing of animal matter and associated processes	June 2020	1 June 2032
	5494-2	To discharge poultry processing wastes by burial into land in the vicinity of the Mangati Stream in emergency circumstances only	June 2020	1 June 2032
	6357-1	To take and use groundwater from a bore for food processing and washdown purposes	June 2020	1 June 2038
	7389-1	To discharge stormwater from a poultry processing plant via a wetland into the Mangati Stream	June 2020	1 June 2026
Vector Gas Ltd	4780-1	To discharge up to 608 litres/second of stormwater from an administration site into the Mangati Stream [Consent renewed after end of monitoring period]		1 June 2014
W Abraham Ltd	7147-1 7147-2	To discharge emissions into the air from the operation of a crematorium including a natural gas-fired cremator [Consent 7147-2 replaced 7147-1 on 11 May 2015]		1 June 2032

² This consent is for a discharge to land in the Waiwhakaiho catchment, however as part of the TIL site is in the Managti catchment, and monitoring of consent 6952 is inspection focused, it is more cost efficient to include this consent in the Mangati Catchment Monitoring Programme.

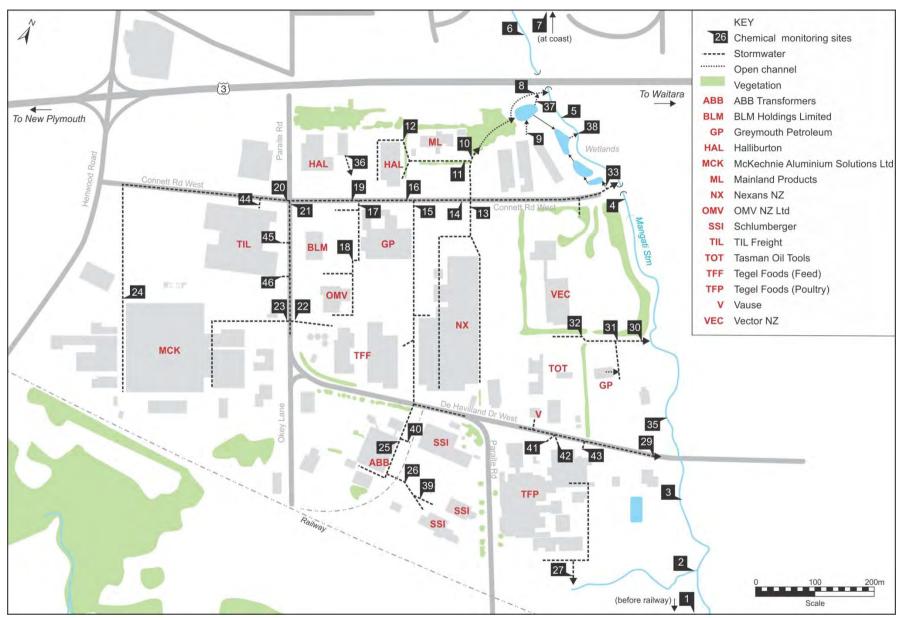


Figure 2 Stormwater drainage systems in the industrial area of Mangati catchment

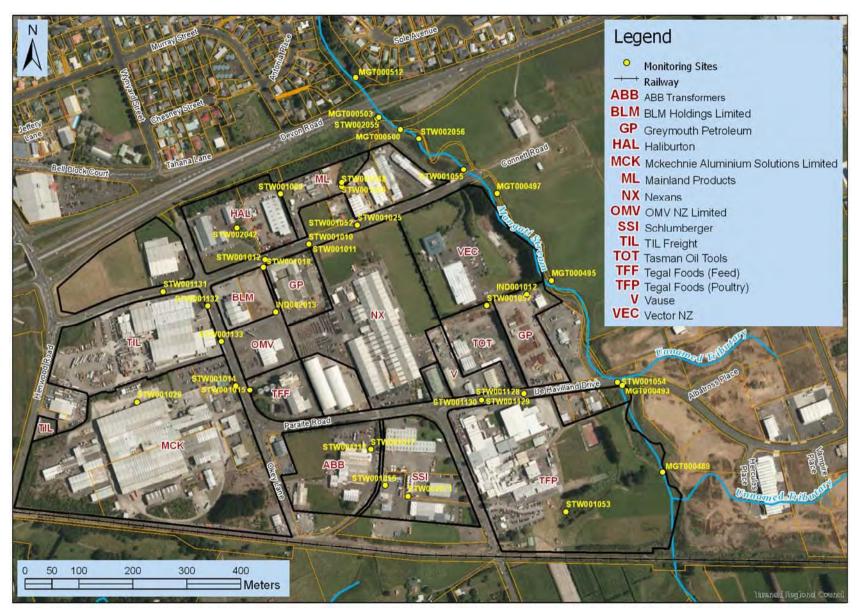


Figure 3 Location of consent holders and surface water monitoring sites

1.3 Monitoring programme

1.3.1 Introduction

Section 35 of the RMA sets out obligations for the Council to gather information, monitor, and conduct research on the exercise of resource consents, and the effects arising, within the Taranaki region and report upon these.

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

The monitoring programme for the industries in the Mangati catchment consisted of six primary components.

1.3.2 Programme liaison and management

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

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

1.3.3 Site inspections

Each of the consent holders' properties was inspected during the monitoring period for compliance with any relevant consent conditions, and potential for unauthorised discharge. 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. Areas where chemicals or products are stored or transferred are also given particular attention. Air inspections focused on plant processes with associated actual and potential emission sources and characteristics, including potential odour, dust, noxious or offensive emissions. 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.

The programmed frequency of inspection varies depending on the type of activity at the site, the outcome of previous inspections, and the stage of any investigation of unsourced discharges of contaminants.

During the 2014-2015 monitoring period an officer of the Council carried out inspections approximately quarterly with the exception of the Vector Gas site, which is scheduled for biannual inspections. A written report is provided to each consent holder following inspection.

1.3.4 Chemical sampling

In relation to the monitoring of water discharges, the Council undertook sampling of the discharges from the sites, the combined discharges and the water quality upstream and downstream of the discharge points and mixing zones.

General surveys of the entire industrial stormwater drainage system and the Mangati Stream are carried out in both dry and wet weather conditions. This involves sampling at up to 42 points (refer Figure 2 and Figure 3), depending upon the weather conditions and the discharges occurring. The analysis of samples from these monitoring points includes a wide range of parameters, the particular number and type of which, is dependent on the particular sampling site location.

These synoptic surveys produce information on the combined and likely relative effects of discharges from the various industrial sites on water quality of the Mangati Stream. Where possible, these surveys also allow for the determination of compliance with consent conditions on effluent composition for particular consent holders.

The frequency of general chemical surveys has changed as the programme has developed. The programme for the sampling surveys is now approximately quarterly, three are scheduled in wet weather and one in dry weather during the summer low flow period. Due to the installation of the "wetland", through which the industrial drain and Connett Road stormwater are directed, during one of the wet weather surveys, the individual discharges going to the wetland are not sampled. Following analysis of the combined discharges, follow up sampling of individual discharges may be carried out if required.

During the period under review four surveys were performed. The full wet weather surveys were conducted on 5 September 2014 and 7 May 2015, while dry weather surveys were conducted on 18 February and 5 May 2015.

In relation to the monitoring of air emissions, the Council undertook odour surveys in the neighbourhood of the site inspected and ambient dust and discharge dust monitoring was undertaken using hand held electronic equipment. The monitoring programme provides for deposition gauging to be conducted every three years, this was undertaken in the 2012-2013 year and will next be included in the 2015-2016 monitoring programme at selected locations in the vicinity of ABB Ltd's site and Tegel Poultry Ltd's feed mill site, and the collected samples were analysed for deposited particulates.

1.3.5 Macroinvertebrate surveys

A biological (macroinvertebrate) survey was performed on two occasions at eight sites in the Mangati Stream to determine whether or not the discharges of treated and untreated stormwater, treated wash water and cooling waters from the sites have had a detrimental effect upon the communities of the stream. Monitoring was undertaken on 2 December 2014 and 12 February 2015.

The locations of the biomonitoring sites are described in Table 2 and depicted in Figure 4.

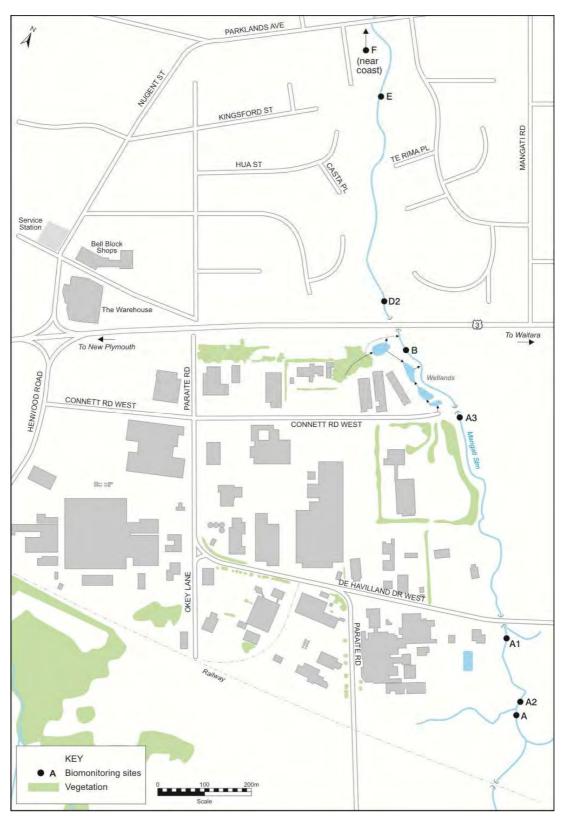


Figure 4 Location of biological monitoring sites

 Table 2
 Biomonitoring sites in the Mangati Stream

Site	TRC Site code	Map Reference NZTM		Location	Distance from
		Easting	Northing		sea, km
Α	MGT000488	1700095	5678043	Below railway (above industrial area)	2.8
A2	MGT000490	1700062	5678084	Between wetland tributary receiving Tegel stormwater and old Tegel discharge point	2.7
A1	MGT000491	1700018	5678166	Below old Tegel Foods discharge point	2.6
А3	MGT000497	1699775	5678573	Above Connett Road	2.1
В	MGT000500	1699596	5678691	Above the industrial tributary but below the wetland	1.9
D2	MGT000512	1699513	5678787	Below the (industrial) tributary and wetland (20m below SH3)	1.9
Е	MGT000520	1699385	5679103	400 metres below industrial stormwater drain	1.5
F	MGT000550	1699215	5680409	50 metres above Bell Block beach	0.0

1.3.6 Fish survey

Electric fishing and spotlighting are techniques commonly used for the assessment of fish species present in waterways. The fish communities have been monitored in the past in three areas focused around MGT000491 (Figure 4, site A1), MGT000505 (Figure 4, site D) and MGT000550 (Figure 4, site F).

Electric fishing surveys have been undertaken intermittently with the previous surveys carried out in December 1990, March 2001, and June 2007. In the 2010-2011 year it was determined by the Council's freshwater biologist that spotlighting was a more appropriate method for this small stream, and so three yearly spotlight fish surveys were recommended with the first of these carried out in March 2011 and again in the 2013-2014 period.

In the March 2011 fish survey report it was suggested that future surveys may benefit from the inclusion of fyke nets set in the stream, to try and capture larger, more secretive fish. This was due to the fact that all fish found were less than two years old, and some fish that could be expected to inhabit this stream were not recorded, e.g. giant kokopu, longfin eel. It was concluded that although this may be cause for concern, it may also be as a result of the monitoring method, rather than being indicative of environmental effects.

Night-spotting surveys are scheduled every three years and will next be undertaken in the 2016-2017 monitoring period.

1.3.7 Data review

Special condition 4 of water abstraction consent 6357 held by Tegel Poultry Processing requires that their abstraction records are forwarded to Council by 31 July each year. Council reviews these records to ensure that the required records are being kept and that the abstraction has been managed according to the requirements of the consent.

Other data collected by consent holders and/or records that they are required to keep are requested periodically and reviewed by Council Officers for compliance with consent conditions.

2. ABB Ltd (Transformer Division)

2.1 Introduction

2.1.1 Process description

ABB Ltd (ABB) established the transformer plant on Paraite Road in 1996. Electricity distribution transformers are produced for both domestic and export markets.

The site is 2.64 ha in area, of which about one-third is roofed or sealed and half is in pasture. Stormwater from the developed area of the site enters the Bell Block industrial drainage system via seven main on site stormwater collection points. The length of the drainage system to the Mangati Stream is approximately 800 metres.

Bulk chemicals stored on the site include transformer oils, paint and thinners.

A total of up to about 60,000 litres of hydrocarbon transformer oil is stored outside in three tanks within a bunded area. There are high level alarms on the tanks. The liquid level in the bunded area is under continuous electronic surveillance. An oil separator treats drainage from the bunded area and the oil tanker unloading area.

Paint and thinners are kept in three enclosed dangerous good stores.

Solid waste containing zinc is produced during the manufacture of transformer casings, from steel shot blasting and electric arc galvanising. Three air scrubbers remove the metal dust, which is stored on site in drums awaiting sale. There are two dry (bag) scrubbers for shot blasting, and a cyclone for zinc galvanising.

ABB achieved ISO 14001 environmental certification in October 1998. Routine internal environmental compliance reporting and staff training is carried out by ABB.

A contingency plan is in place in case of spillage. The latest version of the contingency plan that was accepted by Council as being satisfactory was prepared by the Company in December 2012.

2.1.2 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.

ABB holds water discharge permit **2336-3** to discharge stormwater from a transformer manufacturing site into the Mangati Stream. This permit was originally issued on 20 November 1979 as a water right pursuant to Section 21(3) of the *Water and Soil Conservation Act 1967*, was renewed on 12 June 1996 under Section 87(e) of the RMA, and the current consent was issued to ABB on 19 June 2008. It is due to expire on 1 June 2026.

A summary of the conditions of permit 2336-3, are given below.

Condition 1 requires that the consent holder adopts the best practicable option to minimise effects from the discharge.

Because stormwater generation is dependant on the rainfall event and is not always practicable for the consent holder to control, condition 2 limits the catchment area from which the stormwater covered by the consent can originate, rather than limiting the discharge rate.

Conditions 3 and 4 require that all stormwater is directed for treatment prior to discharge and state that areas where hazardous substances are stored can not discharge directly to the stormwater catchment.

Conditions 5 and 6 place chemical limits on the discharge and prohibit certain effects on the receiving waters downstream of the mixing zone.

Conditions 7 and 8 require that the consent holder maintain a contingency plan and a stormwater management plan.

To ensure that the potential for environmental effects is consistent with the information provided to the Council at the time the consent conditions were drafted, condition 9 requires that the Council is notified in writing of any changes at the site that could alter the nature of the stormwater discharged from the site.

Conditions 10 and 11 contain provisions for the consent to be allowed to lapse, and for Council to review the conditions of the consent.

2.1.3 Air discharge permit

Section 15(1)(c) of the RMA stipulates that no person may discharge any contaminant from any industrial or trade premises into air, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations.

ABB holds air discharge permit **5435** to cover the discharge of emissions into the air from dry steel grit blasting processes and associated activities. This permit was originally issued by the Council on 29 January 1999 under Section 87(e) of the RMA. this consent expired on 1 June 2014 after which ABB continued operate under protection of Section 124 of the RMA. A renewed permit was granted on 12 February 2015 and this expires on 1 June 2032.

Condition 1 requires that all abrasive blasting be carried out in an enclosed booth or shed.

Condition 2 requires the consent holder to adopt best practicable option to prevent or minimise adverse environmental effects.

Conditions 3 to 8 deal with odours, dust and discharge from the site.

Conditions 9 and 10 require the preparation and maintenance of and Operation, Management and Maintenance Plan.

Conditions 11 and 12 deal with the lapse and review of the consent.

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

2.2 Results

2.2.1 Water

2.2.1.1 Inspections

Inspections were undertaken on 1 July, 19 August, and 7 November 2014, and 13 April and 19 May 2015.

Inspections focussed on evidence of spills, the condition of the drains and catchment area, treatment measures and general housekeeping

The site was found to be clean and tidy during each inspection. There was no evidence of spills or sheens in the catchment area.

During the inspection on 19 August 2014, it was noted that a number of the stormwater sumps were in need of cleaning and staff advised that this had been scheduled to be carried out in the near future.

2.2.1.2 Results of discharge monitoring

Stormwater discharged from ABB's plant is monitored at up to eight points before it reaches the Mangati Stream (Figure 2 sites 8, 10, 14, 15 25, 33, 37, and 38). Other discharges contribute to the flow at each monitoring point. The primary monitoring site is immediately outside the plant, at the side of the administration building (site 25). The results from chemical monitoring at site 25 are given in Table 3.

Stormwater from the Schlumberger sites may influence the results observed at this site (see Section 10).

The discharge points were visited for sampling on four occasions. During two dry weather surveys, no discharges were occurring. Two samples of stormwater were taken from the flow exiting ABB's site during wet weather surveys undertaken during the monitoring period.

The discharge complied with the suspended solids, pH and oil and grease limits on all monitoring occasions.

Zinc and copper are monitored because of the close proximity to where the MCK Metals copper and brass foundries used to be operated, and because zinc shot blasting and galvanising is carried out at ABB's plant.

The dissolved and acid soluble copper and zinc concentrations of the samples collected during the period under review were all below the median values calculated from all data from the site. Results showed that there was little influence from this discharge observed in the samples collected from the stormwater entering the New Plymouth District Council's stormwater ponds, or in the bypass drain.

Table 3 Chemical monitoring results for ABB's stormwater discharge (site 25) at Paraite Road for 2014-2015, with a summary of previous monitoring data. TRC site code STW001017

Date	Condy mS/m	CuAs g/m ³	CuD g/m³	O&G g/m ³	PbAs g/m³	pH pH	SS g/m ³	Temp Deg.C	Turby NTU	ZnAs g/m³	ZnD g/m³
Consent limit	-	-	1	15	-	6-9	100	1	-	-	-
number	48	40	25	31	30	48	45	42	16	40	25
minimum	1.8	<0.01	< 0.01	0.7	< 0.05	6.6	4	10.2	4.6	0.043	0.018
maximum	131	0.4	0.06	150	0.28	10.8	290	22.2	76	2.57	1.40
median	5.9	0.05	0.01	1.7	<0.05	7.2	21	14.7	13	0.594	0.386
5-Sep-14 (w)	20.1	<0.01	<0.01	3.0	<0.05	7.5	15	12.6	14	0.322	0.284
18-Feb-15 (d)	b	b	b	b	b	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b	b	b	b	b
7-May-15 (w)	4.6	<0.01	<0.01	а	< 0.05	6.9	10	17.3	11	0.242	0.194

Key: a parameter not determined, no visible hydrocarbon sheen and no odour

- b not discharging at time of sampling survey
- (d) dry weather survey (w) wet weather survey

2.2.2 Air

2.2.2.1 Inspections

No visible emissions or objectionable odours were detected around the site during the inspections on 1 July, 19 August, and 7 November 2014, and 13 April and 19 May 2015. Three further visits were made to the site to check the discharge concentration of dust from the cyclone outlet.

Results from inspections carried out on 14 July 2014 and 22 May 2015 were well within acceptable levels and within consent conditions. Air monitoring could not be undertaken on 19 June 2015 as the cyclones were not operating at the time of the inspection.

2.2.2.2 Deposition gauging

Many industries emit dust from various sources during operational periods. In order to assess the effects of the emitted dust, industries have been monitored using deposition gauges. Deposition gauging is scheduled to occur every three years at the ABB site; this will next be carried out during the 2015-2016 monitoring period.

2.2.3 Investigations, interventions, and incidents

During the 2014-2015 period, the Council was not required to undertake significant additional investigations and interventions, or record incidents, in association with ABB's conditions in resource consents or provisions in Regional Plans.

2.3 Discussion

2.3.1 Discussion of site performance

During the period under review the site was well managed and there were no issues noted during inspections.

An air discharge management plan that was due in May 2015 was not supplied on time however at the time this report being prepared ABB had submitted the required plan.

There were no objectionable odours noted during the period under review.

2.3.2 Environmental effects of exercise of consents

During the period under review there were no adverse effects observed as a result of the stormwater discharges from the site. No adverse effects were noted as a result of the exercise of ABB's air discharge consent either, with no off site odours noted at any of the inspections.

Atmospheric particulate matter can arise from a number of sources, both natural and from human activity, for example pollens, smoke and ash, sea spray, dust from soils and paved surfaces, and manufacturing processes. While extremely fine particles may remain floating in the atmosphere for weeks or months, coarser dusts may settle out within timeframes ranging from a few seconds to minutes.

The environmental effects of dusts include loss of visibility, loss of the amenity and aesthetic values of a `clear sky', irritation to breathing, and soiling of surfaces.

Visual assessments of the degree of dust deposition in the vicinity of the site were made during routine compliance monitoring inspections with no significant dust deposition issues recorded during the year under review. Dust monitoring was conducted at the cyclone outlet on two occasions, with low concentrations of dust detected indicating that consent conditions were being complied with.

2.3.3 Evaluation of performance

A tabular summary of ABB's compliance record for the year under review is set out in Table 4 and Table 5.

 Table 4
 Summary of performance for ABB's Consent 2336-3

Pur	Purpose: To discharge stormwater from a transformer manufacturing site into the Mangati Stream						
Co	ndition requirement	Means of monitoring during period under review	Compliance achieved?				
1.	Adoption of best practicable option to minimise effects on the environment	Inspection and discussion with consent holder	Yes				
2.	Limits stormwater catchment area	Inspection	Yes				
3.	Stormwater to be directed to treatment in accordance with special conditions	Inspection and discussion with consent holder	Yes				
4.	Above ground hazardous substance storage to be bunded and not to drain directly to stormwater catchment	Inspection and discussion with consent holder. Mineral oil tank bund drains via interceptor to soak hole	Yes				
5.	Limits on chemical composition of discharge	Sampling	Yes				

Condition requirement	Means of monitoring during period under review	Compliance achieved?		
Discharge cannot cause specified adverse effects beyond mixing zone	Receiving water sampling	Yes		
Maintenance of a contingency plan for action to be taken to prevent spillage	Review of documents provided. Plan on file dated December 2012	Yes		
Maintenance of stormwater management plan	Company's work instructions relating to chemical and oil storage and bund management (dated October 2007) on file	Yes		
Written notification required regarding changes to activities at the site	Inspection and discussion with consent holder. No changes occurred which may alter nature of discharge	N/A		
Provision for consent to lapse if not exercised	Consent has been exercised	N/A		
Optional review provision re environmental effects and notifications of changes (S.C.9)	Next opportunity for review June 2020	N/A		
Overall assessment of consent compliance and environmental performance in respect of this consent				
Overall assessment of administrative performance in respect of this consent				

N/A = not applicable or not assessed

 Table 5
 Summary of performance for ABB's Consent 5435-1

Pui	Purpose: To discharge emissions into the air from dry steel grit blasting processes (to 12 February 2015)					
Со	ndition requirement	Means of monitoring during period under review	Compliance achieved?			
1.	Clarification that Section 17 of the RMA still applies to the activity	Inspections, odour surveys and ambient monitoring	Yes			
2.	Adoption of best practicable option to minimise effects	Inspections, odour surveys and ambient monitoring	Yes			
3.	Blasting to be carried out in grit rooms	Inspections	Yes			
4.	Limit on particulate deposition rate beyond boundary of 4 g/m²/day	Dust monitoring and visual assessment at inspection	Yes			
5.	Prohibits offensive, objectionable or toxic odour or dust beyond boundary	Inspections, odour surveys and ambient monitoring	Yes			
6.	Optional review provision re environmental effects	Consent expired 1 June 2014	N/A			
Ov	Overall assessment of consent compliance and environmental performance in respect of this consent					
Ov	Overall assessment of administrative performance in respect of this consent					

N/A = not applicable or not assessed

Table 6 Summary of performance for ABB's Consent 5435-2

Cond	lition requirement	Means of monitoring during period under review	Compliance achieved?			
	Blasting to be carried out in a booth or shed	Inspections	Yes			
	Adoption of best practicable option to minimise effects	Inspections	Yes			
	No offensive, objectionable or toxic evels of dust at or beyond boundary	Inspections, odour surveys and air quality sampling	Yes			
	Limit on levels of dust and silica in plasting material	Inspections	Yes			
	Emissions to be contained and treated prior to discharge	Inspections	Yes			
	Concentration of total particulate matter n discharge to be less than 125 mg/m ³	Inspection with handheld dust monitor	Yes			
	Oust deposition beyond boundary to be ess than 0.13 g/m³/day	Not monitored this period next due in 2015-2016	N/A			
8. L	imits on constituents of final discharge	Not monitored during period under review – undertaken as required	N/A			
	Operation, Management and Maintenance plan to be provided	Plan received	Yes			
(N	Records kept in accordance to Operation, Management and Maintenance plan to be provided on request	Not requested during period under review	N/A			
11. L	_apse of consent	N/A	N/A			
	Optional review provision re environmental effects	Next option for review in June 2020	N/A			
Overall assessment of consent compliance and environmental performance in respect of this consent						
Overa	Overall assessment of administrative performance in respect of this consent High					

N/A = not applicable or not assessed

During the year, ABB Ltd demonstrated a high level of environmental performance and compliance with their resource consents and a high level of administrative performance as defined in Section 1.1.4.

2.3.4 Recommendations from the 2012-2014 Biennial Report

In the 2012-2014 Biennial Report, it was recommended:

THAT monitoring programmed for the consented activities of ABB Ltd in the 2014-2015 year continues at the level programmed for 2012-2014.

This recommendation was implemented in the 2014-2015 monitoring period.

2.3.5 Alterations to monitoring programmes for 2015-2016

In designing and implementing the monitoring programmes for air and 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 the obligations of the RMA in terms of monitoring emissions, discharges and their effects, and subsequently reporting 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 and/or discharging to the environment.

It is proposed that for 2015-2016 the monitoring programme remain unchanged. A recommendation to this effect is attached to this report.

2.4 Recommendation

THAT monitoring programmed for the consented activities of ABB Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.

3. BLM Feeds Ltd (Now GrainCorp Feeds Ltd)

3.1 Introduction

3.1.1 Process description

BLM Feeds Ltd (BLM)³ supplies liquid and dry stock feed from this 0.46 ha site at 21 Paraite Road, in the industrial area of Bell Block.

Stormwater from the site discharges via the New Plymouth District Council (NPDC) reticulated system and stormwater ponds, into the Mangati Stream.

Through routine monitoring of permitted activities, and stormwater surveys carried out under this programme during the 2009-2011 years there were three unauthorised discharges found in relation to discharges from the BLM site not complying with the standards/terms/conditions of Rule 23 of the Regional Freshwater Plan for Taranaki (RFWP). That rule that provides for permitted stormwater discharges. This culminated in an abatement notice being issued on 14 October 2010, requiring BLM to comply with the RFWP and the RMA. As a result BLM obtained a resource consent, and has been incorporated into this monitoring programme.

Activities at the site include the unloading of stock feeds from shipping containers, loading/unloading of granular stock feed, mixing stock feed blends, loading/unloading liquid stock feeds, and repacking of a liquid chlorine dioxide cleaning product.

Palm kernel and other dry stock feed ingredients are stored in a warehouse on the site, along with mineral supplements, and cleaning products in containers of up to 1,000 L capacity. In the yard area, there are bunded tanks and silos used to hold molasses and condensed distiller's syrup (CDS). There are un-bunded tanks used to store molasses under a lean-to canopy on the eastern side of the building, and there is an open stormwater grate less than 5 m from one of the tanks. Shipping containers holding bladders of CDS are stored in the yard temporarily, prior to unloading into the tanks/silos. The empty bladders are placed in skip bins within the stormwater catchment before being disposed of off-site. The trucks used to transport the stock feed are parked on a concrete area of the yard within the stormwater catchment. The chlorine dioxide cleaning product is decanted from 100 or 200 L drums into 20 or 5 L containers in the stormwater catchment on the eastern side of the building.

The principal contaminants of concern that may become entrained in the stormwater from this site are:

- the water soluble molasses and CDS, which are high in sugars, exhibit high biochemical oxygen demands, and are acidic in nature (approximate molasses pH 5, CDS pH 3.2),
- dry stock feed products, which could elevate suspended solids and nutrient concentrations of the stormwater discharge,
- the chlorine dioxide solution, which is a sanitiser that is classified as very toxic to aquatic life. It is acidic and a strong oxidising agent. It has a pH of approximately 2.

 $^{^3}$ For the purposes of this report the consent holder will referred to BLM (not GrainCorp) as they were the consent holder for the duration of the period under review.

These contaminants have the potential to result in a variety of effects in the receiving water.

As outlined, unauthorised discharges to the Mangati Stream have occurred in the past from this site. These discharges had resulted in the growth of sewage fungus in the NPDC reticulated stormwater pipes and treatment ponds, and in the Mangati Stream itself, extending to approximately 20 m below the State Highway 3 road culvert. It is considered that the unauthorised discharges were due to a lack of understanding regarding the potential environmental effects of the liquid stock feeds handled on site, and associated management practices.

A stormwater management plan has been developed to cover activities at the site. The plan outlines a number of improvements in structural and procedural controls that have been, or will be, implemented to prevent or minimise the potential for adverse environmental effects as a result of stormwater discharges from the site.

Dry products are stored under cover, and the maintenance programme includes weekly sweeping of the building entry points to remove any sediment or truck contaminants.

A spill contingency plan was drafted as part of the consent application process, however this is now over due for review. Spill kits had been strategically placed around the site, and staff had been trained in their use.

A stormwater/trade waste diversion system is in place for the molasses and CDS loading/unloading area. However, the stormwater outlet from this sump was lower than the trade waste outlet. This was remedied by increasing the height of the stormwater outlet pipe.

Another issue was that the stormwater sumps in the canopied loading/storage area did not drain via the diversion system. This was remedied by blocking off the outlet from this leg of the stormwater drainage system and installing a float activated submersible pump so that this sub-catchment is permanently directed to the diversion sump.

The stormwater plan outlined that the way in which the flow is directed from the diversion sump to either the tradewaste system or stormwater system will remain a manual system. However, clear procedures have been developed that instruct staff on the correct positioning of the stormwater/trade waste outlet valves in relation to the activities being undertaken, and the weather conditions prevailing at the time.

Training plans are in place to ensure that staff are aware that wash water is to be directed to trade waste, and "fish bins" are to be utilised to catch the minor discharges that occur from the delivery vehicles parked on site.

3.1.2 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.

During the period under review, BLM held water discharge permit **7707-1** to cover the discharge of stormwater into the Mangati Stream. This permit was issued by the Council on 31 May 2011 under Section 87(e) of the RMA. It is due to expire on 1 June 2026.

Condition 1 requires the adoption of the best practicable option.

Condition 2 limits the stormwater catchment area to 0.464 ha.

Conditions 3 and 4 specify that the stormwater must be directed through a stormwater diversion system and require that all hazardous substances stored in the stormwater catchment are bunded.

Condition 5 limits the constituent concentrations of the discharge.

Conditions 6 and 7 prohibit specified effects in the Mangati Stream.

Conditions 8 and 9 relate to the provision of contingency and stormwater management plans. The purpose of these conditions is:

- in the case of the management plan, to ensure that the consent holder examines the activities taking place on site, and puts appropriate controls in place to minimise the potential for stormwater contamination to occur due to routine activities, and
- in the case of the contingency plan to ensure that in the event of an unforeseen situation, the chances of a spillage resulting in an unauthorised discharge leaving the site are minimised.

For the consent holder these are also a means of documenting the way in which the "best practicable option" (as required by condition 1) has been implemented.

Condition 10 requires written notification to Council prior to changes at the site that may affect the nature of the discharge.

Conditions 11 and 12 contain provisions for lapse and review of the consent.

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

3.2 Results

3.2.1 Water

3.2.1.1 Inspections

The site was visited on 1 July, 5 August, 7 November, 11 December 2014, 17 April, 4 May, 18 May and 17 June 2015.

Inspections focussed on evidence of spills, the condition of the drains and catchment area, treatment measures, and general housekeeping.

Following the site inspection on 1 July 2014 the company was issued with an abatement notice as stormwater drains had not been lined with filter cloth, as requested previously (refer to Section 3.2.2). Filter cloth was noted in some of the

drains during the August inspection and were found to be mostly working well, however the design of some of the grates was allowing stormwater to bypass the cloth. Solutions to this issue were discussed with BLM staff. They were also advised that the filter cloth should be cleaned of organic material weekly to prevent the breakdown and release of nutrients. A maintenance schedule was put in place, however during the inspections later in the monitoring period this did not appear to be being adhered to, with BLM again needing to be reminded to clean these on a regular basis. A second incident was logged on 11 December 2014 due to the site being non-compliant with the best practice requirements of the consent in regard to product tracking and potential dust emissions.

BLM met with Council officers at Stratford shortly after the inspection and outlined further measures to address the issues. Towards the end of the monitoring period the consent holder's performance with regards to the tracking of product, maintenance of treatment measures, and dust emissions had improved significantly.

3.2.1.2 Results of discharge monitoring

Stormwater discharged from BLM's site is monitored at up to nine points before it reaches the Mangati Stream (Figure 2 sites 8, 10, 16, 17, 33, 37, and 47). Other discharges contribute to the flow at the lower eight monitoring points (i.e. sites 8, 10, 14, 17, 16, 33, 37 and 38). The primary monitoring site is at a manhole in the right of way along the western side of Greymouth Petroleum's offices, prior to it mixing with the OMV and Greymouth laydown area discharges (site 47).

The discharge points were visited for sampling on four occasions During three of the visits (2 dry weather and 1 wet weather), no discharges were occurring. One sample of stormwater was taken from the flow exiting BLM's site during a wet weather survey undertaken during the monitoring period.

The results of the chemical monitoring for this site are given in Table 7 below.

Table 7 Chemical monitoring results for BLM's stormwater discharge for 2014-2015 (site 47). TRC site code STW001138

Date	BOD g/m³	Condy mS/m	O&G g/m³	pH pH	SS g/m³	Temp °C	Turb NTU
Consent Limit	25	-	15	6-9	100	-	-
number	5	6	2	6	6	6	6
minimum	5.1	5.3	1.7	6.2	4	9.9	2.8
maximum	220	34.8	3.0	7.7	240	20.8	130
median	24	9	2.4	7.3	32	14.6	17
4 Sep -14 (w)	b	b	b	b	b	b	b
18-Feb-15 (d)	b	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b
7-May-15 (w)	3.7	7.4	а	7.2	30	17.5	28

Key: a parameter not determined, no visible hydrocarbon sheen and no odour

- b not discharging at time of sampling survey
- (d) dry weather survey (w) wet weather survey

Samples collected during the year under review complied with the consent limit for BOD, pH, and suspended solids. Oil and grease was not assessed in the sample as there was no visible hydrocarbon sheen or odour.

3.2.2 Investigations, interventions, and incidents

During the 2014-2015 period, the Council was required to undertake additional investigations and interventions, and record incidents, in association with BLM's conditions in resource consents or provisions in Regional Plans.

1 July 2014

During a compliance monitoring inspection undertaken in June 2014, it was observed that the best practicable option was not being adopted to prevent or minimise effects on the Mangati Stream.

An inspection of the site found that the stormwater drains in the yard did not have filter cloth in them to prevent organic material discharging to the Mangati Stream. An abatement notice was issued and re-inspection found that the abatement notice was being complied with.

11 December 2014

During a routine monitoring inspection on it was observed that a condition of the resource consent (adoption of best practicable option to prevent or minimise adverse effects) was not being complied with.

During the inspection the doors to the shed were found to be open and product was being blown and tracked by vehicles onto the yard and offsite. It was also noted that the stormwater drain filters were not being maintained. A meeting was held with BLM and they undertook to improve practices on site. Re-inspection was undertaken during routine monitoring and improvements at the site were noted.

3.3 Discussion

3.3.1 Discussion of site performance

Although there have been significant improvements in the structural and procedural controls at the site during previous monitoring periods, particularly in relation to the management of stormwater and wash water from the canopied loading/storage area, there were some recurring issues found at site inspections that had the potential to affect stormwater quality.

During inspections it was found that best practice was not being adopted to minimise the tracking and entrainment of product into stormwater. Two incidents were raised and an abatement notice was issued in relation to this.

BLM improved loading procedures and instigated other controls such as sweeping and installing filter cloth to stormwater drains. However it was noted that these filters were not being cleaned out as often as required. During the second half of the period under review it was noted that there was an improvement in the amount of dust and tracking at the site.

Fluid drippage from trucks was noted to be an issue during the year and the consent holder was advised to fit trucks with drip trays.

Updates for the sites contingency plan and stormwater management plan are currently overdue.

3.3.2 Environmental effects of exercise of consents

The stormwater discharge sample taken on 7 May 2015 was found to be compliant during the period under review; however this was taken after BLM had improved the tracking and dust issues at the site. The levels of organic contaminants noted during inspections at the site are likely to have increased the nutrient load in the stormwater, but as the site discharges into NPDC treatment ponds (via the reticulated network), this would provide further treatment and mitigation prior to final discharge into the Mangati. No heterotrophic or bacterial growths were noted in the downstream receiving waters or in the treatment ponds themselves during the period under review.

3.3.3 Evaluation of performance

A tabular summary of BLM's compliance record for the year under review is set out in Table 8.

 Table 8
 Summary of performance for BLM's Consent 7707-1

Pu	Purpose: To discharge stormwater into the Mangati Steam						
Co	ndition requirement	Means of monitoring during period under review	Compliance achieved?				
1.	Adoption of best practicable option to minimise effects on the environment	Inspection and discussion with consent holder	No -on-going issue of tracking of product from the storage shed				
2.	Limits stormwater catchment area	Inspection	Yes				
3.	Stormwater from loading/unloading area to be directed through a stormwater diversion system by 31 July 2011	Inspection	Yes				
4.	Above ground hazardous substance storage to be bunded	Inspection and discussion with consent holder	Yes				
5.	Limits on chemical composition of discharge	Discharge sampling	Yes				
6.	Discharge cannot cause specified adverse effects in Mangati Stream	Receiving water sampling and observation	Yes				
7.	Limit on filtered carbonaceous BOD of stream	Receiving water sampling and observation	Yes				

Pui						
Co	Condition requirement Means of monitoring during period under review					
8.	Provision (by 31 July 2011) and maintenance of a contingency plan for action to be taken to prevent spillage	Review of documents submitted and assessment of practices/controls at inspection. Consent holder has previously been advised that the plan provided with application was in need of update	Updated plan not provided			
9.	Provision (by 31 July 2011), maintenance and adherence to stormwater management plan	Review of documents submitted and assessment of practices/controls at inspection. Consent holder has previously been advised that the plan provided with application was in need of update	Updated plan not provided			
10.	Written notification required regarding changes to activities at the site. Notification to include assessment of environmental effects	Inspection and discussion with consent holder	N/A			
11.	Lapse of consent	Consent exercised	N/A			
12.	Optional review provision re environmental effects and notifications of changes (S.C.9)	Next opportunity for review June 2020	N/A			
Ove	Overall assessment of consent compliance and environmental performance in respect of this consent					
Ove	Overall assessment of administrative performance in respect of this consent					

N/A = not applicable or not assessed

During the period under review an improvement in BLM Feeds Ltd (BLM) environmental performance was required, however this improvement was achieved. Subsequently BLM's environmental performance is deemed as being good for the period under review. BLM made significant improvements during the latter part of the monitoring period to reducing dust emissions, tracking of product, and maintenance of treatment measures. An improvement in BLM's administrative performance is required as an updated stormwater management plan and contingency plan has not being submitted as requested.

3.3.4 Recommendations from the 2012-2014 Biennial Report

In the 2012-2014 Biennial Report, it was recommended:

THAT monitoring programmed for the consented activities of BLM Feeds Ltd in the 2014-2015 year continues at the level programmed for 2012-2014.

This recommendation was implemented during the 2014-2015 monitoring period.

3.3.5 Alterations to monitoring programmes for 2015-2016

In designing and implementing the monitoring programmes for air and 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 the obligations of the RMA in terms of monitoring emissions, discharges and their effects, and subsequently reporting 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 and/or discharging to the environment.

It is proposed that for 2015-2016 that the monitoring programme remains unchanged. A recommendation to this effect is attached to this report.

3.4 Recommendation

THAT monitoring programmed for the consented activities of GrainCorp Feeds Ltd (formerly BLM Feeds Ltd) in the 2015-2016 year continues at the level programmed for 2014-2015.

4. Greymouth Petroleum Acquisition Company Ltd

4.1 Introduction

4.1.1 Process description

Greymouth Petroleum Acquisitions Company Ltd's (Greymouth Petroleum) pipe yard on De Havilland Drive, formerly operated by Fletcher Challenge Energy Taranaki Ltd (FCET), was established in 1986 as a storage area for well casing, drill pipe and other drilling and testing equipment used in the oil industry. The yard has been used for cleaning and preservation of casing and drill pipe.

During development of the site, about 1 ha of the 1.48 ha area was levelled with a 2% slope eastward towards the Mangati Stream. The surface was overlain with filter cloth and metal. Perimeter drains were made along the western and northern boundaries (to divert stormwater from upslope around the site) and along the eastern boundary to collect stormwater runoff from the site itself. An oil skimmer interceptor was constructed on the eastern drain, above its junction with the northern drain, for removal of hydrocarbons. Separated hydrocarbons are skimmed off the surface of the separator as necessary and disposed of.

The discharge of stormwater from the site enters a small open drain at a point about 50 metres from the Mangati Stream. The drain also carries stormwater from several sites, including (part of) Natural Gas Corporation's warehouse and pipe yard, Tasman Oil Tools' site, and Vause Production Service's site.

New casing and drill pipe is cleaned to remove protective grease, which until recently contained some copper and zinc, and a high proportion of lead. The wash water was discharged to land with the flow directed to the eastern stormwater drain.

There have been a series of upgrades at the site aimed at improving the quality of the water discharged from the site.

In 1995, a large concrete pad was constructed for the cleaning operations, with a three-stage oil separator that removes hydrocarbons in the wastewater. At this time the discharge from the oil separator still flowed into the eastern perimeter stormwater drain. The discharge from the three-stage separator was isolated in March 1998 after increased lead levels were observed in the site effluent. In September 1998 a connection to the NPDC sewer system was made. In the period between March and September 1998, the wash water was collected and disposed of appropriately off-site. During the 1999-2000 year an automatic diverter valve was installed on the wash pad, which sends wash water to the sewer system via an oil separator when the wash pad is in operation.

Oils and grease are now removed with hot water and a degreaser (Teepol) applied using a water blaster in the wash pad area. After washing, casings and pipes are treated with a mild phosphoric acid solution to convert rust to an inert iron oxide, then with a preserving solution. Tube threads are protected with a non-drip oil, prior to storage.

In February 2003 Greymouth Petroleum provided details to the Council of a plan to add a storage area for re-usable synthetic drilling muds to their site. The proposal was to store the drilling muds in locked tanks located within a bunded area. No changes to the consent conditions were considered necessary for the activity.

During the 2006-2007 monitoring period a number of changes in activities at the site took place. The tank farm was extended, a methanol storage facility was constructed, and a 72 m³ oil separator pit was sunk into the main yard, and the practice of storing waste oil in un-bunded transportable containers (up to 44 m³ capacity) commenced. The Council was also advised in April 2008 that the site was now operated by GMP Environmental Ltd. This Company provides oilfield and industrial waste clean-up, transportation and disposal services. As a result, the site could no longer be considered to be solely a pipe yard, and the purpose of the new consent reflected this.

Consent **4664-3** requires that Greymouth Petroleum maintains a contingency plan. A revised plan was submitted to Council in March 2010 as part of the consent renewal process. With the issue of consent 4664-3, conditions require that contingency planning at the site is documented within the overarching GMP Environmental Ltd Pipeyard Environmental Management Plan, which has to be reviewed prior to making changes to activities at the site or upon request from the Council. No such changes or requests were made during the period under review. However, Greymouth Petroleum internal document number HSE003, referred to in the Environmental Management Plan as containing the contingency plan measures for the site, was updated in November 2011, and a copy was received and accepted by Council.

4.1.2 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.

Greymouth Petroleum holds water discharge permit **4664-3** to cover the discharge of treated stormwater from a pipe yard used for the cleaning and storage of casing and drilling equipment, and the storage of hazardous substances. The consent was granted on 1 June 2010 for a period until 1 June 2026.

The special conditions of consent **4664-3** are outlined below.

Condition 1 requires the adoption of the best practicable option to avoid or minimise effects.

Condition 2 limits the stormwater catchment area.

Condition 3 requires all stormwater to be directed for treatment prior to discharge.

Condition 4 limits the concentration of particular constituents in the discharge.

Condition 5 specifies a mixing zone in the Mangati Stream of 20 metres beyond which specific adverse effects are not permitted.

Condition 6 and 7 relate to the Greymouth Petroleum Environmental Management Plan, requiring that all activities are conducted in accordance with the plan, and setting out provisions and requirements associated with future reviews of the plan.

Condition 8 contains provisions for optional review of the conditions of the consent.

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

4.2 Results

4.2.1 Water

4.2.1.1 Inspections

Inspections of the Greymouth Petroleum site were undertaken on 14 July, 5 August, and 10 November 2014, and 17 April and 19 May 2015.

The site was found to be generally tidy and well managed during inspections; however there were some ongoing issues with silt control throughout the period. Some silt cloth had been installed at the site, however the inspecting officer advised Greymouth Petroleum that further controls may be required to ensure compliance with consent conditions.

During the final inspection on 19 May 2015 Greymouth Petroleum was advised of a high level of suspended solids detected during wet weather monitoring of the site on 7 May 2015, and discussion was held around options to prevent the discharge of suspended solid from the site. Options discussed included further silt cloth in ring drains, the creation of weirs, the use of rock to slow water velocity, and the addition of chemical flocculants to remove solids from suspension in the pond.

4.2.1.2 Results of discharge monitoring

The discharge from the yard is typically monitored at up to two points before it reaches the Mangati Stream. These points are shown as sites 31 and 30 in Figure 2. Site 31 (IND001012, Figure 3) monitors the site stormwater discharge, whilst other discharges (from Tasman Oil Tools and Natural Gas Corporation) contribute to the monitoring point at site 30 (MGT000495). The results of the sampling of the combined discharge to the Mangati Stream (site 30) are reported in Section 19.2.

The sample collected from site IND001012 (Table 9) was in compliance with the limits imposed by consent 4664-3 for oil and grease and the pH range; however the suspended solids concentration was being exceeded in the discharge at the time of sampling.

There have been significant improvements in the oil and grease concentrations seen in recent monitoring, with the sample collected during the monitoring period continuing this trend, being found to contain less than the median calculated from previous results⁴.

⁴ Those samples having no visible sheen and no odour are assumed to contain < 2 g/m³ of oil and grease.

Table 9 Chemical monitoring results Greymouth Petroleum stormwater discharge (site 31) at De Havilland Drive for 2014-2015, with a summary of previous monitoring data -TRC site code IND001012

Date	Condy mS/m	CuAs g/m³	CuD g/m³	O&G g/m³	PbAs g/m³	pH pH	SS g/m³	Temp Deg.C	Turby NTU	ZnAs g/m³	ZnD g/m³
Consent limit	-	-	-	15	-	6-9	100	-	-	-	-
number	37	36	20	31	35	37	37	37	19	36	20
minimum	1.8	< 0.01	< 0.01	<0.5	< 0.05	6.3	3	10.0	7.2	0.01	0.009
maximum	564	0.23	0.06	84	0.78	8.3	880	22.8	970	1.37	0.853
median	6.7	0.05	0.02	2.1	0.06	7.1	44	15.0	270	0.268	0.038
4 Sep -14 (w)	b	b	b	b	b	b	b	b	b	b	b
18-Feb-15 (d)	b	b	b	b	b	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b	b	b	b	b
7-May-15 (w)	9.7	0.09	<0.01	а	0.14	7.4	430	16.6	490	0.382	0.013

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b not discharging at time of sampling survey
- (d) dry weather survey (w) wet weather survey

There have been no similar improvements in the suspended solids concentration however, and as found since the 2005-2006 year, these were again high.

The discharge from this site has been monitored since June 1995, and it is noted that there were no suspended solids exceedance found in the 19 samples collected prior to the end of June 2005. Since then, only 2 the 19 samples analysed have complied with the consent limit.

At site MGT000495, where the combined stormwater from this site, Tasman Oil Tools and Vector discharges to the stream, the suspended solids concentration had reduced, but was still almost twice the 100 g/m^3 permitted by the consent. It is noted that Tasman Oil Tools were also breaching their consent limit, albeit to a lesser extent with a suspended solid result of 140 g/m^3 .

No effect was noted in the stream downstream as a result of the suspended solids in the discharge and on this occasion no further action was taken however, the consent holder was contacted and undertook to investigate silt reduction options.

Copper, lead and zinc are monitored at this site because it was known that, historically, these heavy metals were present in the grease washed from the pipes. The wash water from this activity was discharged onto land and into the Mangati Stream via the stormwater basin. Although the grease currently used does not contain these elements, and the washdown wastes are directed to sewer, it has been identified that this practice has resulted in an elevated concentration of copper, lead and zinc in the soil on site particularly in the washdown and pipe drying areas, and in sediments of the eastern site drain, stormwater basin and at the Greymouth Petroleum end of the open stormwater drain to the Mangati. Discharges from the Tasman Oil Tools site, where a similar activity is conducted, will also have contributed to the elevated metals concentration in the drain to the Mangati Stream. Shortly after taking over the site, Greymouth Petroleum undertook further

remediation work in the vicinity of the wash pad, stormwater basin and open drain exiting the site. It is however noted that there is the potential for these contaminants to still be present in other areas of the site surface, and for them to become entrained in the site stormwater particularly in the acid soluble form when the suspended solids content of the discharge is elevated. The dissolved copper, lead and zinc are limited in the consent held by Tasman Oil Tools, which was renewed in 2002. There are no limits for these parameters on Greymouth Petroleum's consent.

The results for acid soluble copper, lead and zinc were all above the median values, while the dissolved copper and zinc metals concentrations were below the median of previous results. The metals concentrations were all below the limits imposed on Tasman Oil Tools pipe yard, which discharges into the Mangati Stream at the same point.

The low conductivity of the sample collected during the year under review indicates that there was no wash water present in the stormwater discharge at the time of sampling.

4.2.2 Investigations, interventions, and incidents

During the 2014-2015 period, the Council was required to undertake additional investigations in association with Greymouth Petroleum's conditions in resource consents or provisions in Regional Plans. It is noted that an abatement notice has recently been issued to Greymouth as a result of the persistent suspended solids non-compliances at this site.

4.3 Discussion

4.3.1 Discussion of site performance

There has been a relatively rapid expansion of the range of activities undertaken at the site in recent years, and although the skimmer pit is present in the system to provide some containment and stormwater treatment, sample results indicate that the pit is no longer able to treat the stormwater discharged from the site to the standard required by Greymouth Petroleum's resource consent.

During the year under review a breach of the suspended solids limit was recorded. It is noted that there had been no recorded breaches of suspended solids found in the 19 samples collected between June 1995 and June 2005. During the period of December 2005 to date, only two of the 19 samples collected have complied with the suspended solids limit. This indicates that changes in activities at the site have altered the nature of the stormwater discharge and that has become an on-going issue.

As part of the Greymouth Petroleum's consent renewal process, the consent holder provided a stormwater management plan so that the potential sources of contamination could be identified, along with the nature of those contaminants and the measures that are in place to minimise the risk to the receiving water body. During the 2011-2012 monitoring period, Greymouth Petroleum installed a new filtration system for the stormwater discharge, and it was hoped that this would bring about the desired improvement. Further improvements were made at the end

of the 2012-2014 period. It is difficult to identify whether or not these have been effective as only one sample was collected from the site during the 2014-2015 period. However a subsequent sample taken in the next monitoring period was also found to have suspended solids in exceedance with consent conditions and as a result, Greymouth has been issued with an abatement notice.

4.3.2 Environmental effects of exercise of consent

During the year under review, an increase in dissolved metals concentrations, in the stream was recorded when the Greymouth Petroleum site was found to be exceeding the suspended solids limit. It is also noted that there was a (lesser) contribution from the Tasman Oil Tools discharge to the increases in the suspended solids concentration of the stream.

Receiving environment monitoring showed that there were measurable (but not significant) impacts on the metals concentrations in the stream, as a result of the pipe yard discharge. However, it is noted that, until the release of suspended solids from the site is controlled to within the limits of Greymouth Petroleum's consent, there is the potential for off site deposition of copper and zinc in both the combined drain and the Mangati Stream itself.

In previous years increases in turbidity and suspended solids were found in the Mangati Stream when measured downstream of Greymouth's site however in this monitoring period no such effects were detected.

4.3.3 Evaluation of performance

A tabular summary of Greymouth Petroleum's compliance record for the year under review is set out in Table 10.

 Table 10
 Summary of performance for Greymouth Petroleum's Consent 4664-3

Pur	Purpose: To discharge treated stormwater from a pipe yard						
Со	ndition requirement	Means of monitoring during period under review	Compliance achieved?				
1.	Adoption of best practicable option to minimise effects on the environment	Inspection and discussion with consent holder	Better silt controls required				
2.	Limit on stormwater catchment area	Inspection	Yes				
3.	Stormwater to be discharged through treatment system	Observation at inspection	Yes				
4.	Limits on chemical composition of discharge	Discharge sampling	SS limit exceeded				
5.	Discharge cannot cause specified adverse effects beyond mixing zone	Results of receiving water sampling and observation at the time of sampling	Yes				
6.	Activities to be conducted in accordance with Environmental Management Plan	Inspection and discussion with consent holder	Yes				

Condition requirement	Means of monitoring during period under review	Compliance achieved?		
Plan to be reviewed on request from Council or prior to changes at the site	No review requested and inspection identified no changes requiring review to be instigated by Greymouth Petroleum	Yes		
Optional review provision re environmental effects	Next review opportunity June 2020	N/A		
Overall assessment of consent compliance and environmental performance in respect of this consent				

N/A = not applicable or not assessed

An improvement in Greymouth Petroleum's environmental performance is required, however this consent holder demonstrated a high level of administrative performance. During the period under review the stormwater sample collected exceeded resource consent limits for suspended solids. Currently an abatement notice is in place requiring Greymouth Petroleum to comply with consent conditions.

4.3.4 Recommendation from the 2012-2014 Biennial Report

In the 2012-2014 Biennial Report, it was recommended:

THAT monitoring programmed for the consented activities of Greymouth Petroleum Acquisitions Company Ltd in the 2014-2015 year continues at the level programmed for 2012-2014.

This recommendation was implemented during the 2014-2015 monitoring period.

4.3.5 Alterations to monitoring programmes for 2015-2016

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 the obligations of the RMA in terms of monitoring emissions/discharges and effects, and subsequently reporting 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 2015-2016 the monitoring programme remains unchanged. A recommendation to this effect is attached to this report.

4.4 Recommendation

THAT monitoring programmed for the consented activities of Greymouth Petroleum Acquisitions Company Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.

5. Halliburton New Zealand Ltd

5.1 Introduction

5.1.1 Process description

Halliburton New Zealand Ltd (Halliburton) has operated a facility off the northern end of Paraite Road for services to the oil field industry since 1988. Halliburton specialises in down-hole work involving drilling fluid and pumping technology. Drilling equipment and chemicals are stored on the site. Equipment maintenance is carried out. There is also a cement bulk plant, and a small laboratory that tests cementing slurries and drilling fluids.

At the start of the 2004-2005 monitoring period the consented site occupied 0.75 ha, about half of which is developed, at the head of a small sub-catchment in the northern part of the Bell Block industrial area. There is a facility for washing drilling equipment using a high pressure water hose, (the equipment is washed first at the drilling site). The washings from the wash pad at the site are treated in a three stage oil separator built to the specifications of the NPDC. A waste disposal firm cleans out the separator on a monthly basis, or more frequently if required. Laboratory wastes are contained for disposal off-site.

The stormwater drain from the site passes through their lower yard and the property of Greenstone Developments Ltd (the site of the Mainland cool store) before joining the main stormwater drain. The main stormwater drain exits the ground upstream of the industrial drain and pond 4 of the NPDC stormwater treatment system, near the Mangati Stream.

A drainage system is in place that automatically diverts effluent from the washdown pad to trade waste while there is pressure on the hose, and allows stormwater to pass to the Mangati Stream when the water supply to the hose is switched off. A separator system is installed above the diverter valve.

All chemicals in the upper yard are segregated according to type and are stored in warehouses within containment bays.

During the 2003-2004 year, Halliburton started utilising the adjoining site (previously occupied by Hookers) for storage of some of their equipment. During the 2004-2005 year, Halliburton established drilling mud mixing and storage facilities on the adjoining site and varied their consent accordingly. This plant has not been used since prior to the 2007-2008 monitoring year.

Spills of substances used on the site have the potential to enter the stormwater system. The areas where the hazardous substances are used and stored are flat, and are either lined, or sealed and bunded.

The mud mixing area was prepared by excavating the site and laying a geotextile matting and plastic 1.5 mm HDPE membrane, and then compacting metal over the top. This is to ensure that if a spill does occur within the bunded area, the ground beneath would not be compromised. Background soil samples were taken for future reference.

Two silos, four active mud tanks and one overflow tank were placed within the bunded area along with a mixing tank. The height of the bund wall was approximately 0.3 m, while the dimensions of the bunded area were approximately $22 \text{ m} \times 35 \text{ m}$. The bunded area was designed to hold approximately 231 m^3 of material, while the largest tank on the site held up to 158 m^3 .

Stormwater from the bunded storage area was managed via a skimmer pit system similar to that used on wellsites throughout Taranaki. The skimmer pit discharge through a pipe along the side of the bunded area, and towards a stormwater grating. Halliburton had the ability to block the stormwater outlet from the skimmer pit so that discharge from the bunded area could be prevented if necessary. The skimmer pit also had the advantage of acting as a spill containment point. Council was informed that the skimmer pit discharge pipe would be closed and only released under supervision.

Parts of this facility were removed from the site during the 2010-2011 year.

A comprehensive spillage response and contingency plan is in place for the site, which has been accepted by the Council as being satisfactory. This plan was last reviewed in November 2013. However, it is considered that the stormwater management plan is now in need of updating to incorporate the necessary maintenance to ensure adequate on-going treatment of the site stormwater and compliance with the suspended solids limit on the consent.

5.1.2 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.

Halliburton holds water discharge permit **2337-3** to cover the discharge stormwater from an industrial site, used for an oil field service operation, into the Mangati Stream. This permit was originally issued to Paraite Partnership 11 November 1987 to discharge up to 145 L/s of stormwater from the 0.75 ha industrial site. The current consent was issued to Halliburton by the Council on 26 June 2008 under Section 87(e) of the RMA. It is due to expire on 1 June 2026.

A summary of the conditions of permit 2337-3 is given below.

Condition 1 requires the consent holder to prevent and minimise any adverse effects.

Because stormwater generation is dependent on the rainfall event and is not always practicable for the consent holder to control, rather than limiting the discharge rate, condition 2 states the maximum stormwater catchment area is 2.02 ha.

Conditions 3 and 4 require that all stormwater is treated prior to discharge and that all above ground hazardous storage areas be bunded.

Condition 5 imposes limits on the chemical concentration of the discharge, and condition 6 prohibits adverse effects on the receiving waters downstream of the discharge.

Condition 7 requires that adequate sampling points are constructed and maintained.

Conditions 8 and 9 require the consent holder to maintain contingency and stormwater management plans. The purpose of these conditions is

- in the case of the management plan, to ensure that the consent holder examines the activities taking place on site, and puts appropriate controls in place to minimise the potential for stormwater contamination to occur due to routine activities, and
- in the case of the contingency plan to ensure that in the event of an unforeseen situation, the chances of a spillage resulting in an unauthorised discharge leaving the site are minimised.

For the consent holder these are also a means of documenting the way in which the "best practicable option" (as required by condition 1) has been implemented.

To ensure that the potential for environmental effects from the exercise of the consent is consistent with the information provided to the reporting officer at the time the consent conditions were drafted, condition 10 imposes a requirement for the consent holder to notify the Council of any changes at the site that may affect the discharge along with providing an assessment of the effect those changes might have on the environment.

Condition 11 provides for the consent to lapse if it not exercised and condition 12 provides for a review of the conditions of the consent.

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

5.2 Results

5.2.1 Water

5.2.1.1 Inspections

This site was inspected on 1 July, 25 July, and 24 October 2014, and 18 March and 6 May 2015.

There were ongoing issues at the site with silt/sediment tracking from the unsealed to sealed sections of the lower yard. Silt cloth had been installed prior to the beginning of the monitoring period in response to the abatement notice issued by the Council during the previous monitoring period after high suspended solids were detected in the discharge from the site. The silt cloth was observed to be working well on the drains where it had been fitted correctly. Halliburton staff were reminded on more than one occasion that the drain filters needed to be cleaned to ensure that the volume of suspended solids discharging offsite is minimised.

During the inspection on 25 July, an IBC containing Castrol CleanEdge was not bunded as required by special condition 4 of the consent and the consent holder was asked to ensure that this was addressed.

During the monitoring year Halliburton had an abatement notice in place to undertake works to ensure consent conditions were being complied with.

5.2.1.2 Results of discharge monitoring

A stormwater monitoring point was identified on Halliburton's original, upper site early in 1997. Samples collected from this site are representative of stormwater exiting the upper yard via the wash pad. The results for the 2014-2015 year are given in Table 11. Historically, relatively few samples have been collected because of the rapid runoff of stormwater from this small sub-catchment.

The stormwater from the lower yard, where the liquid mud plant was located, has been monitored in combination with other discharges, at the site of Hookers (previously Schreiber Transport), and at Mainland Products (refer to Section 17.1.1). Therefore the stormwater discharged from the expanded Halliburton site is monitored at up to five points before it reaches the Mangati Stream (Figure 2, sites 8, 10, 11, 12, and 36,). Other discharges contribute to the flow at sites 11, 10 and 8. The primary monitoring site for the lower yard is at a manhole over a stormwater drain near the north eastern corner of the building. The results from chemical monitoring at this site are given in Table 12.

Table 11 Chemical monitoring results for Halliburton's' stormwater discharge for 2014-2015 (site 36), with a summary of previous monitoring data. TRC site code STW002042

Date	Condy mS/m	O & G g/m ³	pH	SS g/m³	Temp°C
Consent limits	-	15	6-9	100	-
Number	25	22	25	24	25
Minimum	2.2	0.8	6.9	3	9.1
Maximum	31.1	64.8	9.5	85	23.2
Median	4.4	3.1	7.6	22	14.2
4-Sep -14 (w)	b	b	b	b	р
18-Feb-15 (d)	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b
7-May-15 (w)	21.9	C*	8.0	55	16.8

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded

- b not discharging at time of sampling survey
 - c* sheen present however result not valid due to limitations of sampling method
 - (d) dry weather survey (w) wet weather survey

The consent limits on pH range (6-9) and suspended solids (100 g/m^3) were complied with in the sample collected from the top yard interceptor discharge during the year under review.

Table 12	Chemical monitoring results for Halliburton's' lower yard stormwater discharge for 2014-
	2015 (site 12), with a summary of previous monitoring data. TRC site code STW001009

Date	BOD	Condy	CuAS	CuD	NH ₃	NH ₄	0 & G	рН	SS	Temp	Turby	ZnAS
	g/m³	mS/m	g/m³	g/m³	g/m³-N	g/m³-N	g/m³		g/m³	°C	NTU	g/m³
Consent limit	5	-		•	0.025	-	15	6-9	100	-	-	
Number	12	37	6	17	11	11	32	37	37	33	14	22
Minimum	1.0	2.6	<0.01	< 0.01	0.00006	0.020	< 0.5	6.4	4	9.2	13	0.091
Maximum	10	76.8	0.02	< 0.12	0.02029	0.084	89	9.5	1530	22.7	900	1.05
Median	3.0	6.2	0.01	< 0.01	0.00182	0.030	1.6	7.3	91	14.7	98	0.436
4-Sep -14 (w)	b	b	b	b	b	b	b	b	b	b	b	b
18-Feb-15 (d)	b	b	b	b	b	b	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b	b	b	b	b	b
7-May-15 (w)	3.4	9.6	-	<0.01	0.00510	0.030	а	8.7	430	17.4	540	0.413

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b not discharging at time of sampling survey
- (d) dry weather survey (w) wet weather survey

Limits on biochemical oxygen demand, pH, oil and grease, and unionised ammonia were complied with in the sample collected on 7 May 2015. However there was an exceedance in suspended solids. No significant effects in the receiving environment were noted at the time. An explanation was requested and Halliburton installed new filters on the drains. However when a subsequent sample taken during the following monitoring period was also found to be exceeding the suspended solids limits, an infringement notice was issued.

5.2.2 Investigations, interventions, and incidents

In the 2014-2015 period, the Council was not required to undertake significant additional investigations and interventions, or record incidents, in association with Halliburton's conditions in resource consents or provisions in Regional Plans. There was one non compliant result in regard to suspended solid however no effects were noted. A non-compliant suspended solids result undertaken the subsequent monitoring period resulted in Halliburton being issued with an infringement notice.

5.3 Discussion

5.3.1 Discussion of site performance

It was found that the wash pad, interceptors and chemical and plant storage were generally well managed during the years under review, although there was one instance where Halliburton was asked to ensure that an IBC was bunded. There was one instance where a hazardous substance was noted to be outside of a bunded area.

During the year under review, the suspended solids and pH limits set by Halliburton's stormwater consent were exceeded on the one survey when discharges were occurring.

In the 2014-2015 year sample results indicated that, although a reduction in the discharge of suspended solids from the lower yard had been achieved by the installation of a drain filter in one of the stormwater sumps, it appeared that better

maintenance, and the installation of a filter in an additional drain was required to bring about further necessary improvements and ensure consent compliance.

Halliburton was recently issued an infringement notice for not complying with the existing abatement notice in regard to suspended solids.

5.3.2 Environmental effects of exercise of consent

Although there were two breaches of the contaminant concentration limits on Halliburton's resource consent, and visible effects were observed at the top of the industrial drain tributary on one of these occasions, dilution with other stormwater resulted in the contaminants, as sampled at the point of discharge into the stream (site 8, Figure 2), being at acceptable levels. Due to the conditions prevailing at the time of the sampling surveys during the period under review there was little change in the suspended solids concentration of the stream, and therefore there were no significant adverse environmental effects attributable to the exercise of this consent.

5.3.3 Evaluation of performance

A tabular summary of the Halliburton's compliance record for the year under review is set out in Table 13.

 Table 13
 Summary of performance for Halliburton's Consent 2337-3

Pu	Purpose: To discharge stormwater from an industrial site into the Mangati Stream								
Со	ndition requirement	Means of monitoring during period under review	Compliance achieved?						
1.	Adoption of best practicable option to minimise effects	Inspection and discussion with consent holder	Inadequate sediment control						
2.	Stormwater catchment area limit	Inspection and discussion with consent holder	Yes						
3.	All stormwater to be treated in accordance with special conditions	Inspection and sampling	SS limits breached in sample						
4.	Above ground hazardous substance storage to be bunded	Observation at inspection	Yes						
5.	Limits on chemical composition of discharge	Sampling	SS limits breached						
6.	Discharge cannot cause specified adverse effects beyond mixing zone	Receiving water sampling. Visible effects in industrial drain tributary, but none in the stream itself	Yes						
7.	Construction and maintenance of discharge sampling points	Observation at inspection and access sampling	Yes						
8.	Maintenance of a contingency plan	Review of documentation submitted	Yes						
9.	Maintenance of stormwater management plan	Review of documentation submitted. Update now required regarding maintenance of sediment control devices	Yes, but review now required						

Purpose: To discharge stormwater from an industrial site into the Mangati Stream							
Condition requirement	Compliance achieved?						
Notification of changes accompanied by assessment of effects	No changes found at inspection	N/A					
11. Provision for consent to lapse	Consent has been exercised	N/A					
Optional review provision re environmental effects and notification of changes	Next review opportunity June 2020	N/A					
Overall assessment of consent compliance and environmental performance in respect of this consent							
Overall assessment of administrative perform	mance in respect of this consent	Good					

N/A = not applicable or not assessed

An improvement in Halliburton New Zealand Ltd's environmental performance is required, this consent holder, however did demonstrated a good level of administrative performance and compliance with their resource consents as defined in Section 1.1.4.

During the period under review there were on-going issues with sediment control at the site that resulted in one non-compliant stormwater discharge and it was noted that the existing abatement notice in place was not being complied with. Halliburton has recently being issued with an infringement notice in regards to exceedances in suspend solids in their discharge.

5.3.4 Recommendation from the 2012-2014 Biennial Report

In the 2012-2014 Biennial Report, it was recommended:

THAT monitoring programmed for consented activities of Halliburton New Zealand Ltd in the 2014-2015 year continues at the level programmed for 2012-2014.

This recommendation was implemented in the 2014-2015 period.

5.3.5 Alterations to monitoring programmes for 2015-2016

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 the obligations of the RMA in terms of monitoring emissions/discharges and effects, and subsequently reporting 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 2015-2016 the monitoring programme remains unchanged. A recommendation to this effect is attached to this report.

5.4 Recommendation

THAT monitoring programmed for consented activities of Halliburton New Zealand Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.

6. McKechnie Aluminium Solutions Ltd

6.1 Introduction

6.1.1 Process description

McKechnie Aluminium Solutions Ltd (McKechnie) operates a metal melting and extrusion plant that used to process copper, brass (copper/zinc) and aluminium. The copper and brass divisions have closed and the equipment has been removed from the site. The McKechnie manufacturing plant extends across the boundary between the Mangaone and Mangati catchments. Drainage from the eastern side of the site (aluminium processing areas) is into the Mangati Stream, whilst drainage from the western side of the site (historically copper and brass processing and now aluminium scrap storage and sorting) is to the eastern headwaters of the Mangaone Stream.

Stormwater from the eastern side of the plant flows into the Bell Block industrial drain through an underground system at two points along Paraite Road, one adjacent to (east of) the plant and one north of McKechnie's aluminium extrusion building. Cooling water is discharged from cooling of a press coil and heat treatment electrodes at the northern point.

About 2.7 ha of the site is under roof, comprising the old brass and copper processing buildings and the aluminium foundries, extrusion and finishing mills, and administration and utilities buildings. In the rest of catchment there are bunded areas for storage of chemicals and oils, oil/water separators, wastewater holding tanks and an open aluminium scrap yard that is now rarely used. This is because the majority of the aluminium sorting and storage is now done under cover in the Mangaone Stream catchment. Wastewater is sent to sewer, after pH neutralisation.

Since regular inspection by the Council began in 1982, MCK Metals, the former owner of the site, instituted a series of progressive upgrades of waste containment, treatment and disposal facilities, including:

- the construction of a wastewater neutralisation plant;
- cessation of soakage trenches for disposal of wastewater;
- construction of bunds around chemical storage areas;
- diversion of effluent streams to sewer;
- changes in solid waste management practice;
- the use of a mechanical sweeper for the cleaning of the scrap sorting yards; and
- the installation of baghouses in the brass and copper and aluminium foundries, thus reducing aerial deposition from the site.

A suite of contingency plans is in place in case of spillage. McKechnie operates an Environmental Management System, and specific contingency plans are included as individual Works Procedures within the McKechnie Aluminium Solutions Ltd Management System - Environmental Manual. All new work procedures that have an environmental aspect are incorporated into the documented system. The strengths of this new integrated system are that responsibilities are clearly defined, and that the whole system is reviewed regularly.

6.1.2 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.

McKechnie holds water discharge permit **3139-3** to cover the discharge of stormwater (including cooling water) from an industrial site into an unnamed tributary of the Mangati Stream. This permit was issued by the Council on 2 November 2007 under Section 87(e) of the RMA. It is due to expire on 1 June 2026.

This permit was originally issued on 14 September 1988 as a water right pursuant to Section 21(3) of the *Water and Soil Conservation Act* 1967 for a period until 1 June 1996. A new consent **3139-2** was issued by the Council on 12 June 1996 under Section 87(e) of the RMA, with the 'standardised' conditions, for a period until 1 June 2008 to provide for the stormwater and also cooling water.

Pursuant to Section 128(1)(a) of the RMA, the Council completed a review of consent conditions on MCK Metals stormwater discharge permit in August 2000. The changes to the special conditions reduced the mixing zone in the receiving waters of the Mangati Stream to 10 metres, and placed a maximum induced temperature limit of 25°C in the receiving water (after allowing for the mixing zone) as a result of the discharge. Conditions relating to the preparation, adoption, and review of a stormwater management plan encompassing the cooling water discharge were also included in the reviewed consent issued on 3 August 2000, which were carried over into the renewed consent.

The consent has been transferred a number of times over the years, and was transferred to McKechnie on 4 March 2010.

A summary of the conditions of permit 3139-3 are given below.

Condition 1 requires that the consent holder adopts the best practicable option to minimise effects.

Condition 2 specifies that the consent shall be exercised in accordance with the information provided with the application, but also states that in cases of contradiction with consent conditions, the resource consent prevails.

Because stormwater generation is dependent on the rainfall event and is not always practicable for the consent holder to control, rather than limiting the discharge rate, condition 3 limits the catchment area.

Conditions 4 and 5 specify the limitations imposed on effects in the receiving waters of the Mangati Stream downstream of the mixing zone and the chemical concentration of specific components within the discharge.

Condition 6 and 7 require the maintenance of a contingency plan and stormwater management plan. The purpose of these conditions is

- in the case of the management plan, to ensure that the consent holder examines the activities taking place on site, and puts appropriate controls in place to minimise the potential for stormwater contamination to occur due to routine activities, and
- in the case of the contingency plan to ensure that in the event of an unforeseen situation, the chances of a spillage resulting in an unauthorised discharge leaving the site are minimised.

For the consent holder these are also a means of documenting the way in which the "best practicable option" (as required by condition 1) has been implemented.

Condition 8 requires compliance with the stormwater management plan, but also states that in cases of contradiction with consent conditions, the resource consent prevails.

Conditions 9 and 10 provide for lapsing of the consent if it not exercised for a period of five years, and for review of the conditions of the consent.

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

In addition to 3139, water discharge permit 1857⁵ is held to discharge stormwater from the western part of the industrial site, adjacent to Henwood Road, to a tributary of the Mangaone Stream in the Waiwhakaiho catchment.

McKechnie also holds air discharge consents 4034. Consent **4034** is held to provide for the discharge of emissions into the air from extrusion and re-melting of aluminium and associated activities.

6.2 Results

6.2.1 Stormwater management plan

A comprehensive stormwater management plan was received by the Council in the 2001-2002 monitoring year, which addressed both current and historical issues impacting on the site's discharges to the Mangati and Mangaone Streams, including the cooling water discharge. A significant financial commitment was required to progress the upgrades outlined in the plan, and therefore the improvements were staged over a number of years with initial projects targeting what were current issues with the highest potential for adverse effects. The plan incorporated a six-monthly review. It was anticipated that the control measures identified would be completed by the end of 2010.

Due to the changes in the location of some of the activities at the site, the Council wrote to MCK Metal Pacific Ltd on 11 May 2009 requesting that revised plan be forwarded to Council for review. A revised MCK Metals Environmental Management Plan, which incorporated a stormwater management plan, was received on 17 June 2009.

⁵ The monitoring associated with consents 1857 and 4034, is described in separate McKechnie Aluminium Solutions Ltd Annual Reports (Technical Reports 2015-88).

This document provided up to date information on the activities occurring in both the Mangati and Mangaone catchments. It highlighted the changes that had taken place and those that were about to occur at the site. It also stated that some aspects of the environmental management at the site would need to be reviewed once the powder coating plant was operational at the site.

The processes involved in the powder coating activity mean that there would be additional hazardous substances present on the site, such as those used in the chromating tank. The site plan showed that the powder coating plant was to be located in the old fabrication building. The stormwater catchment to the west of this building, drains to the Mangaone Stream; whilst the stormwater catchment to the east of this building, drains to the Mangati Stream.

The tenth revision of the Stormwater Management Plan (provided by McKechnie) became effective on 25 May 2010. Observations and discussions at inspections that relate to the stormwater management plan are contained in the following section.

The revised contingency plan received on 22 September 2010 been confirmed as still being current in December 2012, but this is now due for review.

6.2.2 Water

6.2.2.1 Inspections

The site was visited on 1 July, 19 August and 7 November 2014, and 4 May and 22 May 2015.

A site visit was carried out on 1 July 2014. McKechnie advised that the proposed planting programme had recently been carried out. An above ground bunded petrol tank was also scheduled to be installed. The bund around the anodising acid etch sludge filter press had been completed and abatement notice 20209 was being complied with at the time of inspection. No issues were raised at the time of the inspection.

During the inspection on 19 August 2014 it was noted that the new acid etch bund had been leaking. One of the open drains leading into the Mangaone Stream appeared to have dead grasses, possibly due to a discharge from this. McKechnie was asked to repair the bund to ensure that discharges into the open drains did not contaminate the waterway.

An inspection was carried out on 7 November 2014. New petrol and diesel tanks had been installed onsite. The bund below the acid etch filter press had been re-contoured so that discharge flowed back into the building. It was noted that further works would be required to increase the volume of the bund. The open drain opposite the filter press still had what appeared to be a dead patch of grass within it and the manager advised that the pH of the discharge into the drain would be checked to ensure that there was no ongoing discharge of contaminants.

The final site inspection for the year was carried out on 22 May 2015. It was noted that a new splash curtain had been installed in the acid etch filter press bund. Spill kits had been modified to include pads that could soak up chemical spills. There were no visible air discharges observed and no odours were detected that would be associated with emissions from the extrusion and re-melting of aluminium at the site.

6.2.2.2 Results of discharge monitoring

Both stormwater discharges to the Mangati catchment from McKechnie's are monitored at up to ten sites before reaching the Mangati Stream (Figure 2, sites 23 and 21 (east), 24 and 20 (north), and 8, 10, 14, 16, 19, 33, 37 and 38 (both)). The eastern stormwater is monitored primarily where it joins the Paraite Road stormwater drain, next to the plant entrance (site 23). The northern stormwater drain is monitored at a manhole within the plant site (site 24).

The results from chemical monitoring at these primary sites are given in Table 14 and Table 15.

Three samples were collected at site STW001014 during the period under review. The limits on the pH range (6-9), suspended solids (100 g/m^3) and oil and grease (15 g/m³) were complied with on each monitoring occasion.

Copper, lead and zinc levels are not specified on consent 3139. However these parameters are monitored because of the likely presence of these contaminants on site, and the possibility of them being contained within the discharge. With the exception of acid soluble aluminium on 5 September 2014, the concentrations of these contaminants were all below the median for all results.

Table 14 Chemical monitoring results for McKechnie's eastern stormwater discharge at Paraite Road for 2014-2015 (site 23), with a summary of previous monitoring data. TRC site code STW001014

Date	AlAs g/m³	Condy mS/m	CuAs g/m³	CuD g/m³	O&G g/m³	PbAs g/m³	pH pH	SS g/m³	Temp Deg.C	Turby NTU	ZnAs g/m³	ZnD g/m³
Consent limits	9/111	-	9/111	g/III -	15	g/III -	6-9	100	Deg.C	-	- -	-
Number	34	53	47	29	32	37	53	52	51	17	47	30
Minimum	<0.1	1.3	<0.01	<0.01	<0.5	< 0.05	6.9	<2	9.8	1.7	0.043	0.034
Maximum	13.8	153	13.0	0.26	320	0.96	11.4	470	45	36	10.6	2.52
Median	0.45	9.3	0.19	0.05	6.0	0.05	7.5	23	16.5	11	0.689	0.450
5-Sep-14 (w)	0.59	4.3	0.06	0.04	1.3	<0.05	7.3	16	13.6	12	0.508	0.437
18-Feb-15 (d)	b	b	b	b	b	b	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b	b	b	b	b	b
7-May-15 (w)	0.28	5.1	0.03	0.02	а	<0.05	6.9	5	17.7	5.3	0.455	0.415

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b not discharging at time of sampling survey
- (d) dry weather survey (w) wet weather survey

At site STW001028 compliance was achieved with consent limits for pH, suspended solids, and oil and grease.

Acid soluble zinc and dissolved zinc concentrations were found to be above median values on both sampling occasions as was dissolved copper on 7 May 2015. Otherwise all other results generally similar to, or below the median values for the site.

Table 15 Chemical monitoring results for McKechnie's northern stormwater and cooling water at the metal extrusion plant for 2014-2015 (site 24), with a summary of previous monitoring data. TRC site code STW001028

Date	AlAs g/m³	Condy mS/m	CuAs g/m³	CuD g/m³	O&G g/m ³	рН	SS g/m³	Temp Deg.C	Turby NTU	ZnAs g/m³	ZnD g/m³
Consent limits	-		-	-	15	6-9	100	-	-	-	-
Minimum	0.06	0.86	0.01	0.01	27	6.7	2	9.8	0.17	0.019	0.006
Maximum	0.76	21	4.1	0.35	<0.5	10.2	42	23.3	4.8	1.94	1.12
Median	0.1	10.2	0.03	0.01	6.4	7.6	3	15.6	1.75	0.328	0.322
Number	46	69	63	46	0.5	69	62	67	30	63	46
5-Sep-14 (w)	0.06	2.2	0.02	0.02	а	7.2	<2	13.4	1.3	0.690	0.650
18-Feb-15 (d)	b	b	b	b	b	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b	b	b	b	b
7-May-15 (w)	<0.1	4.1	0.02	<0.01	а	6.9	<2	17.7	1.5	0.403	0.393

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b not discharging at time of sampling survey
- (d) dry weather survey (w) wet weather survey

6.2.3 Investigations, interventions, and incidents

In the 2014-2015 period, the Council was not required to undertake significant additional investigations and interventions, or record incidents, in association with McKechnie's conditions in resource consents or provisions in Regional Plans.

6.3 Discussion

6.3.1 Discussion of site performance

Inspection found that the site was generally well managed during the period under review. An issue in regard of discharge from an acid etch press filter was resolved in a timely manner. No exceedances of consented discharge limits were found during sampling as result of this.

6.3.2 Environmental effects of exercise of consent

The discharges from the McKechnie site were not found to be having any adverse effects on the Mangati Stream during the period under review. The discharges form this site would have been assimilated within the reticulated stormwater system prior to discharge into the NPDC ponds and/or to the stream from the industrial drain bypass.

6.3.3 Evaluation of performance

A tabular summary of the consent holder's compliance record for the years under review is set out in Table 16.

 Table 16
 Summary of performance for McKechnie's Consent 3139-3

Condition requirement Means of monitoring during period under review								
1.	Adoption of best practicable option to minimise effects	Inspection and discussion with consent holder	Yes					
2.	Consent to be exercised in accordance with application information	Inspection and discussion with consent holder	Yes					
3.	Limits on chemical composition of discharge	Discharge sampling	Yes					
4.	Limit on stormwater catchment	Observation and discussions at inspection	Yes					
5.	Discharge cannot cause specified adverse effects beyond mixing zone	Receiving water sampling	Yes					
6.	Maintenance of a contingency plan	Updated plan received September 2010. Reviewed December 2012	Update due					
7.	Maintenance of stormwater management plan	Updated plan received May 2010	Update due					
8.	Adherence to stormwater management plan	Observations and discussions at inspection	Yes					
9.	Provision for consent to lapse if not exercised	Consent exercised	N/A					
10.	Optional review provision re environmental effects	Next review opportunity June 2020	N/A					
Overall assessment of consent compliance and environmental performance in respect of this consent								
Ove	erall assessment of administrative perform	mance in respect of this consent	Good					

N/A = not applicable or not assessed

During the year, McKechnie Aluminium Solutions Ltd demonstrated a high level of environmental and a good level administrative performance and compliance with their resource consents as defined in Section 1.1.4. An update for McKechnie's stormwater and contingency plans is overdue.

6.3.4 Recommendation from the 2012-2014 Annual Report

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

THAT monitoring programmed for consented activities of McKechnie Aluminium Solutions Ltd in the 2014-2015 year continues at the level programmed for 2012-2014.

This recommendation was implemented during the 2014-2015 monitoring period.

6.3.5 Alterations to monitoring programmes for 2015-2016

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 the obligations of the RMA in terms of monitoring emissions/discharges and effects, and subsequently reporting 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 2015-2016 the programme remains unchanged. A recommendation to this effect is attached to this report.

6.4 Recommendation

THAT monitoring programmed for consented activities of McKechnie Aluminium Solutions Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.

7. New Plymouth District Council

7.1 Introduction

7.1.1 Process description

The roads served by the main Bell Block industrial drainage system occupy a significant stormwater catchment area of 27.5 Ha. This system also serves as a conduit for the carriage of the stormwater from the industrial sites in this area. When the application for the discharge consent was lodged, NPDC stated that 'NPDC has no physical control over accidental spills or deliberate disposal of contaminants into the stormwater system'.

NPDC has assisted with inspections and chemical surveys by the provision of plans of the stormwater drainage system and by loosening the covers of manholes. The plans related only to the main drains, which are serviced by NPDC. For more detailed information, the Regional Council has referred to building permit diagrams and has carried out dye tests.

The NPDC stormwater drainage system had three main discharge points; into the Mangati Stream at the bottom of De Havilland Drive West, into the Mangati Stream at the bottom of Connett Road West, and the industrial drain outlet into the unnamed tributary at the rear of the Mainland site.

At the time of the consent renewal in 2002 routine physicochemical monitoring of the discharge had shown that the discharge occasionally contained high levels of suspended solids, and generally contained elevated levels of ammoniacal nitrogen, copper and zinc. Results of biomonitoring in the receiving water had shown that although the quality of discharges from the industrial area was improving, the Mangati Stream continued to be severely impacted below the industrial area.

In order to try to mitigate the effects of the quality of the stormwater carried by the NPDC pipework, during the 2002-2003 monitoring period NPDC redesigned the way in which stormwater was directed to the stream from the Connett Road and Paraite Road areas. A constructed wetland was put in place with the intention of both upgrading the quality of water discharged to the Mangati Stream, and providing a mechanism for containment of any spills or contaminants from the industrial area. The broad scope for this project was to develop an integrated water and land management system for the middle Mangati catchment in which:

- Stormwater from industrial areas is captured and passed through a constructed wetland for trapping of litter, sediment, hydrocarbons (and chemical contaminants to the extent that this is feasible) before being discharged to the stream.
- Industrial land uses are physically and hydrologically isolated from the stream by the development of a riparian reserve.
- A riparian reserve providing public access, a utilities corridor and machine access for stream maintenance purposes is provided.
- Flood detention structures and ponding areas are developed as required and integrated into the riparian reserve development.

Construction of the four-pond system was completed in the 2002-2003 monitoring year.



Figure 5 NPDC stormwater flow paths and sampling points

The plans submitted to the Council indicated that under light rainfall conditions, the stormwater flows under Connett Road, and passes through a downstream defender pollutant entrapment device installed in the 300mm pipeline in Connett Road, before entering pond 1 adjacent to Connett Road and the Mangati Stream (STW001055). The water from pond 1 flows through pond 2, and into pond 3 from which it then discharges into the Mangati Stream (STW002056). When there is higher flow from moderate rainfall, stormwater will also discharge via the industrial drain outlet (STW001026) and unnamed tributary into pond 4, which then flows into pond 3. There is a provision for pond 4 to discharge into the Mangati Stream (STW002055) when the water level in the pond increases to a certain point. There is also a drainage channel from the unnamed tributary to the Mangati Stream (MGT000503) to allow the ponds to be bypassed under heavy rainfall conditions, when it was expected that the level of contaminants in the stormwater would be at their lowest due to the high rate of dilution.

7.1.2 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.

NPDC is the territorial authority for the Bell Block industrial area and holds water discharge permit **4302-2** to cover the discharge up to 5,200 L/s of stormwater from industrial sealed areas and roofs. This permit was originally issued by the Council on

16 June 1993 under Section 87(e) of the RMA for a period until 1 June 2002. The consent was renewed on 11 September 2002 and is due to expire on 1 June 2020.

The renewed consent has five conditions, in respect of adoption of best practice to prevent or minimise adverse effect on the receiving environment, requirement for management plan, prevention and mitigation of any erosion, and review of conditions.

The permit is attached to this report in Appendix I.

7.2 Results

7.2.1 Water

7.2.1.1 Inspections

During the 2014-2015 monitoring period inspections were undertaken in the area of the constructed ponds, and of the discharges to the Mangati Stream on 1 July, 25 July, 24 October 2014 and, 15 April and 4 May 2015.

The inspections focussed on the condition of the ponds, discharge structures, and receiving waters.

Discolouration was noted in one or more of the ponds during inspections, however there were no effects observed in the receiving waters of the Mangati Stream.

7.2.1.2 Results of discharge monitoring

Stormwater is discharged to the Mangati Stream from the wetlands, and from roads running through the industrial area. As combined discharges, the monitoring of the flow to and from the wetlands to the Mangati Stream is reported in Section 19.2.

Stormwater discharged to the Mangati Stream from roads running through the industrial area is monitored at two points, off De Havilland Drive West and Connett Road West (Figure 3 STW001054 and STW001055, Figure 2, sites 29 and 33 respectively). Other discharges contribute to the flow at both monitoring points. The De Havilland Drive stormwater discharges directly into the Mangati Stream. The Connett Road stormwater now discharge into pond 1 of the wetland and includes a portion of the stormwater from the industrial sites, this discharge is therefore also discussed in Section 19.2 where the combined discharges are considered.

De Havilland Drive stormwater has components from several small industrial sites, including part of Tegel Foods Ltd's (Tegel's) poultry processing plant on the southern side of the road, Ireland Roading and Construction Ltd's depot and Vause Oil Production Services workshop on the northern side of the road.

The results from chemical monitoring of stormwater from De Havilland Drive are given in Table 17.

Three samples were collected during the monitoring period, with no flow found to be occurring at this monitoring location during the dry weather survey on 18 February 2015.

During the period under review it was found that, on the whole, the concentrations of most of the components measured were typical for this monitoring site (within the

historical range) and were within the standards for a permitted stormwater discharge given in the Regional Freshwater Plan (RFWP) that Council uses as a quality target/guideline for the reticulated stormwater outlets to the stream.

Table 17 Chemical monitoring results for stormwater discharged to the Mangati Stream from De Havilland Drive West for 2014-2015 (site 29), with a summary of previous monitoring data. TRC site code STW001054

Date	BOD g/m³	Condy mS/m	DRP g/m³-P	NH ₃ g/m ³ -N	NH ₄ g/m³-N	O&G g/m³	рН	SS g/m³	Temp Deg.C	Turby NTU
Permitted activity limits	5	-	-	0.025	-	15	6-9	100	-	-
Number	26	62	25	26	26	45	62	62	59	28
Minimum	0.6	1.6	< 0.004	<0.00001	< 0.003	<0.5	6.2	<2	7.5	1.6
Maximum	66	33.9	4.44	0.04622	5.820	45	9.1	1100	22.2	60
Median	5.5	6.1	0.108	0.00046	0.170	1.3	7.1	22	15.6	22
5-Sep-14 (w)	3.9	6.4	0.095	0.00151	0.411	a	7.1	24	13.4	34
18-Feb-15 (d)	b	b	b	b	b	b	b	b	b	b
5-May-15 (d)	1.1	24.5	0.110	0.00005	0.139	а	6.0	<2	17.3	1.1
7-May-15 (w)	2.4	4.7	0.049	0.00039	0.096	а	7.0	19	17.7	16

Key: Results shown in bold within a table indicates that *a guideline* for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b not discharging at time of sampling survey
- (d) dry weather survey (w) wet weather survey

7.2.2 Investigations, interventions, and incidents

In the 2014-2015 period, the Council was required to undertake significant additional investigations and interventions, or record incidents, in association with NPDC's conditions in resource consents or provisions in Regional Plans.

It is noted that there were no unauthorised discharges in relation to the stormwater consent held by NPDC and monitored under this programme.

The entries on the Council's incident register discussed below relate to overflows from the reticulated wastewater network and/or the Mangati pump station(s).

NPDC have a Water & Wastes Incident Response Plan to meet their obligations under the waste water treatment plant consent (0882-4) that provides contingency measures to be undertaken in the event of sewage system overflows occurring. The plan addresses, emergency response and clean-up, notifications to the Council and the Taranaki District Health Board, erection of signage to warn the public of the potential risk, and review of the event to instigate corrective actions preventing a reoccurrence, where practicable.

For the most part, if the events leading to the overflow are considered to be due to circumstances beyond NPDC's control, and the contingency plan has been followed, they are generally not to be considered to be a breach of consent. This is assessed on a case by case basis. Full details of NPDC sewerage incidents are reported separately in the New Plymouth District Council New Plymouth Wastewater Treatment Plant Marine Outfall and Sludge Lagoon Monitoring Programme Annual Report 2014-2015 Technical Report 2015-112.

28 January 2015

Self notification was received from City Care regarding an effluent overflow into the Mangati Stream as a result of pump failure at the Mangati Pumping Station. An investigation by City Care staff following an alarm activation at the station found that both pumps at the station had failed. The failure of the pumps resulted in effluent entering the Mangati Stream via way of an overflow pipe from the wet well at the station. There was no overland flow as a result of the spill. Overflow occurred for approximately 90 minutes. Signs were subsequently erected on the foot bridge near the pumping station and at the river mouth. A visual inspection of the stream found it to be running clean and clear. No effluent was sighted along the stream or at the river mouth where the stream filters through boulders before entering the ocean. The coastal area immediately adjacent to the river mouth was also found to be visually free of effluent.

10 April 2015

Intense rainfall on 10 April 2015 resulted in an overflow at the Mangati pump station lasting approximately 40 minutes. The pumps were unblocked and reset and signs were erected to inform the public.

10 June 2015

On 10 June 2015 NPDC informed the Council that the Mangati sewer rising main was leaking, and that this would need emergency repair. Repairs were undertaken on 12 June 2015 under emergency works provisions in the RMA. Pump stations using the pipeline were shut down during the repair and sewage was discharged to the Mangati Stream over a period of approximately 90 minutes. NPDC implemented a number of measures to minimise discharge to the stream and reduce risk to public health. These included;

- Tegel asked to cease discharges;
- Sucker trucks used to minimise the volume of effluent discharged;
- Local schools were contacted;
- A press release was issued and warning signs erected.

The Council undertook monitoring during the repair work and found that adverse effects to the environment were minimised.

7.2.2.1 NPDC Annual Reports

Annual reports are required from NPDC by the wastewater treatment plant consent. These reports summarise the sewage pump station and reticulation overflows, and also contain a summary of any upgrade works or investigations into infiltration issues undertaken by NPDC throughout the district.

In the 2014-2015 report there were three overflows reported from the Mangati pump station.

There were no upgrade works or investigations reported that were relevant to the Mangati Stream catchment.

7.3 Discussion

7.3.1 Discussion of site performance

The wetlands were found to be well maintained during the year under review.

The number of sewage overflows to the stream that were reported is still of concern, however it is noted that the cause of the overflows were beyond NPDC's control. It is noted that the areas affected by the short term discharges were cleaned up to the Council's satisfaction, and signs were erected to notify the public. The NPDC's Incident Response Plan was followed in each case.

7.3.2 Environmental effects of exercise of consent

No significant adverse effects were noted as a result of the exercise of NPDC's stormwater discharge consent.

As stated earlier in this report, NPDC has little, if any, control over the quality of the industrial discharges entering its system. For this reason the consent does not place limits on the quality of the NPDC's discharges. The effects observed are discussed in more detail in Section 19 covering the combined discharges and Section 20 covering the Mangati Stream chemical monitoring.

7.3.3 Evaluation of performance

A tabular summary of NPDC's compliance record for the year under review is set out in Table 18.

 Table 18
 Summary of performance for NPDC's Consent 4302-2

Condition requirement	Means of monitoring during period under review	Compliance achieved?	
Consent to be exercised in accord with application information	ance Inspection and discussion with consent holder	Yes	
Adoption of best practicable option minimise effects	Inspection and discussion with consent holder	Yes	
Provision of designs, specification and operating procedures	Review of Council records	Yes	
4. Prevention and mitigation of erosi	on Inspection	Yes	
Optional review provision re environmental effects	No further option for review prior to expiry	N/A	
Overall assessment of consent compli	ance and environmental performance in respect of this consent	High	
Overall assessment of administrative	performance in respect of this consent	High	

N/A = not applicable or not assessed

During the year, NPDC demonstrated a high level of environmental and administrative performance and compliance with their resource consent conditions.

7.3.4 Recommendation from the 2012-2014 Annual Report

In the 2012-2014 Annual Report, it was recommended:

THAT monitoring programmed for consented activities of New Plymouth District Council in the 2014-2015 year continues at the level programmed for 2012-2014.

This recommendation was implemented in full during the 2014-2015 monitoring period.

7.3.5 Alterations to monitoring programmes for 2015-2016

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 the obligations of the RMA in terms of monitoring emissions/discharges and effects, and subsequently reporting 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 2015-2016 the programme remain unchanged. A recommendation to this effect is attached to this report.

7.4 Recommendation

THAT monitoring programmed for consented activities of New Plymouth District Council in the 2015-2016 year continues at the level programmed for 2014-2015.

8. Nexans New Zealand Ltd

8.1 Introduction

8.1.1 Process description

The electric wire and cable manufacturing plant of Nexans New Zealand Ltd (Nexans) was established on Paraite Road beside the railway line in 1967. The plant produces for both domestic and export markets. This company was previously known as Olex New Zealand Ltd.

The site occupies an area of 6.7 ha, of which about 85% is developed. A large variety and volume of chemicals, some potentially toxic, are stored on the site. The majority are stored within buildings in areas where they can be contained if spilled. Chemicals are stored outside the buildings in two bunded areas. In one area, phthalate esters (also liquid plasticisers) are stored in three 50,000 L tanks. In another area, copper wire drawing liquor is stored in a 12,000 L above ground tank which is bunded. A security fence surrounds areas vulnerable to vandalism. All bunded areas are fitted with liquid level alarms and stormwater from within one of is discharged to the stormwater drains after appropriate quality checks. The other bind is used to harvest rainwater for cooling water.

The air discharge consent held by Nexans is to cover the minor discharges associated with the Curing Continuous Velocity (CCV) process. This process involves the moulding of an insulating layer around a conductor at elevated temperatures in an inert nitrogen atmosphere. The discharge stream from this process has the condensates separated before the gas is released to atmosphere via a sparge nozzle above the factory roof. The gas discharged is predominantly nitrogen, but contains alkanes at less than 0.5 %, and acetophenone (10 ppm). Acetophenone has a sweet orange blossom odour and is not expected to give rise to any adverse environmental effects.

There is a contingency plan in place in case of spillages, with a revised plan dated 13 July 2013 being received and accepted by the Council during the period under review. A subsequent revision of the plan has also been received.

A comprehensive Environmental Management System has been put in place at the Nexans site, and a revised stormwater management plan was received in December 2011. After a review of this plan the consent holder was asked to clarify one of the points in the plan. In Section 2.1 of the plan (Structural & Procedural Controls – Existing) it was stated that in the event of a major spillage from the cooling towers/recirculating pumps, this was safe to enter stormwater. On 5 December 2011 the company were asked to outline what, if any, treatment chemicals were added to the cooling water, the maximum temperature the water might be at, and the potential maximum quantities/discharge rates involved. Council officers have continued to follow this up, and the revision of the plan was delayed due to improvements being made at the site during the period under review in relation to process water and cooling water discharge systems.

8.1.2 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.

Nexans New Zealand holds water discharge permit **4497-3** to cover the discharge of stormwater and cooling water from an electric wire and cable manufacturing site off Paraite Road. It was originally granted on 23 March 1994 for a period until 1 June 1996. It was renewed on 12 June 1996, and again on 25 June 2008. This permit was issued by the Council under Section 87(e) of the RMA, and is due to expire on 1 June 2026.

Condition 1 requires the adoption of the best practicable option to minimise effects. Because stormwater generation is dependent on the rainfall event and is not always practicable for the consent holder to control, rather than limiting the discharge rate, condition 2 limits the catchment area from which the discharge can originate to 6.24 ha.

Condition 3 requires hazardous substances areas to be bunded.

Conditions 4 and 5 limit the concentration of particular constituents in the discharge and prohibit specific effects in the receiving water beyond a given mixing zone.

Conditions 6 and 7 require the consent holder to provide and maintain both a contingency plan and a stormwater management plan. The purpose of these conditions is:

- in the case of the management plan, to ensure that the consent holder examines the activities taking place on site, and puts appropriate controls in place to minimise the potential for stormwater contamination to occur due to routine activities, and
- in the case of the contingency plan to ensure that in the event of an unforeseen situation, the chances of a spillage resulting in an unauthorised discharge leaving the site are minimised.

For the consent holder these are also a means of documenting the way in which the "best practicable option" (as required by condition 1) has been implemented.

To ensure that the potential for environmental effects from the exercise of the consent is consistent with the information provided to the reporting officer at the time the consent conditions were drafted, condition 8 requires that Council is notified in writing of any changes in activities at the site that may affect the nature of the discharge.

Condition 9 contains provision for the consent to lapse, and condition 10 provides for the conditions of the consent to be reviewed by Council.

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

8.1.3 Air discharge permit

Section 15(1)(c) of the RMA stipulates that no person may discharge any contaminant from any industrial or trade premises into air, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations.

Olex (Nexans) held air discharge permit **5417-1** to cover the discharge of emissions into the air from an electric wire and cable manufacturing plant and associated activities. This permit was issued by the Council on 30 November 1998 under Section 87(e) of the RMA. The consent expired on 1 June 2014.

An application to renew this consent was received on 4 November 2013, and therefore under Section 124 of the RMA, Nexans were allowed to continue to operate under the conditions of the expired consent until a new consent was granted.

Nexans now hold air discharge permit **5417-2** to discharge emissions into the air from an electric wire and cable manufacturing plant and associated activities. This renewed permit was issued by the Council on 24 February 2015 under Section 87(e) of the RMA. The consent expires on 1 June 2032.

The conditions on the consent address management and operation of the plant and processes, and place limits on the boundary ground level concentrations of contaminants. Conditions also prohibit the discharge from being noxious, dangerous, offensive or objectionable at or beyond the boundary and include provisions for review of the consent.

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

8.2 Results

8.2.1 Water

8.2.1.1 Inspections

The site was inspected on 1 July, 26 August, and 24 October 2014 and 15 April and 19 May 2015.

The inspections focussed on stormwater treatment measures, the condition of containment bunds, and general housekeeping.

The site was found to be tidy and well managed during the period under review. It was noted during the inspection on 1 July 2014 that condensate from the sauna was now being directed to sewer.

8.2.1.2 Results of discharge monitoring

Stormwater from the Nexans site discharges to the industrial stormwater drain underneath Connett Road at two points; the one from the main loading area on the western side of the plant is opposite the entrance to Mainland Products; the other, from the remainder of the site, is about 100 metres further down Connett Road. The uppermost monitoring point for the eastern catchment (STW001025) is unaffected by other discharges. Other discharges contribute to the flow at all of the monitoring

points for the western discharge, including the uppermost site (STW001011), which is influenced by discharges from ABB, Schlumberger (tool and mud sites), Tegel's feed mill storage sheds. The results of monitoring for these two primary sites are given in Table 19 and Table 20.

Two samples were collected at this site during the 2014-2015 monitoring period. The pH of the samples complied with consent conditions.

The consent also places limits on the concentration of suspended solids in the discharge. However, these parameters are routinely determined in the discharge by analysis, as historical data (in excess of 25 samples) has shown that the maximum recorded values have generally been very low (oil and grease 2 g/m^3 , suspended solids 7 g/m^3). The samples are inspected visually and analysis may be performed if it is considered necessary. During the period under review, on 7 May 2015, a very slight sheen and/or odours was noted at the time of sampling, and therefore an oil and grease sample was collected. The sample returned results that were well below the consent limit.

Table 19 Chemical monitoring results for Nexans cooling water and eastern stormwater discharge at Connett Road for 2014-2015 (site 13), with a summary of previous monitoring data. TRC site code STW001025

Date	Condy mS/m	CuAs g/m³	CuD g/m³	O&G g/m³	pH pH	Temp Deg.C	Turby NTU	ZnAs g/m³	ZnD g/m³
Consent limits	-	-	•	15	6-9	-	-	-	
Number	60	53	31	28	60	60	21	54	31
Minimum	<1	<0.01	<0.01	< 0.5	6.3	9.5	0.68	0.028	0.025
Maximumm	72.4	0.16	0.10	2.5	8.2	28	31	1.98	1.98
Median	5.1	0.04	0.01	< 0.5	7.2	15.6	1.8	0.252	0.086
5-Sep-14 (w)	2.2	0.02	0.01	а	7.1	13.4	1.4	0.118	0.082
18-Feb-15 (d)	b	b	b	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b	b	b
7-May-15 (w)	3.2	<0.01	<0.01	<0.5	6.8	17.5	2.2	0.048	0.044

Key:

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b not discharging at time of sampling survey
- (d) dry weather survey (w) wet weather survey

Copper is included in the analysis suite for site STW001025 because the cooling water used as part of the copper wire drawing process was previously discharged via stormwater. Whilst the cooling water is now being directed to the sewer, the Council will continue to analyse for copper given that the site is still a potential source of copper contamination with the large amount of copper stored and processed at the site. Zinc is included in the analysis suite to better assist Council in the assessment of zinc contamination of the entire industrial area, and because a calcium/zinc stabiliser is used at the site.

Both acid soluble and dissolved zinc and copper concentrations in the discharge were below the median values of all results from the site..

One sample was collected from the central drain and Nexans western stormwater discharge during the period under review (STW001011, Table 20). The pH result complied with consent conditions.

Table 20 Chemical monitoring results for the central drain and Nexans western stormwater discharge at Connett Road for 2014-2015 (site 15), with a summary of previous monitoring data. TRC site code STW001011

Date	Condy mS/m	NH ₄ g/m³-N	O&G g/m³	pH pH	SS g/m³	Temp °C	Turby NTU
Consent limits	-	-	15	6-9	100	-	-
Number	62	58	30	62	32	60	23
Minimum	1.2	0.024	< 0.5	5.9	<2	8.7	6.2
Maximum	55.7	4.2	110	9.7	280	22.4	53
Median	5.8	0.105	1.2	7.0	17	15.2	14
5-Sep-14 (w)	23.4	0.154	а	7.3	-	14.1	16
18-Feb-15 (d)	b	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b
7-May-15 (w)	b	b	b	b	b	b	b

Key: a parameter not determined, no visible hydrocarbon sheen and no odour

b not discharging at time of sampling survey

(d) dry weather survey (w) wet weather survey

The consent also places limits on the suspended solids and oil and grease concentrations in the discharge. The samples were inspected visually and analysis was not considered necessary as high turbidity or hydrocarbon odour/sheen was not noted in the sample.

The ammoniacal nitrogen concentration of the discharges was found to be above the median of previous results. The concentrations found were not of concern. It is noted that other industries drain via this part of the reticulated stormwater network, including the storage sheds utilised by Tegel's feed mill. Monitoring of this parameter will continue at this location, with additional monitoring of the Tegel feed mill drain being undertaken if warranted.

8.2.2 Air

Air inspections were carried out in conjunction with site water inspections on 1 July, 26 August, and 24 October 2014, and 15 April and 19 May 2015.

No visible emissions or objectionable odours were noted during any of the inspections.

8.2.3 Investigations, interventions, and incidents

In the 2014-2015 period, the Council was not required to undertake significant additional investigations and interventions, or record incidents, in association with Nexans conditions in resource consents or provisions in Regional Plans.

8.3 Discussion

8.3.1 Discussion of site performance

The site was found to be well managed throughout the period under review and no issues were noted in regard to mitigation measures, bunding or general housekeeping.

8.3.2 Environmental effects of exercise of consents

No adverse environmental effects were observed as a result of discharges or emissions originating from the Nexan's site during the 2014-2015 monitoring period.

8.3.3 Evaluation of performance

A tabular summary of Nexans compliance record for the year under review is set out in Table 21, Table 22 and Table 23.

 Table 21
 Summary of performance for Nexans Consent 4497-3

Purpose: To discharge stormwater and cooling water							
Condition requirement	Means of monitoring during period under review	Compliance achieved?					
Adoption of best practicable option to minimise effects on the environment	Inspection and discussion with consent holder	Yes					
Limits stormwater catchment area	Inspection	Yes					
Above ground hazardous substance storage to be bunded and not to drain directly to stormwater catchment	Inspection and discussion with consent holder	Yes					
Limits on chemical composition of discharge	Sampling	Yes					
Discharge cannot cause specified adverse effects beyond mixing zone	Receiving water and sediment sampling. Biomonitoring	Yes					
Maintenance of a contingency plan for action to be taken to prevent spillage	Review of documents provided. Plan on file dated July 2013	Yes					
Maintenance of stormwater management plan	Plan on file June 2015	Yes					
Written notification required regarding changes to activities at the site	Inspection and discussion with consent holder	Yes					
Provision for consent to lapse if not exercised	Consent has been exercised	N/A					
10. Optional review provision re environmental effects and notifications of changes (S.C.9)	Next opportunity for review June 2020	N/A					
Overall assessment of consent compliance an	d environmental performance in respect of this consent	High					
Overall assessment of administrative performa	ince in respect of this consent	High					

N/A = not applicable or not assessed

 Table 22
 Summary of performance for Nexans Consent 5417-1

Pu	Purpose: To discharge emissions to air (replaced by 5417-2 from 24 February 2015)					
Co	Condition requirement Means of monitoring during period under review					
1.	Adoption of best practicable option to minimise effects	Inspections	Yes			
2.	Processes to be supervised and controlled to minimise emissions	Inspections	Yes			
3.	Notification prior to making changes which may significantly change discharge	Inspection and discussion at inspection. Review of documentation received. No changes	Yes			
4.	Limit on contaminant concentrations beyond boundary	Not assessed during years under review, but no visible emissions sighted	N/A			
5.	Prohibits noxious, dangerous, offensive, or objectionable effects at or beyond boundary	Inspections, odour surveys	Yes			
6.	Optional review provision re environmental effects	Consent has expired	N/A			
Overall assessment of consent compliance and environmental performance in respect of this consent						
Ov	erall assessment of administrative perform	mance in respect of this consent	High			

N/A = not applicable or not assessed

 Table 23
 Summary of performance for Nexans Consent 5417-2

Pu	Purpose: To discharge emissions to air (effective from 24 February 2015)							
Co	ndition requirement	Means of monitoring during period under review	Compliance achieved?					
1.	Adoption of best practicable option to minimise effects	Inspections and liaison with consent holder	Yes					
2.	Discharge not to give rise to offensive, objectionable or toxic dust or odour	Inspections	Yes					
3.	Control of emissions of CO, NO ₂ , PM ₁₀ and SO ₂	Not assessed during review period	N/A					
4.	Control on other emissions	Not assessed during review period	N/A					
5.	Consent holder to consult Council prior to making alterations to plant, processes or operations	Inspections and liaison with consent holder	Yes					
6.	Consent holder to maintain record of complaints	Not requested during review period	N/A					
7.	Report reviewing technological advances in the reduction and mitigation of emissions due in November each year	Next due in November 2015	N/A					

Pu	Purpose: To discharge emissions to air (effective from 24 February 2015)						
Co	Condition requirement Means of monitoring during period under review						
8.	Optional review provision re environmental effects	Option for review in June 2020	N/A				
Ov	Overall assessment of consent compliance and environmental performance in respect of this consent High						
Ov	verall assessment of administrative perform	ance in respect of this consent	High				

N/A = not applicable or not assessed

During the year, Nexans New Zealand Ltd demonstrated a high level of environmental and administrative performance and compliance with their resource consents as defined in Section 1.1.4.

8.3.4 Recommendation from the 2012-2014 Biennial Report

In the 2012-2014 Biennial Report, it was recommended:

THAT monitoring programmed for consented activities of Olex New Zealand Ltd – A Nexans Company, in the 2014-2015 year continues at the level programmed for 2012-2014.

This recommendation was implemented during the 2014-2015 monitoring period.

8.3.5 Alterations to monitoring programmes for 2015-2016

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 the obligations of the RMA in terms of monitoring emissions/discharges and effects, and subsequently reporting 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 2015-2016 the programme remains unchanged. A recommendation to this effect is attached to this report.

8.4 Recommendation

THAT monitoring programmed for consented activities of Nexans New Zealand Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.

9. OMV New Zealand Ltd

9.1 Introduction

9.1.1 Process description

OMV New Zealand Ltd (OMV) currently manages this 1.08 ha site as a storage facility to support the offshore Maari Field.

The site is used for the storage and dispatch of off-shore equipment between drilling campaigns. This equipment includes chemicals and drill pipes. The drill pipes are either new, prior to them being prepared for use, or unused pipes returned from the off-site drilling activities. There is no pipe washing, preparation, or reconditioning of used pipes carried out at the site.

Chemicals, of limited quantities and classes, are stored either under cover in the warehouse buildings, or in bunded shipping containers in the yard, prior to dispatch.

Any equipment returned from off-shore is washed off-shore, if required, and is clean when it is returned to the site.

Stormwater drains via a three-stage oil separator to the Bell Block industrial drainage system.

Prior to OMV leasing the site, the entire property had been developed, with the site being roofed, tar-sealed or metalled.

A wash facility is situated on the southern side of the site, and an automatic diverter valve diverts the discharge of washings to sewer via an oil separator when the wash pad is in use. Stormwater from the washing area, when the wash pad is not in use, continues to be directed to the Mangati Stream via an older oil separator. The wash pad is now permanently diverted to sewer.

9.1.2 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.

OMV holds water discharge permit **3913-2** to cover the discharge of up to 125 L/s of treated stormwater from a transport depot into the Mangati Stream from this site.

This permit was originally issued on 12 April 1991 to Clark and Rogers Ltd as a water right pursuant to Section 21(3) of the *Water and Soil Conservation Act* 1967. Permit 3913-2 was issued by the Council on 7 February 1996 under Section 87(e) of the RMA. It was transferred to Shaycar Trust on 1 December 2008, and then to OMV on 17 December 2013. This consent expired on 1 June 2014.

An application to renew this consent was received from OMV on 26 February 2014, more than three months prior to the consent expiry date. Therefore under Section 124 of the RMA, the Council has exercised its discretion and allowed the consent holder

to continue to operate under the conditions of the expired consent until a decision is made on the renewal application.

The original conditions of consent **3913-2** are outlined below.

Special conditions 1 and 2 related to chemical limits on the discharge and effects on the receiving waters downstream of the mixing zone.

Special condition 3 required the consent holder to maintain a contingency plan and special condition 4 was a provision for optional review in June 2008.

The permit is attached to this report in Appendix I.

Note: Consent 3913-3 was granted on 24 September 2015.

9.2 Results

9.2.1 Water

9.2.1.1 Inspections

The site was visited on 1 July, 19 August and 7 November 2014 and 15 April and 18 May 2015.

The inspections focussed on treatment measures, the condition of the stormwater drains and general house keeping.

The site was generally found to be clean and tidy when inspected. Minor issues noted during the period included full bunds needing to be emptied, a stormwater drain to be cleaned out, and the observation of hydrocarbon sheen. These were discussed with staff at the time of the inspections and the issues noted were addressed.

9.2.1.2 Results of discharge monitoring

Treated stormwater discharged from the OMV site is monitored at up to nine points before it reaches the Mangati Stream (Figure 2, sites 8, 10, 16, 17, 14, 33, 37, 38, and 47). Other discharges contribute to the flow at the lower eight monitoring points (i.e. sites 8, 10, 14, 16, 17, 33, 37, and 38). The primary monitoring site is immediately below the oil separator for treating the site stormwater discharged (site 18). The results from chemical monitoring at this site are given in Table 24.

Table 24	Results from monitoring of stormwater from the OMV site for 2014-2015 (site 18), with a
	summary of previous monitoring data. TRC site code IND002013

Date	BOD g/m³	BODF g/m ³	COD g/m ³	Condy mS/m	DRP g/m³-P	NH3 g/m³-N	NH ₄ a/m ³ -N	O&G g/m ³	PH pH	SS g/m³	Temp Deg.C	Turby NTU
Consent limits	16	-	-	-	-	-	10	15	6-9	100	-	-
Number	47	24	48	57	54	52	57	39	57	56	55	19
Minimum	2.1	0.5	7.5	1.3	0.018	0.00005	0.017	<0.5	6.5	6	8.0	6.3
Maximum	500	12	340	74.4	11.2	2.552	36.5	230	9.4	1000	22.3	460
Median	7.4	3.0	46	7.4	0.32	0.00246	0.375	2.2	7.2	70	14.3	28
5-Sep-14 (w)	16	5.4	48	5.4	0.027	0.00073	0.250	а	7.0	9	13.4	36
18-Feb-15 (d)	b	b	b	b	b	b	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b	b	b	b	b	b
7-May-15 (w)	2.9	1.6	22	5.2	0.025	0.00018	0.071	<0.5	6.8	60	17.5	30

Key:

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b not discharging at time of sampling survey
- (d) dry weather survey (w) wet weather survey

The discharge complied with consent conditions for ammoniacal nitrogen, pH range, oil and grease, BOD and suspended solids during the period under review.

The majority of the results obtained during the 2014-2015 year were similar to or below the previous medians. The result for BOD on 5 September 2014 was elevated but compliant with consent conditions. Subsequent monitoring returned far lower results. This potentially may reflect improved control over fugitive stock feed dust emissions from the neighbouring feedmill.

9.2.2 Investigations, interventions, and incidents

In the 2014-2015 period, the Council was not required to undertake significant additional investigations and interventions, or record incidents, in association with OMV's conditions in resource consents or provisions in Regional Plans.

9.3 Discussion

9.3.1 Discussion of site performance

The site was well managed during the period under review, with no significant issues found during inspections.

Stormwater monitoring found that the discharge from the site complied with consent conditions at the time of sampling.

9.3.2 Environmental effects of exercise of consent

During the year under review, there were no adverse effects noted as a result of the exercise of OMV's water discharge consent.

9.3.3 Evaluation of performance

A tabular summary of OMV's compliance record for the year under review is set out in Table 25.

Table 25 Summary of performance for OMV's Consent 3913-2

Pu	Purpose: To discharge up to 125 litres/second of treated stormwater from a transport depot						
Co	ndition requirement	Means of monitoring during period under review	Compliance achieved?				
1.	Limits on chemical composition of discharge	Sampling	Yes				
2.	Discharge cannot cause specified adverse effects beyond mixing zone	Receiving water sampling	Yes				
3.	Preparation of a contingency plan to be provided by March 1997	Review of documents provided. Original plan approved November 2001. Latest plan on file dated April 2011	Yes				
4.	Optional review provision re environmental effects	Consent has expired	N/A				
5.	Preparation and maintenance of a stormwater management plan	Received	Yes				
Ov	Overall assessment of consent compliance and environmental performance in respect of this consent						
Οι	erall assessment of administrative perfor	mance in respect of this consent	High				

N/A = not applicable or not assessed

During the year, OMV New Zealand Ltd demonstrated a high level of environmental and administrative performance and compliance with the resource consents as defined in Section 1.1.4.

9.3.4 Recommendation from the 2012-2014 Biennial Report

In the 2012-2014 Biennial Report, it was recommended:

THAT monitoring programmed for consented activities of OMV New Zealand Ltd in the 2014-2015 year continues at the level programmed for 2012-2014.

This recommendation was implemented during the 2014-2015 monitoring period.

9.3.5 Alterations to monitoring programmes for 2015-2016

In designing and implementing the monitoring programmes for air and 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 the obligations of the RMA in terms of monitoring emissions, discharges and effects, and subsequently reporting 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 and/or discharging to the environment.

It is proposed that for 2015-2016 the monitoring programme is unchanged. A recommendation to this effect is attached to this report.

9.4 Recommendation

THAT monitoring programmed for consented activities of OMV New Zealand Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.

10. Schlumberger New Zealand Ltd

10.1 Introduction

10.1.1 Process description

Schlumberger New Zealand Ltd (Schlumberger) provides services to the oil production industry, and stores a range of hazardous substances in enclosed areas of the site. Washdown of drilling mud and occasionally oil residue from down hole tools occurs, with this water discharged to the stormwater system via an interceptor. The 1.7 ha site off Paraite Road is in the area previously occupied by Maui Metals and Taranaki Drum and Pallet Recycling. The property has been substantially improved and is now mostly either sealed or under roof. The majority of the stormwater plus the washdown water exits the site after passing through the old Ashtech Industries monitoring point (site 26).

The site is tar sealed with all maintenance activities and hazardous goods storage contained within buildings. There are purpose built facilities on site for the storage of radioactive borehole logging sources, explosives, hazardous goods and paint. Storage in the yard areas of the site is limited to off shore logging units, mechanical equipment and trucks. Schlumberger has a policy that no hazardous goods are to be stored outside the designated facilities. There is no treatment system or interceptor in place for the stormwater discharged from the general storage and standing areas of the site. However, there are dedicated three stage interceptors for the pressure test bay and for the laydown area of the site.

The wash area is housed within a building that also contains the paint, waste, oil, and chemical storage areas. The floors within this building all drain to a common 1.5 m³ capacity sealed sump. The liquid collected in this sump can either be removed by a contractor for appropriate off-site disposal, or be pumped to the stormwater drainage system via an oil separator, which removes the oily waste and suspended solids from the effluent stream. The pump intake is placed above the bottom of the sump to allow for the settlement of sludge and sediment. The pump operates as part of an automated system activated by high and low level sensors. The sensors are positioned such that free oil on the surface and sludge/sediment at the base is retained within the sump.

All washing is performed using hot water/steam only, i.e. no surfactants, degreasers or other additives (which would have the effect of emulsifying or solubilising oils and greases) are used.

The free oil and low density suspended solids removed by the oil separator are directed to a bunded 15,000 litre storage tank inside the building. This is emptied on an as required basis by a contract vacuum truck for appropriate off site disposal. There is a valve at the base of the separator for the removal of accumulated heavy solids and sludge.

Schlumberger stated that the maximum treated wash water discharge from the site would be $1.5~\text{m}^3/\text{day}$, only once every one to two months, with the discharge duration being a maximum of 2-3 hours.

In the 2006-2007 monitoring year a second wash pad was installed and commissioned at the site.

The consent requires contingency, stormwater management and wash water management plans are maintained for the site. The latest version of the contingency plan was received and accepted by the Council in September 2010. The latest version of the stormwater management and wash water management plans were received by the Council in August 2009, which Council records indicate was confirmed as still being current in December 2012.

Late in the 2013-2014 year Schlumberger acquired the MI New Zealand site, with consents being transferred to Schlumberger on 13 May 2014. This includes the operation of a Liquid Mud Plant (LMP) and a warehouse/storage facility.

Activities at the site involve the mixing of synthetic based muds to be used in hydrocarbon exploration, and storage of chemicals to be used in the mixing operations. The LMP comprises a series of tanks of up to $10.9 \, \mathrm{m}$ in height that are used to mix up the drilling mud. Once mixed the mud is tankered from the site. Chemicals used in the LMP are stored on site in a warehouse. The LMP is not used on a full time basis - mud is mixed on demand. The maximum amount of mud being mixed at any time is $1,100 \, \mathrm{m}^3$.

The LMP area is outdoors and is not covered with a roof to prevent stormwater from entraining contaminants.

The LMP area covers approximately 420 m² and the total area of the stormwater catchment of this property is approximately 2,400 m².

The LMP area is tar-sealed to form an impervious layer that will prevent any spills contaminating soil or groundwater on the site. The LMP area is bunded to contain 110% of the largest tank (the largest tank volume being 63,000 L).

Stormwater from the site is directed to stormwater drains via land contouring. The drains connect with existing NPDC stormwater culverts from the site and discharge into the Mangati Stream, via the wetland system, approximately 700 m from the site.

All stormwater discharged from the bunded LMP area is treated via an interceptor.

The adjacent site contains a large outdoor laydown area and large warehouse/ workshop building. Sea transport containers containing flexitank bladders of synthetic fluid are stored in this laydown area pending the availability of storage space in the LMP area. The sea containers are transferred by swing-lift transporter to the bunded loading/unloading bay alongside LMP when the synthetic fluids are required for use.

Stormwater from the driveways, access areas, parking areas, laydown area and office/warehouse buildings are not treated via the LMP interceptor.

The key concern is the potential for contaminants to be entrained in the stormwater discharge to the Mangati Stream. A contingency plan is in place for the site. The site is manned at all times when the mixing of chemicals occurs in the LMP therefore minimising the potential of a spill occurring unnoticed. Sandbags are also

located on the site for use in the event of a spill to contain liquid chemicals and to place over stormwater drains to prevent discharge from the site.

10.1.2 Water discharge permits

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.

Schlumberger hold discharge permit **5987-1** to discharge treated stormwater from a synthetic LMP and storage site into the Mangati Stream. This permit was issued by the Council on 4 July 2002 under Section 87(e) of the RMA, with a variation to consent on 8 June 2010. The consent was transferred to Schlumberger from MI New Zealand on 13 May 2014. It is due to expire on 1 June 2020.

Conditions are attached in respect of catchment size, provision of treatment system design information, concentrations of stormwater components, effects in the receiving water after reasonable mixing, a contingency plan, and review of conditions.

Schlumberger holds water discharge permit 6032-1 to discharge treated wash water and stormwater from a storage and maintenance premises for oil field exploration equipment into the Mangati Stream. This permit was originally issued by the Council on 4 July 2002 under Section 87(e) of the RMA, with a review on 27 August 2008. It is due to expire on 1 June 2020.

In addition to the 'standardised' conditions for contingency planning, prohibiting particular effects in the receiving water and limiting the pH, suspended solids and oil & grease, limits have also been placed on the component concentrations of dissolved copper (0.05 g/m^3) , dissolved lead (0.2 g/m^3) and dissolved zinc (0.65 g/m^3) in the discharge. The consent also requires that activities are conducted in accordance with the information provided in support of the application and that the Council is notified of any changes at the site that could alter the nature of the discharge. Plans are required to ensure that the effectiveness of the wash water treatment system is maintained and that the stormwater is not contaminated by inappropriate storage of chemicals/soiled equipment in the stormwater catchment.

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

10.2 Results

10.2.1 Water

10.2.1.1 Inspections

This site was visited on 1 July, 25 July, and 10 November 2014, and 13 April and 6 May 2015.

The site was found to be tidy and clean during all inspections. There were no hydrocarbon sheens visible onsite and all puddles and stormwater drains were clear, with the exception of 13 April 2015 where discolouration in one of the drains may have occurred from the tracking of silt/sediment on the yard. The consent holder

agreed to monitor this and it was considered that a sample was not required to be collected. A spill kit was observed onsite.

An inspection of the stormwater system was carried out on 10 November 2014 to identify the flow-path after samples collected during a wet weather sampling survey in September 2014 were found to exceed limits imposed by consent conditions. The likely source of the non-compliance could not be identified due the time elapsed between the sample being taken and the results being reported.

10.2.1.2 Results of discharge monitoring

The site is graded such that the majority of the stormwater from the consented LMP and office complex area exits the site at the southwest corner. This is monitored at STW002071. The discharge flows through a stormwater pipe passing through the rest of the Schlumberger site (monitoring site 26, STW001056), and the ABB site (monitoring site 25, STW001017). Stormwater from the adjacent site formerly occupied by Mainfreight exits the site at two points; at the middle of the western boundary of the site (STW001118) which joins the stormwater network on the ABB site, and at the northwest corner of the site to the Paraite Road stormwater drains. The results from chemical monitoring at site STW002071 are given in Table 26, and the results from the chemical monitoring at site STW001118 are given in Table 27.

Table 26 Chemical monitoring results for stormwater discharged from Schlumberger's LMP site for 2014-2015 (site 40), with a summary of previous monitoring data. TRC site code STW002071

Date	BOD g/m³	Condy mS/m	NH₃ g/m³-N	NH ₄ g/m³-N	O&G g/m³	pH pH	SS g/m³	Temp Deg.C	Turby NTU
Consent limit	5	-	0.025	-	15	6-8	100	-	-
Number	13	13	13	13	6	13	13	13	13
Minimum	0.5	1.4	0.00002	0.013	< 0.5	6.6	3	8.7	2.2
Maximum	63	46.7	0.01222	0.138	3.0	8.7	270	22.1	62
Median	2.9	5.5	0.00035	0.072	1.2	7.2	19	15.3	11
5-Sep-14 (w)	>100	301	0.00016	0.038	4.2	7.2	31	12.1	10
18-Feb-15 (d)	b	b	b	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b	b	b
7-May-15 (w)	1.4	5.9	0.00018	0.047	а	7.0	31	17.2	12

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b not discharging at time of sampling survey
- (d) dry weather survey (w) wet weather survey

Compliance was achieved with the component concentrations for unionised ammonia, oil and grease and suspended solids on all monitoring occasions. BOD was in exceedance of the consented limit in the sample obtained from the LMP site on 5 September 2014. This was logged on the Council's Incidents Register and is discussed further in Section 11.2.2 below.

The consent holder was contacted and asked to investigate, no sources of contamination were found and it was determined that this non compliance was transitory and all subsequent sampling was found to have compliant results. No

more than minor effects were noted at the combined discharge points or in the receiving waters.

Table 27 Chemical monitoring results for stormwater discharged from Schlumberger's warehouse/storage site for 2014-2015 (site 39), with a summary of previous monitoring data. TRC site code STW001118

Date	BOD	Condy	NH ₃	NH ₄	O&G	рН	SS	Temp	Turby
	g/m³	mS/m	g/m³-N	g/m³-N	g/m³	pН	g/m³	Deg.C	NTU
Consent limit	7	-	0.025	-	15	6-9	100	-	-
Number	11	11	11	11	4	11	11	11	11
Minimum	1.5	2.0	0.00005	0.010	<0.5	6.8	21	8.4	22
Maximum	9.0	10.9	0.00454	0.194	3.0	9.4	320	18.9	410
Median	2.7	5.5	0.00029	0.078	<0.5	7.1	34	14.1	57
5-Sep-14 (w)	3.9	12.6	0.00116	0.110	0.6	7.6	46	12.2	74
18-Feb-15 (d)	b	b	b	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b	b	b
7-May-15 (w)	7.9	5.6	0.00163	0.420	а	7.0	39	17.2	40

Key: Results shown in bold within a table indicates that a limit for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b not discharging at time of sampling survey
- (d) dry weather survey (w) wet weather survey

The discharge from the warehouse and storage site complied with limits imposed on unionised ammonia, oil and grease, pH and suspended solids. BOD was above the consented level on 7 May 2015, however this was considered a very exceedance and as such was not logged on the Council's Incidents Register. The consent holder was contacted and advised that there was a sight exceedance. Subsequent sampling at this discharge point was found to be compliant.

The majority of the stormwater and washdown water exit the site after passing through the old Ashtech Industries monitoring point (STW001056, Figure 3; site 26, Figure 2), which is also affected by stormwater discharged from the area housing the LMP.

Two samples were collected by the Council in the 2014-2015 period (Table 28). Standardised consent conditions for pH range, oil and grease and suspended solids were met, as were the limits for copper, lead and zinc.

Table 28 Chemical monitoring results for Schlumberger's stormwater discharge for 2014-2015 (site 26) with a summary of previous monitoring data. TRC site code STW001056

Date	COD g/m ³	Condy mS/m	CuD g/m³	O&G g/m³	PbAS g/m³	pH pH	SS g/m ³	Temp Deg.C	Turby NTU	ZnD g/m³
Consent limits	-	-	0.05	15	0.02*	6-9	100	-	-	0.65
Number	27	37	6	20	6	37	35	35	19	6
Minimum	<5	1.4	<0.01	<0.5	<0.05	6.3	<2	8.3	3.0	0.034
Maximum	650	163	0.05	119	<0.05	8.7	970	22.1	50	0.232
Median	21	6.9	<0.01	1.6	<0.05	7.2	12	14.9	7.0	0.068
5-Sep-14 (w)	42	6.6	0.01	а	< 0.05	7.6	12	12.9	14	0.195
18-Feb-15 (d)	b	b	b	b	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b	b	b	b

Date	COD	Condy	CuD	O&G	PbAS	pH	SS	Temp	Turby	ZnD
	g/m³	mS/m	g/m³	g/m³	g/m³	pH	g/m³	Deg.C	NTU	g/m³
7-May-15 (w)	<5	4.3	< 0.01	а	< 0.05	7.0	16	17.3	5.5	0.099

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
- * limit is for dissolved lead
- b not discharging at time of sampling survey
- (d) dry weather survey (w) wet weather survey

10.2.2 Investigations, interventions, and incidents

In the 2014-2015 period, the Council was required to undertake significant additional investigations and interventions, or record incidents, in association with Schlumberger's conditions in resource consents or provisions in Regional Plans.

5 September 2014

During the analysis of samples collected as part of routine monitoring on 5 September 2014 it was found that biochemical oxygen demand in the discharge exceeded the level allowed by consent conditions.

The consent holder was contacted and asked to investigate the issue. No sources of contamination were found and it was determined that this non compliance was transitory and was not repeated. No effects were noted at the combined discharge points or in the receiving waters as result of this discharge. In this instance, due to the transitory nature of the exceedances, no further action was taken.

10.3 Discussion

10.3.1 Discussion of site performance

Inspection found that material handling and plant maintenance at the site was well managed during the year under review.

Although there were two samples from the LMP separator that exceeded consent limits, no effects were noted and the exceedances were found to be transitory.

All subsequent routine monitoring samples were found to have compliant results.

10.3.2 Environmental effects of exercise of consent

There were no adverse environmental effects identified by the Council as a result of the discharges from the Schlumberger Seaco site during the years under review. Exceedances in BOD from this site did not result in more than minor effects in the receiving waters as result.

10.3.3 Evaluation of performance

A tabular summary of Schlumberger's compliance record for the years under review is set out in Table 29 and Table 30.

 Table 29
 Summary of performance for Schlumberger's Consent 5987-1

Condition requirement Means of monitoring during period under review							
1.	Adoption of best practicable option to minimise effects	Inspection and discussion with consent holder	Yes				
2.	Limit on stormwater catchment	Observation and discussions at inspection	Yes				
3.	LMP discharge to be treated and managed as per stormwater management plan	Inspection and discussion with consent holder	Yes				
4.	Limits on chemical composition of discharge	Discharge sampling	BOD exceeded				
5.	Discharge cannot cause specified adverse effects beyond mixing zone	Receiving water sampling	Yes				
6.	Preparation and maintenance of contingency plan re measures to prevent spillage or accidental discharge and avoid, remedy or mitigate effects	Review of documentation received. Reviewed December 2012	Yes				
7.	Preparation and maintenance of stormwater management plan re measures to minimise contaminants in the stormwater	Review of documentation received. Reviewed December 2012	Yes				
8.	Written notification required regarding changes to activities at the site. Notification to include assessment of environmental effects	Inspection and discussion with consent holder	N/A				
9.	Optional review provision re environmental effects or changes	Not required during period under review	N/A				
Ov	erall assessment of consent compliance	te and environmental performance in respect of this consent	Good				
Overall assessment of administrative performance in respect of this consent							

N/A = not applicable or not assessed

 Table 30
 Summary of performance for Schlumberger's Consent 6032-1

1. Consent to be exercised in accordance with information submitted at application, and in plans (S.C. 3,4,and 7) 2. Council to be advised in writing with assessment of effects prior to changes 3. Maintenance of plan for wash water treatment system 4. Maintenance of stormwater management plan 5. Limits on chemical composition of discharge 6. Discharge cannot cause specified adverse effects beyond mixing zone 7. Maintenance of a contingency plan for action to be taken to prevent spillage 8. Optional review provision re environmental effects and notifications of changes (S.C.2) 9. Prohibition of wastes containing degreasers, solvents or surfactants Inspection and discussion with consent holder. No further changes Inspection and discussion with consent holder, and review of documentation on file Yes Yes Yes Yes Not required during period under review holder. Yes Not sequired during period under review holder. Yes	Condition requirement	Means of monitoring during period under review	Compliance achieved?
assessment of effects prior to changes further changes further changes 3. Maintenance of plan for wash water treatment system Inspection and discussion with consent holder, and review of documentation on file 4. Maintenance of stormwater management plan Inspection and discussion with consent holder, and review of documentation on file 5. Limits on chemical composition of discharge Sampling, and review of self-monitoring data Minor BOD exceedance 6. Discharge cannot cause specified adverse effects beyond mixing zone Receiving water sampling Yes 7. Maintenance of a contingency plan for action to be taken to prevent spillage 8. Optional review provision re environmental effects and notifications of changes (S.C.2) 9. Prohibition of wastes containing Inspection and discussion with consent holder.	accordance with information submitted at application, and in plans		Yes
treatment system review of documentation on file 4. Maintenance of stormwater management plan linspection and discussion with consent holder, and review of documentation on file 5. Limits on chemical composition of discharge Sampling, and review of self-monitoring data Minor BOD exceedance 6. Discharge cannot cause specified adverse effects beyond mixing zone Receiving water sampling Yes 7. Maintenance of a contingency plan for action to be taken to prevent spillage 8. Optional review provision re environmental effects and notifications of changes (S.C.2) Not required during period under review N/A P. Prohibition of wastes containing Inspection and discussion with consent holder.	assessment of effects prior to		Yes
management plan review of documentation on file 5. Limits on chemical composition of discharge 6. Discharge cannot cause specified adverse effects beyond mixing zone 7. Maintenance of a contingency plan for action to be taken to prevent spillage 8. Optional review provision re environmental effects and notifications of changes (S.C.2) Prohibition of wastes containing review of documentation on file Sampling, and review of self-monitoring data Minor BOD exceedance Peceiving water sampling Yes Plan on file received September 2010 – review overdue Not required during period under review N/A			Yes
discharge Sampling, and review of self-monitoring data exceedance Discharge cannot cause specified adverse effects beyond mixing zone Maintenance of a contingency plan for action to be taken to prevent spillage Plan on file received September 2010 – review overdue Yes Optional review provision re environmental effects and notifications of changes (S.C.2) Not required during period under review N/A Inspection and discussion with consent holder.			Yes
adverse effects beyond mixing zone 7. Maintenance of a contingency plan for action to be taken to prevent spillage 8. Optional review provision re environmental effects and notifications of changes (S.C.2) 9. Prohibition of wastes containing Receiving water sampling Plan on file received September 2010 – review overdue Yes Not required during period under review N/A		Sampling, and review of self-monitoring data	
for action to be taken to prevent spillage 8. Optional review provision re environmental effects and notifications of changes (S.C.2) 9. Prohibition of wastes containing Yes Yes Yes Not required during period under review N/A		Receiving water sampling	Yes
environmental effects and notifications of changes (S.C.2) Not required during period under review N/A Not required during period under review N/A Prohibition of wastes containing Inspection and discussion with consent holder.	for action to be taken to prevent	•	Yes
	environmental effects and	Not required during period under review	N/A
			Yes
	Overall assessment of administrative perfo	ormance in respect of this consent	Good

N/A = not applicable or not assessed

During the year, Schlumberger demonstrated an overall good level of environmental performance and administrative performance and compliance with their resource consents as defined in Section 1.1.4.

10.3.4 Recommendation from the 2012-2014 Biennial Report

In the 2012-2014 Biennial Report, it was recommended:

THAT monitoring programmed for consented activities of Schlumberger Seaco Incorporated in the 2014-2015 year continues at the level programmed for 2012-2014.

This recommendation was implemented during the 2014-2015 monitoring period.

10.3.5 Alterations to monitoring programmes for 2015-2016

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 the obligations of the RMA in terms of monitoring emissions/discharges and effects, and subsequently reporting 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 2015-2016, the programme remains unchanged. A recommendation to this effect is attached to this report.

10.4 Recommendation

THAT monitoring programmed for consented activities of Schlumberger New Zealand Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.

11. Tasman Oil Tools Ltd

11.1 Introduction

11.1.1 Process description

Tasman Oil Tools Ltd (Tasman Oil) has a 1.4 ha yard on De Havilland Drive for storage and maintenance of drill pipe, down-hole tools and other miscellaneous equipment used in the oil industry. New casing and drill pipe is cleaned to remove protective grease, which until recently contained some copper and zinc, and a high proportion of lead. The wash water was discharged to land and then flowed overland to an interceptor pit. Tasman Oil's yard is immediately upslope of the pipe yard of Greymouth Petroleum, where a similar activity is undertaken.

The site is mostly metalled, with some sealed areas. Stormwater flows to drains, which then run along the eastern and northern boundaries and converge at an oil interceptor pit. The discharge from the pit enters a common open stormwater drain that also receives stormwater from the adjacent properties of NGC and Greymouth Petroleum. The drain reaches the Mangati Stream about 250 m below De Havilland Drive.

Drilling pipes are cleaned with hot water and sprayed with a fast drying resin (Protekto-coat 1114NFP) on a metalled area at least 50 m from the stormwater drains.

Improvements made at the site include the construction of a roofed wash pad, the installation of a three-stage oil separator to collect and treat equipment washings, the connection of the wash pad to trade waste sewer, the installation of a large shipping container to house oils and chemicals, and the installation of a paint locker.

Due to elevated levels of copper being found in the stormwater discharged from the site, in April 2002 the Council investigated contaminant levels in soils on the site with samples taken from current and historical pipe storage areas and the gravelled pipe washing area. Although elevated levels of various metals were found in the samples, the concentrations met the relevant industrial guideline levels. Stormwater sampling continued to indicate that there was a significant source of heavy metals on site due to historical activities and two possible conclusions were identified:

- A 'hot spot' containing a higher concentration of heavy metals was missed during the soil sampling exercise.
- Because the original source of heavy metals was from an historical activity that
 occurred in excess of five years ago, the loose surface soils containing the major
 portion of the heavy metals have been washed from the active areas of the site and
 had been retained in the settlement pond.

It was considered at that time, that the second conclusion was the more probable scenario and the accumulated sediment and sludge was removed from the settlement pond. Council has continued to monitor for the presence of copper, lead and zinc in the site stormwater discharge.

A contingency plan for spillage response is in place for the site, with the most recent document received in August 2015.

11.1.2 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.

Tasman Oil holds water discharge permit **4812-2** to cover the discharge up to 112 L/s of stormwater including washdown water from a storage and maintenance yard for oil field drilling equipment into an unnamed tributary of the Mangati Stream. This permit was originally issued by the Council on 1 November 1995 under Section 87(e) of the RMA, and was renewed on 26 November 2001 and reviewed in August 2014. It is due to expire on 1 June 2020.

Conditions are attached in respect of concentration of stormwater components which include the 'standardised' conditions for pH, suspended solids and oil and grease, as well as for dissolved copper (0.05 g/m^3) , dissolved lead (0.2 g/m^3) and dissolved zinc (0.65 g/m^3) . Other conditions require notification to the Council if the yard wash pad is used more heavily than was anticipated at the time of the consent application, limit effects in the receiving water after reasonable mixing, require a contingency plan, and provide for opportunities for review of conditions.

In the 2011-2012 Mangati Catchment Annual report it was noted that the wording of condition 3 was ambiguous as it specified "one day per week", which could be interpreted as 24 hours during a given calendar week, rather than the intent of 8 hours within any 7 day period. The condition also did not specify that the notification should occur prior to this level of wash pad usage being undertaken. It was therefore considered that this consent condition should be clarified at the next opportunity, and a recommendation to this effect was attached to the report. The next scheduled review opportunity was in June 2014, and Tasman Oil was informed of the Council's intent to review the consent conditions on 23 June 2014. A review of the consent was undertaken in July 2014 and the reviewed consent was granted on 5 August 2014. The wording of condition 3 was changed to specify that 48 hours notice was required prior to use for periods in excess of eight hours in any seven day period.

The permit is attached to this report in Appendix I.

11.2 Results

11.2.1 Water

11.2.1.1 Inspections

Inspections were undertaken on 1 July and 5 August 2014, and 15 April and 18 May 2015.

The inspections focussed on treatment measures, the condition of the stormwater drains and general house keeping.

The site was found to be clean and tidy and well managed during all visits. Works had been carried out at the end of the previous monitoring period to reduce the amount of silt and sediment entering the settlement pond, and ultimately

discharging offsite. Additional improvements and modifications that could reduce silt and sediment further were discussed with the consent holder during inspections.

11.2.1.2 Results of discharge monitoring

The discharge from Tasman Oil's yard is monitored at up to two points before it reaches the Mangati Stream (Figure 2, sites 32 and 30). Other discharges contribute to the flow at the lower monitoring point (site 30). The primary monitoring site is at the discharge point from the skimmer pit (site 32). Samples of the discharge were collected on two occasions during the 2014-2015 monitoring period. The results for the period under review are given in Table 31, along with a summary of results for previous monitoring.

Table 31 Chemical monitoring results for Tasman Oil's stormwater discharge for 2014-2015 (site 32) with a summary of previous monitoring data. TRC site code STW001057

Date	Condy mS/m	CuAs g/m³	CuD g/m³	O&G g/m³	PbAs g/m³	pH pH	SS g/m³	Temp Deg.C	Turby NTU	ZnAs g/m³	ZnD g/m³
Consent limits	•	-	0.05	15	0.5	6-9	100	-	-	-	0.65
Number	41	33	29	42	33	41	41	41	23	33	29
Minimum	1.9	<0.01	<0.01	<0.5	<0.05	6.4	8	7.8	51	0.06	0.017
Maximum	19	0.4	0.09	600	0.29	8.2	620	22.6	570	1.18	0.56
Median	4.8	0.08	0.02	2.4	0.08	7.1	96	14.8	150	0.312	0.104
5-Sep-14(w)	8.2	0.12	0.02	a	0.05	7.4	43	12.3	130	0.309	0.088
18-Feb-15 (d)	b	b	b	b	b	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b	b	b	b	b
7-May-15 (w)	7.4	0.13	0.01	<0.5	< 0.05	7.2	140	17.1	150	0.311	0.065

Key:

Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
- (d) dry weather survey (w) wet weather survey

Copper, lead and zinc are monitored at this site because it was known that, historically, these heavy metals were present in the grease washed from the pipes. The wash water from this activity was discharged onto land and into the Mangati Stream via the interceptor pit. Although the grease currently used does not contain these elements, and the majority of the washdown wastes are directed to sewer, it has been identified that this practice has resulted in an elevated concentration of copper, lead and zinc in the soil on site.

The results for pH, oil and grease, dissolved copper, lead and zinc were within the consent limits.

The suspended solids exceeded the permitted concentration in one of the samples collected during the monitoring period. Under the conditions prevailing at the time of the survey, the suspended solids concentration had increased to 190 g/m^3 at the discharge point from the combined drain to the stream (MGT000495, where this site, Greymouth Petroleum and Vector discharges to the stream), although this was still higher than desirable, there were no adverse effects found in the stream.

Whilst an increase in suspended solids may be considered transient and therefore less than minor, particularly at times of high stream flow, the increases in suspended

solids may lead to an increase in the acid soluble metals concentrations in the stream (as discussed further in Section 20).

The dissolved copper and zinc concentrations were similar to or below the historical medians, as was the acid soluble zinc. Acid soluble copper concentrations were above the median value on both occasions however in this case it is noted that the sample taken on 5 September 2014 had a far lower level of suspended solids and generally lower levels of acid soluble metals would be expected as a result.

All subsequent sampling from this site were found to have compliant levels of suspended solids.

11.2.2 Investigations, interventions, and incidents

In the 2014-2015 period, the Council was not required to undertake significant additional investigations and interventions, or record incidents, in association with Tasman Oil's conditions in resource consents or provisions in Regional Plans.

11.3 Discussion

11.3.1 Discussion of site performance

Tasman Oil generally maintained a high level of housekeeping during the year under review and activities at the site in relation to chemical storage and use of the main wash pad (which is diverted to trade waste) were generally well managed.

Despite improvements to control the release of suspended solids having been carried out at the end of the previous monitoring period, suspended solids exceeded consent conditions on one occasion. The need for additional improvements and modifications that could reduce silt and sediment further were discussed with the consent holder during inspections. Subsequent sampling returned compliant results for all parameters.

According to condition 3 of Tasman Oil's consent, notification of yard blasting should have been received on one occasion during the period under review. It is recognised that the wording of this condition was ambiguous prior to review of the consent, however the and reviewed consent granted in August 2014 now makes the consent holders obligations very clear, Tasman Tools failed to make the first notification under the reviewed consent, however after being reminded of their obligations, all other wash pad usages were notified as required.

11.3.2 Environmental effects of exercise of consent

Although high suspended solids and turbidity were found in the discharge on one occasion, no elevation of these parameters was observed in the Mangati Stream, there were no significant adverse effects found as a result of the exercise of Tasman Oil's consent during the year under review. It is noted that there was also a (greater) contribution to the suspended solids and turbidity from the Greymouth Petroleum in the combined discharge at site MGT000495.

As the dissolved (immediately bioavailable) copper concentration of the Tasman Oil Tools discharge was at the permitted level on all sampling occasions during the period under review, and the concentration of this parameter remained low in the Mangati Stream, it is considered that there was no significant adverse effect occurring at the time of sampling.

11.3.3 Evaluation of performance

A tabular summary of Tasman Oil's compliance record for the year under review is set out in Table 32.

 Table 32
 Summary of performance for Tasman Oil's Consent 4812-2

Pur	Purpose: To discharge wash water and stormwater							
Co	ndition requirement	Means of monitoring during period under review	Compliance achieved?					
1.	Consent to be exercised in accordance with information submitted at application, and conditions of consent	Inspection and discussion with consent holder	Yes					
2.	Yard washing records to be kept and provided to Council on request	Records provided	Yes					
3.	Council to be notified if yard washing more than 8 hours in any 7 days	Wash log sent to Council	One of six wash pad usages not notified					
4.	Council to be advised in writing with assessment of effects prior to changes	Inspection and discussion with consent holder. No changes	Yes					
5.	Stormwater treatment system to be maintained satisfactorily	Inspection and discussion with consent holder	Yes					
6.	Limits on chemical composition of discharge	Sampling	Suspended solids exceeded in one sample					
7.	Discharge cannot cause specified adverse effects beyond mixing zone	Receiving water sampling	Yes					
8.	Maintenance of a contingency plan for action to be taken to prevent spillage	Plan last updated on August 2015	Yes					
9.	Optional review provision re environmental effects and notifications of changes (S.C.4)	Consent reviewed during monitoring period	N/A					
10.	Prohibition of wastes containing degreasers, solvents or surfactants	Inspection and discussion with consent holder. Observations at sampling	Yes					

Purpose: To discharge wash water and stormwater						
Condition requirement	Means of monitoring during period under review	Compliance achieved?				
Maintenance of stormwater management plan	Inspection and discussion with consent holder, and review of documentation on file	Plan received- needs updating				
Overall assessment of consent complia	Good					
Overall assessment of administrative p	Good					

N/A = not applicable or not assessed

Tasman Oil Tools demonstrated a good level of environmental performance and compliance with their resource consents and a good level of administrative performance as defined in Section 1.1.4.

11.3.4 Recommendation from the 2012-2014 Biennial Report

In the 2012-2014 Biennial Report, it was recommended:

THAT monitoring programmed for consented activities of Tasman Oil Tools Ltd in the 2014-2015 year continues at the level programmed for 2012-2014.

This recommendation was implemented during the 2014-2015 monitoring period.

11.3.5 Alterations to monitoring programmes for 2015-2016

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 the obligations of the RMA in terms of monitoring emissions/discharges and effects, and subsequently reporting 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 2015-2016 the monitoring programme remains unchanged. A recommendation to this effect is attached to this report.

11.4 Recommendation

THAT monitoring programmed for consented activities of Tasman Oil Tools Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.

12. Tegel Foods Ltd – feed mill

12.1 Introduction

12.1.1 Process description

The New Plymouth feed mill of Tegel Foods Ltd (Tegel) has been in operation on their 1.6 ha site on Paraite Road since 1968. Raw grain and supplements are processed into feed for central North Island divisions of the company. The plant operates 20 hours per day for five days per week. Thirteen staff are employed.

Raw materials are transported to the site by truck in bagged and bulk form, the largest component being various types of grain. Other raw materials are soft goods or feed supplements such as lime, meat and bone meals, broll, vitamins, and minerals. Liquids such as tallow, canola oil, or molasses are also used. The grain is ground and the meal is mixed and blended with various supplements and liquids according to requirements. The feed is then pelletised and bagged or stored in bulk, before being loaded onto trucks for dispatch.

Storage tanks for tallow (40 tonne), molasses (30 tonne), and canola oil (40 tonne) feed supplements are situated outside the mill. The "alimet" tank, in which the canola oil is stored, is situated within a bund. There is no bund around the tallow and molasses tanks owing to the high viscosity of the liquids. A dangerous goods store holds miscellaneous liquids such as weed sprays, paint and oils.

During the 2005-2006 year the site stormwater drainage system was modified and a diversion valve installed so that in the event of a spillage, or during washdown activities, the flow from the stormwater catchment could be directed to a wastewater holding tank. The contents of this tank are disposed of appropriately by waste contractors.

Major releases of dust to the atmosphere are controlled by treatment of airflows through cyclones, which separate the dust from the air. Other potential discharges arise from operations such as the discharge of raw materials from bulk trucks into tipping pits and the discharge of final product into dry tanks, from any potential spillage during storage, and from dust generation during processing and bagging.

A comprehensive contingency plan is in place for action to be taken in the event of liquid spills. The latest version of the plan was produced in December 2012. A dust management plan was forwarded to the Council on 27 June 2002, and was accepted as being satisfactory. Updated information on the emission abatement equipment at the site and management practices in place to prevent an accumulation of dust occurring in the stormwater catchment was provided to the Council in the 2012-2013 monitoring year, during the renewal of the stormwater consent 2335.

12.1.2 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.

Tegel hold water discharge permit **2335-4** to discharge stormwater from a stock/poultry feed manufacturing site to the NPDC stormwater drainage network. Permit 2335-1 was originally issued to NRM Feeds Ltd on 11 November 1987 as a water right pursuant to Section 21(3) of the *Water and Soil Conservation Act* 1967 for a period until 1 June 1996. The consent was transferred to Tegel on 9 November 1992 and has subsequently been renewed three times since, with the most recent one issued by the Council on 12 February 2014 under Section 87(e) of the RMA. It is due to expire on 1 June 2026.

Condition 1 requires the adoption of the best practicable option, and specifies that this requirement incorporates the requirement to ensure that the BOD of the discharge is as low as practically achievable.

Again, for the reasoning stated above, condition 2 limits the stormwater catchment area to 2 ha.

Condition 3 limits the constituent concentrations of the discharge while condition 4 prohibits adverse effects on the receiving waters downstream of the discharge.

Conditions 5 and 6 relate to improvements at the site. Condition 5 requires that the waste water is piped directly to the NPDC trade waste system rather than being stored on site in a large fibreglass tank, and condition 6 requires that the consent holder develops and documents a performance based improvement programme that is to be certified by the Council. Both of these requirements have a deadline for completion, and condition 7 requires that a performance report be provided to the Council by 1 July each year.

Conditions 8 and 9 relate to the provision of contingency and stormwater management plans, with the purpose of the plans being outlined above (ref consent 2335-3).

Again, to ensure that the potential for environmental effects from the exercise of the consent was consistent with the information provided to the reporting officer at the time the consent conditions were drafted, condition 10 requires written notification to the Council prior to changes at the site that may affect the nature of the discharge, and condition 11 provides opportunities for review of the consent.

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

12.1.3 Air discharge permit

Section 15(1)(c) of the RMA stipulates that no person may discharge any contaminant from any industrial or trade premises into air, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations.

Tegel holds air discharge permit **4038-6** to cover the discharge emissions into the air from the milling and blending of grain and/or animal meals together with associated activities. This permit was originally issued to NRM Feeds Ltd on 17 June 1992. It was transferred to Tegel Foods on 9 November 1992 and was renewed by the Council on 23 November 2001 under Section 87(e) of the RMA. It is due to expire on 1 June 2020.

Special conditions limit the discharge of dust (less than 125 mg/m³ normal temperature and pressure (NTP)), dust deposition rate beyond the boundary (less than $4.0 \text{ g/m}^2/30 \text{ days}$), and suspended particulate matter at or beyond the boundary (3 mg/m³). Conditions also address maintenance, operation, and control of, or alteration to the plant and processes, and require that Tegel keeps and makes available to Council, a record of any dust or smoke emission incidents, and provides and maintains a dust management plan.

The permit is attached to this report in Appendix I.

12.2 Results

12.2.1 Water

12.2.1.1 Inspections

The feed mill site was inspected on 1 July, 28 August, and 11 December 2014 and 13 April and 18 May 2015.

Inspections focussed on treatment measures, product tracking, potential sources of contamination, conditions of drains and general housekeeping.

The tracking of organic matter was found to be an issue during almost every inspection during the period under review. Although drains contained filter cloth that was regularly maintained the consent holder was asked to ensure that any tracking of organic matter from the sheds onto the yard was minimised as best as practicable.

During one inspection organic material from the extraction fan was observed to be accumulating on the roof of the building and also in the stormwater guttering. The consent holder was advised that this product should be removed to ensure that resource consent conditions were complied with at all times.

During the inspection of 11 December 2014 it was noted that the first flush diversion system was up and running, and that this was diverting the first flush of stormwater from the rear loading area to sewer.

During the period under review it was noted during inspections that Tegel Feedmills were leasing some of its storage sheds for the storage of palm kernel expeller (PKE). During the inspection of 18 May 2015 it was noted that PKE was being tracked around the site and it was outlined by Tegel staff a vacuum machine was being used remove palm kernel from the yard.

12.2.1.2 Results of discharge monitoring

Stormwater discharged from Tegel's feed mill is monitored at up to ten points before it reaches the Mangati Stream (Figure 2, sites, 8, 10, 14, 16, 19, 21, 22, 33, 37 and 38). The primary monitoring site (STW001015) is at a manhole over the stormwater drain at the northern entrance to the mill from Paraite Road (site 22). The site is not influenced by discharges from other sources. The results from chemical monitoring at that site are given in Table 33.

Samples were collected on three occasions during the monitoring period. The consent conditions for pH range (6-9) and oil and grease (15 g/m^3) were complied with on all monitoring occasions. The biochemical oxygen demand and suspended solids concentrations exceeded the permitted limits on 5 September 2014 and 7 May 2015. These were logged as unauthorised discharges and are discussed further in Section 12.2.3 below.

There were no numerical limits specified in the consent for any of the other parameters tested. However, these additional analyses were performed in order to monitor the overall quality of the discharge.

Table 33 Chemical monitoring results for Tegel's feed mill stormwater discharge for 2014-2015 (site 22) with a summary of previous monitoring data. TRC site code STW001015

Date	BOD g/m³	BODF g/m³	COD g/m ³	Condy mS/m	DRP g/m³-P	CI g/m³	NH ₃ g/m ³ -N	NH ₄ g/m ³ -N	O&G g/m³	рН	SS g/m³	Temp °C	Turby NTU
Consent limits	25	-	-	-	-	1		-	15	6-9	100	-	-
Number	37	30	52	59	36	-	47	48	47	58	61	55	22
Minimum	1.2	0.7	<5	2	0.008	-	0.00015	0.016	<0.5	6.5	14	8.6	3.9
Maximum	730	98	10500	1320	1.85	-	0.03016	5.34	990	7.9	8440	22.2	149
Median	33	9.4	88	13	0.293	-	0.00246	0.710	3.0	7.0	83	15.3	42
5-Sep-14 (w)	70	>28	160	18.4	0.526	1	0.00574	2.36	1.1	6.9	150	14.0	32
18-Feb-15 (d)	11	2.2	-	3550	0.028	15000	0.01408	1.31	<0.5	7.4	70	18.6	14
5-May-15 (d)	b	b	b	b	b	b	b	b	b	b	b	b	b
7-May-15 (w)	54	22	180	8.0	0.519	ı	0.00047	0.234	<0.5	6.7	120	17.5	59

Key:

Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b not discharging at time of sampling survey
- (d) dry weather survey (w) wet weather survey

Chemical oxygen demand (COD) analysis was performed to assess the relative organic strengths of the discharges. It was noted in the 2009-2011 Biennial Report that there had been an overall trend of increasing COD when looking at the results from the previous 11 years. During the 2011-2014 years it was found that the COD concentration appeared to have stabilised, with most of the results for that period being similar to the historical median. COD was relatively high during the 2014-2015 period in conjunction with high BOD's recorded on 5 September and 7 May. Incidents were logged as a result and Tegel provided an explanation and undertook preventive measures. At the time of preparation of this report these measures had been effective as all subsequent results have found to be compliant with consent conditions.

Dissolved reactive phosphorus and ammoniacal nitrogen are measured in order to monitor these nutrients in the discharge. Dissolved reactive phosphorus concentrations were relatively high in the samples collected on 5 September 2014 and 7 May 2015. Ammoniacal nitrogen values were also elevated in the September and February sample however the unionised ammonia levels were well below the $0.025 \, \text{g/m}^3$ RFWP guideline limit.

Incidents were logged as a result of the exceedances on 5 September 2014 and 7 May 2015 and an abatement notice was issued as a result of the persistent issues at the site.

During a dry weather survey, a trickle discharge of water in the stormwater network with a high level of chloride was traced back to the Tegel Feedmill. Due to the small volume of discharge no effects were anticipated, however Tegel was contacted and informed of the result. Investigations by Tegel staff found that salt water used to backflush the water softener filter for the boiler which was normally directed to sewer, was partially spilling onto the ground and potentially entering the stormwater system. Tegel instigated immediate temporary works to rectify the issue and has since installed permanent measures to ensure this waste stream is completely diverted to sewer.

12.2.2 Air

12.2.2.1 Inspections

The inspections focus on assessing the relevant emission sources to air particularly:

- the cyclonic dust extraction systems;
- the boiler and exhaust gas stack;
- general processing areas within the plant;
- raw and finished material storage areas (including the main silos);
- and conveyance system within the factory.

In addition to this any changes to the mill which could have an effect upon local air quality were also checked.

The feed mill site was inspected on 1 July, 14 July, 28 August 2014, 22 May and 19 June 2015.

The site was inspected in a variety of wind and weather conditions. During the period under review, no visible emissions were found from the emission abatement equipment, the processing buildings or the dry goods/grain storage sheds at any of the inspections. In most instances no issues were found regarding deposited dust either on or off site, and no off-site air borne dust or odours were detected.

A dust sample was taken from the cyclone discharge point on the roof on 14 July 2014, 22 May 2015 and 19 June 2015. The average concentrations of dust recorded were 10.2, 0.012, and 10.5 mg/m³ respectively. These indicative results were well within the 125 mg/m³ consent limit.

12.2.2.2 Deposition gauging

Many industries emit dust from various sources during operational periods. In order to assess the effects of the emitted dust, industries have been monitored using deposition gauges.

Deposition gauges are basically buckets elevated on a stand to about 1.6 m. The buckets have a solution in them to ensure that any dust that settles out of the air is not re-suspended by wind.

Gauges are placed a site and within the surrounding community. The gauges were left in place for 15 days.

Guideline values used by the Council for dust deposition are $4~g/m^2/30$ days or $0.13~g/m^2/day$ deposited matter. Consideration is given to the location of the industry and the sensitivity of the surrounding community, when assessing results against these values.

Deposition gauging was not undertaken during the period under review, this will next be monitored during the 2015-2016 monitoring period.



Figure 6 Location of Tegel's feed mill deposition gauges

12.2.3 Investigations, interventions, and incidents

In the 2014-2015 period, the Council was required to undertake significant additional investigations and interventions, or record incidents, in association with conditions in resource consents or provisions in Regional Plans.

9 July 2014

An abatement notice was issued to Tegel on 9 July 2014 as, despite frequent reminders from Council, Tegel had not submitted information required by conditions 6 and 9 of resource consent 2335-4. Condition 6 required details of a performance based improvement programme before 1 April 2014, while condition 9 required a stormwater management plan to be submitted by 28 February 2014. The abatement notice required that these be supplied by 31 July 2014. The information was subsequently received and approved by Council staff.

7 May 2015

An abatement notice was issued on 15 May 2015 after it was discovered that samples collected on 7 May 2015 during routine monitoring exceeded suspended solid and BOD limits. An abatement notice was issued as a result of this second noncompliance.

A meeting was held with the company and solutions to the problem were now being implemented. Re-inspection found the abatement notice was being complied with and it's noted that all subsequent sampling undertaken at this site have returned compliant results.

12.3 Discussion

12.3.1 Discussion of site performance

During the year under review, air discharges from the site were found to be well managed.

Tegel had ongoing issues with the tracking of organic matter around the site during the period under review. This was evident in the results of samples collected from the site which contained elevated levels of COD, ammonia, and DRP.

There were also non-compliances in regard to BOD and suspended solids in two of the three samples taken during the period under review.

A meeting was held with the company near the end of the monitoring period and solutions to the problem are now being implemented.

Council has subsequently sampled the stormwater discharge from the site on three occasions and all these samples were found to compliant with consent conditions.

In terms of administrative compliance with the stormwater consent, there was one non-compliance related to the provision of a performance based improvement plan. This was due by 1 April 2014, and although Tegel advised that there would be a delay in providing this report, it had still not been submitted by the end of the 2013-2014 monitoring period. This was resolved after an abatement notice was issued in July 2014, which Tegel complied with.

12.3.2 Environmental effects of exercise of consents

During the years under review there were no significant adverse environmental effects attributable to the exercise of the Tegel's stormwater or air discharge consents for activities at their feed mill site.

Although there were two exceedances of the BOD and suspended solids limits on the consent, under the particular circumstances prevailing at the time of the sampling survey, the level of contaminants had, for the most part, been assimilated within the reticulated stormwater network through dilution by stormwater from the other sites draining into the system, and would be further treated in the NPDC ponds.

It is also noted Council has subsequently sampled the stormwater discharge from the site on three occasions and all these samples were found to compliant with consent conditions.

12.3.3 Evaluation of performance

A tabular summary of Tegel's compliance record for the year under review is set out in Table 34 and Table 35.

 Table 34
 Summary of performance for Tegel's Consent 2335-4

Purpose: To discharge stormwater from a stock/poultry feed manufacturing site to NPDC's stormwater drainage network							
Condition requirement	Means of monito	oring during period under review	Compliance achieved?				
Adoption of best practicable minimise effects on the envir particularly with respect to Be	onment, Inspection and di	scussion with consent holder	Improvements required with regard to tracking of organic materia				
2. Limits stormwater catchment	area Inspections		Yes				
Limits on chemical compositi discharge	on of Not assessed du	ring time this consent in force	No. BOD and SS exceeded in 2/4 sampling visits				
Discharge cannot cause spe adverse effects beyond mixir		sampling	Yes				
Waste water tank to be replatrade waste connection by 30 November 2014	ced with Installation comp	lete	Yes				
Provision of performance base improvement programme by 2014		14	Yes-but received late				
7. Performance report to be pro	Received July 20	14	Yes- received late				
Maintenance of a contingence for action to be taken to prev spillage		14 (incorporated into Stormwater n)	Yes				
Prepare and maintain storms management plan	vater Received July 20	14	Yes				
Written notification required rechanges to activities at the signal.		of PKE being stored on site	Yes				
Optional review provision re environmental effects and notifications of changes (S.C.)		for review June 2017	N/A				
Overall assessment of consent co	ompliance and environmental	performance in respect of this consen	t Improvement required				
Overall assessment of administra	itive performance in respect o	f this consent	Good				

 Table 35
 Summary of performance for Tegel's Consent 4038-6

Condition requirement Means of monitoring during period under review						
Adoption of best practicable option to prevent or minimise effects on the environment	Inspection and discussion with consent holder. Investigation of complaint	Yes				
No alterations that might change the nature/quantity of discharge without prior consultation with Council	Council notified of PKE being stored on site	Yes				
Maintenance of plan to prevent accumulation of dust in stormwater catchment	Inspection and discussion with consent holder	Yes				
Limit on point source particulate emissions (125 mg/m³)	Discharge monitoring at inspection	Yes				
Limit on dust deposition beyond boundary (4.0 mg/m²/day)	Not assessed during period under review	N/A				
Limit on boundary suspended particulates (3 mg/m³)	Inspection and dust monitoring	Yes				
7. Keep, and make available, records of all dust and smoke incidents	Inspection of records and discussion with consent holder	Yes				
Clearance of accumulated dust	Inspection	Yes				
Optional review provision re environmental effects	No further provision for review prior to expiry	N/A				
Overall assessment of consent compliance and environmental performance in respect of this consent						
Overall assessment of administrative perfor	mance in respect of this consent	High				

During the year, the Tegel Foods Ltd (feed mill) demonstrated a good level of administrative performance. However an improvement was required in Tegel's level of environmental performance and compliance with their resource consents as defined in Section 1.1.4. During the period under review there were two non compliances in regard to the level of BOD in the concentrations in the stormwater discharges and there were product tracking issues noted at the site.

12.3.4 Recommendations from the 2012-2014 Biennial Report

In the 2012-2014 Biennial Report, it was recommended:

THAT monitoring programmed for consented activities of Tegel Foods Ltd (feed mill) in the 2014-2015 year continues at the level programmed for 2012-2014.

This recommendation was implemented during the 2014-2015 monitoring period.

12.3.5 Alterations to monitoring programmes for 2014-2015

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 the obligations of the RMA in terms of monitoring emissions/discharges and effects, and subsequently reporting 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 2015-2016 the programme remains unchanged, including the triennially scheduled deposition gauge survey at four sites in the vicinity of the feed mill that is due to be undertaken during 2015-2016. A recommendation to this effect is attached to this report.

12.4 Recommendation

THAT monitoring programmed for consented activities of Tegel Foods Ltd (feed mill) in the 2015-2016 year continues at the level programmed for 2014-2015. This includes a triennially scheduled deposition gauge survey at four sites in the vicinity of the feed mill.

13. Tegel Foods Ltd – poultry processing plant

13.1 Introduction

13.1.1 Process description

Tegel Foods Ltd (Tegel) operates a poultry processing plant on Paraite Road in the south-east corner of the Bell Block industrial area. The plant processes, on average, 65,000 birds per day, but has the capacity to process 85,000 per day.

Poultry are delivered in plastic crates to the hanging area where they are hung on a chain line, in a semi-enclosed area under a roof with two exhaust fans discharging to the atmosphere. Slaughter is accomplished via stunning and bleeding, and then the carcasses are scalded and plucked. The chickens then enter a primary processing stage where they are prepared to a 'dressed' stage prior to secondary processing or alternatively chilling and dispatch as whole chickens. The refrigeration system in place utilises ammonia as a coolant replacing a carbon dioxide based system. Primary and secondary processed chickens are chilled and frozen on site before being moved off site for storage.

All materials to be rendered, including feathers, are transferred by screw conveyer into trucks and removed off site to Taranaki By-Products Ltd for further processing. Blood is pumped to a holding tank prior to discharge.

Wastewaters such as cooling water, blowdown, and process water, along with truck wash water are directed to trade waste sewer. Modifications have been made to divert runoff from the live bird reception area and yard to the trade waste system also. Areas with potential for spillage of chemicals have been bunded. Spill containment equipment is on site.

Stormwater from a developed area of 1.7 ha discharges to the Mangati catchment at two points. Drainage from most of the site flows to a small wetland on the southern side of the plant that feeds into the Mangati Stream. Drainage from the relatively small remainder, including the car park and part of the load-out area in the north western area of the site, flows into the New Plymouth District Council (NPDC) De Havilland Drive stormwater drain.

Major construction activities occurred at the site during the 2002-2003 monitoring period. In large, upgrades have been driven by the relocation of processing activities from the Te Horo region to the New Plymouth site. New structures included a new crate wash, concreting in the area around the ammonia plant, and 5,000 m² of roofing, which covers the bird reception area, renderable waste storage area, and areas that flowed to both the stormwater and trade waste catchments. A new chlorinated water tank has been installed within a bunded area that drains to trade waste.

Additional expansions at the site have also included a new cool store and load out area, and a sausage plant.

Contingency plans in place for the site included a contingency plan in case of spillage, a contingency plan for burial to land, and a contingency plan for discharge to air.

13.1.2 Water abstraction permit

Section 14 of the RMA stipulates that no person may take, use, dam or divert any water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or it falls within some particular categories set out in Section 14.

Tegel holds water permit **6357-1** to cover the take and use of groundwater from a bore for food processing and washdown purposes. This permit was issued by the Council on 20 May 2005 under Section 87(d) of the RMA. It is due to expire on 1 June 2038.

The consent conditions limit the daily abstraction volume, rate of abstraction, and water level in the bore, set out monitoring, record keeping and reporting requirements, and provide for lapsing and review of the consent.

Condition 7 specified a lapse date of 20 May 2010. A varied consent, with a new lapse date of 20 May 2015, was issued on 31 March 2010. This was again varied on 17 April 2015 to change the lapse date to 20 May 2020. In both instances this was the only change made to the conditions of the consent.

The permit is attached to this report in Appendix I.

13.1.3 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.

Water discharge permit **3470-4** to discharge stormwater from a poultry processing plant site to the NPDC drainage network was originally issued by the Council on 18 April 1990, with the renewed version granted on 23 December 2013 under Section 87(e) of the RMA. It is due to expire on 1 June 2026.

Condition 1 requires the adoption of the best practicable option, while condition 2 limits the stormwater catchment area to 1.4 ha.

Condition 3 limits the constituent concentrations of the discharge, and condition 4 prohibits specific effects in the Mangati Stream beyond the mixing zone of 20 metres.

Condition 5 required the provision of an accurate stormwater network analysis to be provided before 28 February 2014, to allow the stormwater flow paths to be determined and management practices to be put in place to ensure that the quality of the stormwater discharging from the site, without the benefit of treatment through the sites wetland, can be managed effectively.

Conditions 6 and 7 relate to the provision of contingency and stormwater management plans.

Condition 8 requires written notification to Council prior to changes at the site that may affect the nature of the discharge, and condition 9 provides opportunities for review of the consent.

Tegel also holds water discharge permit **7389-1** to cover the discharge stormwater from a poultry processing plant via a wetland into the Mangati Stream. This permit was issued by the Council on 30 March 2009 under Section 87(e) of the RMA. It was reviewed in July 2012 and is due to expire on 1 June 2026.

Condition 1 requires the adoption of the best practicable option.

Condition 2 limits the stormwater catchment area to 2.6 ha.

Conditions 3 and 4 specify that the stormwater must be treated to ensure compliance with the conditions of the consent and require that all hazardous substances stored in the stormwater catchment are bunded.

Condition 5 limits the constituent concentrations of the discharge.

Conditions 6 and 7 prohibit specified effects in the Mangati Stream.

Conditions 8 and 9 ensure that the wetland treatment system is managed and maintained to in such a way as to achieve continued effective treatment performance, and to enhance the riparian margins of the wetland and the Mangati Stream along the site boundary.

Conditions 10 and 11 relate to the provision of contingency and stormwater management plans aimed at minimising the concentrations of contaminants in the discharge.

Condition 12 requires written notification to Council prior to changes at the site which may affect the nature of the discharge, and condition 13 provides opportunities for review of the consent.

These permits are attached to this report in Appendix I.

13.1.4 Air discharge permit

Section 15(1)(c) of the RMA stipulates that no person may discharge any contaminant from any industrial or trade premises into air, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations.

Tegel holds air discharge permit **4026-3** to discharge emissions into the air from the processing of animal matter and associated processes. This permit was originally issued by the Council on 6 December 1995 under Section 87(e) of the RMA. Variations were granted on 10 February 1997 and 10 November 1999. The renewed consent was granted on 16 June 2014 and is due to expire on 1 June 2032.

Conditions 1 and 3 require the 'best practicable option' to be adopted to prevent or minimise effects, and prohibit objectionable or offensive off site odours.

Condition 2 requires approval from the Council prior to making any changes that significantly alter the emissions from the site.

Condition 4 prohibits blood and offal from being discharged to the waste water pond.

Conditions 5 and 6 require maintenance of a contingency plan and operation in accordance with an 'Operations and Maintenance plan'.

Condition 7 contains provisions for review of the conditions of the consent.

The permits are attached to this report in Appendix I.

13.1.5 Discharges of wastes to land

Sections 15(1)(b) and (d) of the RMA stipulate that no person may discharge any contaminant onto land if it may then enter water, or from any industrial or trade premises onto land under any circumstances, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations.

Tegel hold discharge permit **5494-2** to discharge poultry processing wastes by burial into land in the vicinity of the Mangati Stream in emergency circumstances only. This permit was originally issued by the Council on 20 December 1999 under Section 87(e) of the RMA, expiring on 1 June 2014. The renewed consent was granted on 24 October 2014 and is due to expire on 1 June 2032.

Conditions 1 and 2 require confirmation from Council that it is in fact an emergency situation and that there are no alternatives.

Condition 3 deals with best practicable option to prevent or minimise adverse effects.

Conditions 4 to 6 relate to burial trenches and disposal details.

Condition 7 requires the consent holder to maintain and regularly update a 'Burial Management Plan'.

Conditions 8 and 9 deal with lapse and review of the consent.

The permit is attached to this report in Appendix I.

13.2 Results

13.2.1 Water

13.2.1.1 Reporting on exercise of groundwater abstraction consent

It was confirmed by Tegel that the groundwater bore had been capped and that abstraction consent 6357 was not exercised during the 2014-2015 monitoring period.

13.2.1.2 Inspections

Inspections of the site concentrated on the loading areas, particularly the live bird reception area, the truck wash area, the wastewater treatment plant, chemical storage, the dispatch area, and the drainage systems for trade waste and stormwater.

Inspections occurred on 1 July, 28 August, and 11 December 2014, and 4 May and 16 June 2015. The site was found to be generally clean and tidy and well managed, however there were a few ongoing issues noted during inspections.

The inspecting officer observed that the discharge was tracking through the wetland via a single path, rather than dispersing evenly for maximum treatment as is the intention of a wetland. The consent holder modified the discharge point in an attempt to disperse the flow, however this was unsuccessful. The final wetland discharge was noted as being clear in inspections.

On several occasions organic material such as sludge and feathers was observed around the area where the cleaned bird cages are stored. These products were tracking to the stormwater drain. A drain warden was in place over the drain however worms and other organisms were present within the material suggesting that the drain was a good source of nutrient supply and that the drain may not have been cleaned for some time. The inspecting officer noted during each inspection that this drain and surrounding area should be cleaned and maintained however this was not undertaken until near the end of the monitoring period, with the final inspection noting the area as being clean and tidy. All discharges from this area are now being permanently diverted to sewer.

The guttering used to capture wastewater leaking from the building on the north western side of the site was observed to be failing in some places. The consent holder advised that they were in the process of installing drip trays below some pipework where condensation was occurring. These works have now been completed.

13.2.1.3 Results of discharge monitoring

During the years under review the stormwater discharges from Tegel's poultry plant was monitored at a total of six points (sites 2, 27, 29, 41, 42, and 43).

Two points relate to discharges from the combined stormwater drain from their site to their wetland, one (site 27, TRC site code STW001053) at the stormwater drain outlet above the wetland, and one (site 2, TRC site code MGT000489) where the flow from their wetland enters the Mangati Stream. Site MGT000489 is the designated sampling point for the discharge in relation to assessing compliance with the component concentrations in the discharge. Site STW001053 is sampled in order to ensure that the contaminants present in the discharge will not result in significant adverse effects in the wetland, and to assess the performance of the wetland. The results from chemical monitoring of the discharge to the wetland and from the wetland itself are given in Table 36 and Table 37 respectively.

There are also four monitoring points that relate to the stormwater discharges from the northern area of the site to the Mangati Stream via the NPDC stormwater network that services De Havilland Drive. Monitoring site 29 (TRC site code STW001054) is at the piped stormwater outlet to the Mangati Stream at the De Havilland Drive road bridge on the true left bank of the stream. This site is influenced by discharges from several other sources.

The sample results are presented in Table 17 and discussed in Section 7.2.1.2. High BOD's and material consistent in appearance to chicken fat have been observed at

this sampling site in the past. Although Tegel was the most obvious potential source of these contaminants, monitoring had not been geared towards positively isolating the discharges from the poultry processing plant. During the renewal of consent 3470 in the 2008-2009 year it was identified that the poultry processing plant discharge via this point may not be of the desired quality, and it was therefore proposed that additional sampling sites be identified and monitored to assist Tegel in identifying and controlling contaminants in preparation for the anticipated renewal of the short term consent.

Three new monitoring sites were identified and have been sampled since the 2009-2011 years. Site 41 (TRC site code STW001130, site 42 (TRC site code STW001129) and site 42 (TRC site code STW001128) are stormwater discharged from different subcatchments within the Tegel poultry processing plant. This monitoring found that these discharges were not compliant with the stormwater permitted activity rule in the RFWP (Rule 23, see Appendix IV), and therefore is now covered by consent 3470. The results of the monitoring of these sites are presented in Table 38, Table 39 and Table 40 respectively.

Consent 7389 - treated stormwater discharge via wetland

Three samples were collected at site STW001053 during the monitoring period under review. These results are given in Table 36 along with a summary of all data from the site.

The discharge from the plant to the wetland was observed to already be within the consent limits given by consent 7389 for unionised ammonia and BOD on all three monitoring occasions.

Table 36 Chemical monitoring results for Tegel's poultry processing plant lower stormwater discharge to Mangati Stream tributary (wetland) for 2014-2015 (site 27), with a summary of previous monitoring data. TRC site code STW001053

Date	BOD g/m³	COD g/m³	Condy mS/m	DRP g/m³-P	NH ₃ g/m ³ -N	NH ₄ g/m³-N	O&G g/m³	pH pH	SS g/m³	Temp °C	Turby NTU
Consent limits	15	-	-	-	0.025	-	-	6-9	100	-	-
Number	53	26	56	55	54	55	42	57	56	56	23
Minimum	<0.5	12	1.6	0.049	0.00015	0.109	<0.5	6.6	<2	9.7	3.1
Maximum	96	29 0	142	23.9	0.99937	5.3	68	9.9	400	27.2	140
Median	10.0	40	13.7	0.282	0.00628	0.77	1.0	7.4	38	14.6	35
5-Sep-14 (w)	11	34	7.2	0.269	0.00961	0.908	а	7.6	6.1	12.2	82
18-Feb-15 (d)	11	18	19.2	0.077	0.00712	0.189	-	8.0	2.0	17.2	1.9
5-May-15 (d)	b	b	b	b	b	b	b	b	b	b	b
7-May-15 (w)	9.2	43	7.3	0.229	0.01944	0.410	а	8.1	74	17.3	60

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
 - b not discharging at time of sampling survey
 - (d) dry weather survey (w) wet weather survey

Four samples were taken of the discharge from the wetland to the stream. This monitoring location is considered to be the discharge point when assessing compliance with the component concentrations given on the consent. These results are given in Table 37 along with a summary of all data from the site.

Table 37 Chemical monitoring results for stormwater discharge to Mangati Stream from wetland receiving stormwater from Tegel's poultry processing for 2014-2015 (site 2), with a summary of previous monitoring data. TRC site code MGT000489

Date	BOD g/m³	BODCF g/m ³	Condy mS/m	DO g/m³	DRP g/m³-P	NH ₃ g/m ³ -N	NH ₄ g/m ³ -N	рН	SS g/m³	Temp °C	Turby NTU
Consent limits	15		-	-	-	0.025	-	6-9	100	-	-
Number	75	7	77	71	75	74	75	76	75	76	34
Minimum	< 0.5	<0.5	7.4	0.4	<0.003	0.00002	0.018	6.2	2	9.6	1.2
Maximum	73	1.0	39.4	8.7	0.214	0.00725	5.44	7.0	260	20.6	120
Median	2.0	0.6	17.6	5.1	0.014	0.00040	0.25	6.6	14	14.8	13
5-Sep-14 (w)	7.6	-	17.0	6.9	0.039	0.00328	0.762	7.2	40	12.4	41
18-Feb-15 (d)	2.0	0.6	19.9	3.9	0.063	0.00302	0.989	7.0	8	14.0	7.3
5-May-15 (d)	1.4	0.5	1.4	4.3	0.038	0.00061	0.633	6.5	9	14.0	12
7-May-15 (w)	7.2	-	7.2	7.3	0.100	0.00136	0.569	6.8	46	16.9	42

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b not discharging at time of sampling survey
- (d) dry weather survey (w) wet weather survey

Consent 7389, specifically covering only the discharge to the Mangati Stream via the wetland, was issued on 30 March 2009. Samples collected prior to this date (i.e. the majority of the historical data) were compared against the conditions of consent 3470, which covered the discharges from the site prior to the issuing of consent 7389. The pH range, suspended solids and oil and grease limits included in consent 3470 were not included in consent 7389, but were reinstated in the reviewed consent that was issued on 30 July 2012.

The discharge was not analysed for oil and grease as there was no hydrocarbon sheen or odour detected in the discharge sample during any of the surveys.

The BOD of two of the four samples collected during the years under review exceeded the median calculated from previous results for this monitoring site. However all the BOD concentrations were found to be well below the consented limit.

All of the ammoniacal nitrogen results were above the historical median value for this monitoring site. However, the unionised ammonia concentration of the discharge was well below that permitted by the consent on all monitoring occasions during the period under review.

A comparison between the median values for the discharge from the plant to wetland and the discharge from wetland to stream show the benefits of the wetland treatment system for this type of discharge. The median values show that the solids content and organic strength of the stormwater are significantly reduced by the wetland. However, it is noted that the dissolved oxygen content of the discharge is frequently quite low.

Consent 3470 – untreated stormwater discharges via De Havilland Drive

Site 41 (TRC site code STW001130) collects stormwater predominantly from the paved areas around the deboning building in the north western corner of the site. This site was visited on four occasions, however it was only discharging on one of those occasions. These results are given in Table 38 along with a summary of all data from the site.

However, the stormwater drainage plan shows that there are connections in the stormwater drainage pipes that, under heavy rainfall conditions, may allow stormwater from the central northern and southern parts of the site to discharge via this monitoring location, through a connection underneath the nurses' clinic. The stormwater sample collected from this monitoring location complied with the BOD, oil and grease, pH and suspended solids limits of the consent.

Table 38 Chemical monitoring results for Tegel's poultry processing plant stormwater discharge for 2014-2015 (site 41), TRC site code STW001130

Date	BOD g/m³	Condy mS/m	DRP g/m³-P	NH ₃ g/m ³ -N	NH ₄ g/m ³ -N	O & G g/m ³	рН	SS g/m³	Temp °C	Turby NTU
Consent Limit	15	-	-	-	-	15	6-9	100	-	-
Number	9	9	7	9	9	4	9	9	9	9
Minimum	5.1	2.6	0.170	0.00013	0.035	<0.5	6.9	6	8.2	3.6
Maximum	28	14.2	0.600	0.00382	0.964	2.3	7.4	470	19.9	180
Median	15	4.0	0.319	0.00071	0.175	0.7	7.2	58	15.2	48
5-Sep-14 (w)	b	b	b	b	b	b	b	b	b	b
18-Feb-15 (d)	b	b	b	b	b	b	b	b	b	b
5-May-15 (d)	С	С	С	С	С	С	С	С	С	С
7-May-15 (w)	3.3	3.5	0.077	0.00101	0.257	а	7.0	12	17.4	8.1

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b not discharging at time of sampling survey
- c manhole not accessible
- (d) dry weather survey (w) wet weather survey

Stormwater in the northern area of the site, west of the cool stores discharges via site 42 (TRC site code STW001129). However, the stormwater drainage plan shows that there are connections in the stormwater drainage pipes that, under heavy rainfall conditions, may allow stormwater from the north western and southern parts of the site to discharge through this monitoring location.

Table 39 Chemical monitoring results for Tegel's poultry processing plant stormwater discharge for 2014-2015 (site 42), TRC site code STW001129

Date	BOD g/m³	Condy mS/m	DRP g/m³-P	NH ₃ g/m ³ -N	NH ₄ g/m ³ -N	O & G g/m ³	рН	SS g/m³	Temp °C	Turby NTU
Consent Limit	15	-	-	-	-	15	6-9	100	-	-
Number	11	11	9	11	11	5	11	11	11	11
Minimum	<0.5	1.1	0.016	0.00006	0.041	<0.5	6.6	<2	8.6	0.59
Maximum	160	28.8	4.24	0.24637	20	9.2	8.3	700	20.1	220
Median	2.8	3.6	0.076	0.00106	0.241	< 0.5	7.2	5	15.1	5.8
5-Sep-14 (w)	4.5	2.7	0.053	0.01134	1.45	0.6	7.4	3	14.3	0.91
18-Feb-15 (d)	10	21.2	1.04	0.13339	6.90	<0.5	7.6	5	20.4	2.4
7-May-15	4.9	5.0	0.158	0.00100	0.161	а	7.2	37	17.4	20

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
- c manhole not accessible
- (d) dry weather survey (w) wet weather survey

The stormwater samples collected from this monitoring location complied with the BOD, oil and grease, pH and suspended solids limits on all monitoring occasions.

It is noted that (as in the previous monitoring period) there were discharges occurring during a dry weather survey (18 February 2015). As the consent permits only stormwater discharges, these were not covered by Tegel's resource consent. At the time of sampling the flows were estimated to be low at approximately 200 mL/min.

In this sample the unionised ammonia concentration of this unconsented discharge was around five times that permitted by the RFWP. It is noted that the unionised ammonia concentration at the point of discharge to the stream (STW001054, Table 17) was low at 0.00005 g/m^3 which was much lower the RFWP permitted activity rule limit of 0.025 g/m^3 .

Tegel has continued to implement works to track down and minimise fugitive low flow discharges. Works have been undertaken on the diversion of condensate and run off from areas with potential contamination.

Stormwater from the north eastern corner of the site, east of the loadout area discharges via site 43 (TRC site code STW001128). Two samples were collected from this monitoring location during the period under review. Both samples complied with all of the component concentration limits imposed by consent 3470.

Table 40 Chemical monitoring results for Tegel's poultry processing plant stormwater discharge for 2014-2015 (site 43), TRC site code STW001128

Date	BOD g/m³	Condy mS/m	DRP g/m³-P	NH ₃ g/m ³ -N	NH ₄ g/m³-N	O & G g/m ³	рН	SS g/m³	Temp °C	Turby NTU
Consent Limit	15	-	-	-	-	15	6-9	100	-	-
Number	9	9	7	9	9	2	9	9	9	8
Minimum	1.2	1.9	0.029	0.00018	0.035	0.7	7.2	6	8.3	1.2
Maximum	41.0	90.0	5.39	1.33121	42.6	0.9	8.3	51	20.8	18
Median	2.6	3.8	0.072	0.00128	0.117	0.8	7.5	14	15.0	10
5-Sep-14 (w)	1.3	18.2	0.234	0.00156	0.099	а	7.7	23	14.5	9.2
18-Feb-15 (d)	b	b	b	b	b	b	b	b	b	b
5-May-15 (d)	С	С	С	С	С	С	С	С	С	С
7-May-15 (w)	2.0	4.4	0.078	0.00091	0.148	а	7.2	7	17.3	3.3

Key:

Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
- c manhole not accessible
- (d) dry weather survey (w) wet weather survey

13.2.2 Air

13.2.2.1 Inspections

Inspections focused on the areas associated with the following potential emissions:

- Combustion products from the two units within the boiler house.
- Ammonia, which is used as a refrigerant, is circulated through pipes under vacuum. Contamination with small amounts of air requires purging of the system releasing small quantities of ammonia. The odour is not noticeable more than ten metres from the purge outlet.
- Heat and water vapour discharged to the atmosphere from the cooling units onsite, including evaporative towers and oil coolers.
- Dust (during summer) and odours may be discharged from the area of the plant where the birds are received and slaughtered. These effects are not usually discernible off-site.
- Odours from the offal and blood storage areas.
- Odours from the effluent system. The effluent passes through a milliscreen to separate out solids, then a Dissolved Air Flotation (DAF) treatment unit to aerate the wastewater and remove fats. The rate of discharge of wastewater to the sewage system is maintained at a constant 10 L/s during the day, with the remainder of the wastewater being stored in a holding pond, to enable the entire flow of wastewater to be directed to the sewage system if any contingency event should make this necessary.

Routine compliance monitoring inspections were undertaken on 1 July, 28 August, and 11 December 2014, and 4 May and 16 June 2015.

During routine compliance monitoring inspections no issues were noted regarding the management of the blood, offal or feathers at the site, with the exception of finding a localised onsite odours in the vicinity of the dissolved air filtration plant (DAF plant) on 4 May 2015. While these odours were confined to the site at the time

of the survey it was considered that they had the potential to affect neighbours if current processes were not maintained.

13.2.3 Exercise of discharge to land consent

It was confirmed that no discharges to land occurred during the 2014-2015 monitoring years.

13.2.4 Investigations, interventions, and incidents

In the 2014-2015 period, the Council was required to record incidents, in association with Tegel's conditions in resource consents or provisions in Regional Plans on four occasions.

13.2.4.1 Land/water

4 May 2015

On 4 May 2015 during routine monitoring, it was found that organic matter in and around the bird cage storage area was discharging into a stormwater drain. Tegel staff were advised of the untidy drain and likely discharge, and action was taken to immediately clean up the organic matter. A letter of explanation from Tegel was received and accepted. Works have been undertaken to divert the stormwater drain to a sump and pump all discharges to sewer. There were no environmental effects observed downstream.

13.2.4.2 Air

5 January 2015

On 5 January 2015 a complaint was received regarding odours emanating from the plant. The complainant stated that the odours had been occurring for some days prior to a complaint being made. No odours were noted during an inspection of the site, however Tegel agreed to follow up the complaint with their own investigation.

13 January 2015

A complaint was received on 13 January 2015 from a nearby neighbour regarding poultry processing odours. A subsequent inspection found slight odours at the complainant's property and Tegel staff agreed to check their systems and discuss the issue with the complainant.

3 March 2015

A complaint was received on 3 March 2015 regarding odours from the site, with a further anonymous complaint received shortly after the first one. No odours were noted when Council staff visited the site. However further investigation by Tegel found that the odours had occurred during the loading of rancid sludge from the waste water treatment plant onto trucks for disposal.

13.3 Discussion

13.3.1 Discussion of site performance

At inspection, chemical storage and the wastewater pond were found to be well managed throughout the year under review. No issues were raised in relation to the historical emergency burial areas, or the management of the solid waste and pet food bins. There was one issue in regards to potential sources of contamination draining to stormwater and this was rectified by diverting the run-off to sewer.

Discharge monitoring found that the discharge from the wetland to the Mangati Stream complied with the conditions of Tegel's consent. It is however noted that the previous trend of declining water quality of the stormwater directed to the wetland in relation to chemical and biochemical oxygen demand may have continued. Whilst it is accepted that this is in the stormwater prior to the wetland and not at the discharge point specified in the consent, the wetland is itself a natural receiving waterbody within the mixing zone that Tegel has enhanced to polish the site stormwater discharge. As such, it is desirable that the concentration of contaminants in the stormwater leaving the active area of the site, is minimised by good management practices on site.

During the period under review, discharges were found to both the wetland and to the stream via the De Havilland Drive stormwater, during dry weather surveys.

There was one water related incident recorded as a result of findings during sampling and inspection that were associated with, or likely to have been associated with unconsented wastewater discharges going to stormwater. There was one discharge found to the stormwater system during dry weather sampling which breached the RFWP and Tegel undertook works to identify and divert the source. No effects were noted form this discharge.

No objectionable or offensive odours were found beyond the boundary. During the period under review there were three odour complaints received by the Council none of which could be substantiated.

13.3.2 Environmental effects of exercise of consents

Monitoring of the NPDC network discharges, Tegel's wetland discharges and receiving waters indicate that in combination with other discharges Tegel's activities had no effects on receiving water that was more than minor.

Three odour complaints were received by the Council, none of which were substantiated.

13.3.3 Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Table 41, Table 42, Table 43, Table 44 and Table 45.

 Table 41
 Summary of performance for Tegel's Consent 6357-1

		om a bore for food processing and washdown purposes	Compliance	
Col	ndition requirement	Means of monitoring during period under review	achieved?	
1.	Consent to be exercised in accordance with application information	Consent not exercised during period under review	N/A	
2.	Limit on abstraction rate: 3000m³/day and 35 L/s	Consent not exercised during period under review	N/A	
3.	Water level to be maintained above 35 m below ground level at all times	Consent not exercised during period under review	N/A	
4.	Record of date pumping hours and daily volume abstracted to be kept and provided to council upon request	Consent not exercised during period under review	N/A	
5.	Water meter to be installed and maintained	Not monitored. Tegel advised that they had no immediate plans to utilise the bore	N/A	
6.	Consent holder to meet reasonable costs associate with monitoring	Combined monitoring programme in place	Yes	
7.	Provision for consent to lapse if not exercised	Lapse date extended to 20 May 2020, if not exercised prior	N/A	
8.	Optional review provision re environmental effects	Next opportunity for review June 2020	N/A	
Ove	erall assessment of consent compliance a	and environmental performance in respect of this consent	N/A	
Ov	erall assessment of administrative perfori	mance in respect of this consent	N/A	

 Table 42
 Summary of performance for Tegel's Consent 3470-4

Pu	rpose: To discharge stormwater from	a poultry processing plant site to NPDC's drainage no	etwork
Co	ndition requirement	Means of monitoring during period under review	Compliance achieved?
1.	Adoption of best practicable option to minimise effects on the environment, particularly with respect to BOD	Inspection and discussion with consent holder	Minor non- stormwater flow entering system. No adverse environmental effects.
2.	Limits stormwater catchment area	Inspection	Yes
3.	Limits on chemical composition of discharge	Sampling and analysis of discharges. Total of 3 samples	Yes
4.	Discharge cannot cause specified adverse effects beyond mixing zone	Receiving water sampling	Yes
5.	Provision of stormwater network analysis by 28 February 2014	Review of documents provided July 2014	Yes

Pu	rpose: To discharge stormwater from	a poultry processing plant site to NPDC's drainage ne	etwork
Co	ndition requirement	Means of monitoring during period under review	Compliance achieved?
6.	Maintenance of contingency plan	Review of documents provided. Reviewed plan provided August 2014	Yes
7.	Maintenance of stormwater management plan	Review of documents provided. Reviewed plan provided August 2014	Yes
8.	Written notification required regarding changes to activities at the site	Inspection and discussion with consent holder. No changes occurred which may alter nature of discharge	N/A
9.	Optional review provision re environmental effects and notifications of changes (S.C.9)	Next opportunity for review June 2017	N/A
Ov	erall assessment of consent compliance	Good	
Ov	erall assessment of administrative perfor	mance in respect of this consent	High

 Table 43
 Summary of performance for Tegel's Consent 7389-1

Pu	rpose: To discharge stormwater from	a poultry processing plant via a wetland into the Mang	ati Stream
Co	ndition requirement	Means of monitoring during period under review	Compliance achieved?
1.	Adoption of best practicable option to minimise effects on the environment	Inspection and discussion with consent holder	Minor non- stormwater flow entering system. No adverse environmental effects
2.	Limits stormwater catchment area	Inspection	Yes
3.	All stormwater directed through treatment system (wetland), and wetland to be maintained to ensure effective treatment	Inspection and discussion with consent holder	Yes
4.	Above ground hazardous substance storage to be bunded and not to drain directly to stormwater catchment	Inspection and discussion with consent holder	Yes
5.	Limits on chemical composition of discharge	Sampling and analysis of discharges	Yes
6.	Discharge cannot cause specified adverse effects beyond mixing zone	Receiving water sampling	Yes
7.	Limit on filtered carbonaceous BOD change in stream (2 g/m³)	Receiving water sampling	Yes
8.	Wetland to be maintained to ensure maximum effluent treatment at all times	Inspection and discussion with consent holder and sampling	Yes
9.	Riparian fencing to be completed as per plan by 31 December 2010	Inspection by Council Land Management Officers	Yes

Purpose: To discharge stormwater from a poultry processing plant via a wetland into the Mangati Stream				
Condition requirement	Condition requirement Means of monitoring during period under review			
Maintenance of a contingency plan for action to be taken to prevent spillage	Review of documents provided. Reviewed plan received November 2010	Yes		
Maintenance of and adherence to stormwater management plan	Review of documents provided. Reviewed plan provided August 2014	Yes		
Written notification required regarding changes to activities at the site	Inspection and discussion with consent holder. No changes occurred which may alter nature of discharge	N/A		
Optional review provision re environmental effects and notifications of changes (S.C.9)	N/A			
Overall assessment of consent compliance	Good			
Overall assessment of administrative perfor	mance in respect of this consent	High		

 Table 44
 Summary of performance for Tegel's Consent 4026-3

Pu	Purpose: To discharge emissions into the air form the processing of animal matter and associated processes					
Co	Condition requirement Means of monitoring during period under review					
1.	Adoption of best practicable option to minimise effects on the environment	Inspection and discussion with consent holder	Yes			
2.	No alterations that might change the nature/quantity of discharge without prior consultation with the Council	Inspection and discussion with consent holder. Review of documents provided to the Council	N/A			
3.	Offensive and objectionable odours beyond boundary not permitted	Inspection and discussion with consent holder. Complaint response	Yes			
4.	No offal or blood to go to waste water pond	Inspection and discussion with consent holder	Yes			
5.	Contingency plan to be maintained and regularly updated	Review of documents provided. Updated plan provided September 2014	Yes			
6.	Operation and maintenance plan re special conditions of consent and particular aspects of Tegel's activities	Review of documents provided. Updated plan provided September 2014	Yes			
7.	N/A					
O۷	High					
O۷	Overall assessment of administrative performance in respect of this consent					

N/A = not applicable or not assessed

Table 45 Summary of performance for Tegel's Consent 5494-2

Purpose: To discharge poultry processing wastes by burial into land in the vicinity of the Mangati Stream in emergency circumstances only					
Condition requirement	Condition requirement Means of monitoring during period under review				
To be exercised in emergency only, as confirmed by Council	Not exercised during period under review	N/A			
Details to be provided to Council prior to exercise of consent	Not exercised during period under review	N/A			
Adopt BPO to prevent or minimise adverse effects	Not exercised during period under review	N/A			
Burial trenches to be more than 25 m from any surface water body	Not exercised during period under review	N/A			
Base of burial trenches to be located above groundwater level	Not exercised during period under review	Yes			
Consent holder to maintain records of disposal	Not exercised during period under review	N/A			
Maintain and update a Burial Management Plan	Updated plan received August 2014	Yes			
8. Lapse of consent June 2032		N/A			
Optional review provision re environmental effects	Next opportunity for review June 2020	N/A			
Overall assessment of consent compliance	High				
Overall assessment of administrative perfor	High				

Overall, during the period under review, Tegel Foods Ltd (poultry processing plant) demonstrated a good level of environmental performance and a high level of administrative performance and compliance with their resource consents as defined in Section 1.1.4. Some minor fugitive wastewater discharges were identified during the year, however no environmental effects were noted as a result.

13.3.4 Recommendations from the 2012-2014 Biennial Report

In the 2012-2014 Biennial Report, it was recommended:

THAT monitoring programmed for consented activities of Tegel Foods Ltd (poultry processing plant) in the 2014-2015 year continues at the level programmed for 2012-2014.

THAT consideration be given to reinstating the unionised ammonia limit on consent 3470-3 at the next review opportunity (June 2017).

The first recommendation was implemented during the 2014-2015 monitoring period. A decision about the second recommendation will be made in the 2015-2016 report, to be actioned in June 2017 if still considered necessary.

13.3.5 Alterations to monitoring programmes for 2015-2016

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 the obligations of the RMA in terms of monitoring emissions/discharges and effects, and subsequently reporting 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 2015-2016 the programme remains unchanged. A recommendation to this effect is attached to this report.

13.4 Recommendations

- 1. THAT monitoring programmed for consented activities of Tegel Foods Ltd (poultry processing plant) in the 2015-2016 year continues at the level programmed for 2014-2015.
- 2. THAT consideration be given to reinstating the unionised ammonia limit on consent 3470-3 at the next review opportunity (June 2017) if still considered necessary.

14. TIL Freighting Ltd

14.1 Introduction

14.1.1 Process description

TIL Freighting Ltd (TIL) (previously Hookers Bros Investments Ltd), operates a truck depot from a 5.7 ha site from which goods for various industries are transported throughout the country. The site was established in 2005. The three primary industries using TIL's transport services are food and beverage, agriculture, and petroleum/gas exploration. Some of the materials handled or transported through the site are classified as hazardous substances and others, although not classified as hazardous substances, would result in adverse environmental effects if discharged to water.

The site straddles the Mangati Stream/Mangaone Stream catchment boundary, and therefore TIL holds consents to discharge stormwater in each of these catchments.

Activities in the Mangaone catchment include a container storage area, a truck parking area, a truck wash facility and Ross Graham Motors workshop.

The truck wash facility has a wash water separator, which directs stormwater into the stormwater system and any truck wash into the sewage system. The separator is a "Smart Valve", which works by directing all water from the truck wash pad to trade waste whenever it is in use (i.e. if any tap is turned on). While the truck wash is not in use, water is directed to stormwater after a certain amount of rainfall.

The truck park and container storage areas have sumps that collect stormwater, and direct it through a 300 mm pipe to the stormwater settlement pond. The pond, which is approximately 350 m² in area and 3 m deep, has an overflow outlet pipe. However, it was anticipated that the pond would be large enough for the stormwater to soak away, without overflows occurring.

The consent for this area was granted prior to the development of the site. At the time the consent was processed it was considered that, as the truck wash water is discharged to tradewaste, and stormwater is directed to the stormwater settlement pond to soak away, there should be no direct discharge to surface water and therefore no adverse environmental effects were anticipated.

The eastern area of the site (approximately 2.60 ha) is piped to NPDC's reticulated stormwater system at three points, and discharges to the Mangati Stream via the NPDC's constructed wetland.

A large proportion of this area of the site is roofed (approximately 1.26 ha) and the remainder is predominantly hard paved or metalled. Activities within the stormwater catchment include parking, loading, storage and heavy vehicle movements.

The stormwater discharges from three points, all of which contain a mixture of roof stormwater and yard stormwater. The northern catchment is predominantly leased, and contains KMC Engineering, the Coca-Cola distribution loading area and parking, and has a low traffic volume. It discharges to the NPDC system at Connett Road.

The central catchment is used for loading and storage, and has high heavy traffic volume. This area discharges to the NPDC system on Paraite Road in front of the loading tunnel. The southern catchment contains molasses storage and loading facilities, container storage, privately leased storage sheds and a wash bay used for cleaning imported containers to the standards required by the Ministry of Primary Industries (MPI). It is subject to a lower volume of heavy traffic movement and discharges to the NPDC system in front of the building leased by Turners and Growers.

There is the potential for the stormwater to become contaminated by hazardous substances and molasses, if they are spilt on site, and also hydrocarbons, suspended solids, copper and zinc from the volume of vehicular traffic. It was also stated that the roof stormwater may contain *E.coli* and coliforms from the number of birds that frequent the roofs of the properties in this area.

Mitigation measures

TIL has in place a stormwater management plan which identifies the structural and procedural controls in place to minimise the potential for contamination of stormwater to occur due to activities undertaken at the site. As a result of preparing the stormwater management plan, some further improvements were identified and have been prioritised within the plan.

TIL has advised the Council that nearly all the loading and unloading of trucks takes place within the covered loading tunnel. The material is then transferred by forklift to the storage sheds, accessed from inside the tunnel. It was identified that the stormwater grates within the tunnel could allow contaminants to enter the stormwater system. It was proposed that nib walls be constructed around these open grates, and that an additional spill kit be located next to the one grate that, due to traffic movements, cannot be protected by a nib wall.

There are well written procedures in place to ensure that the MPI wash bay discharges to the NPDC sewer system whilst in use. It was proposed that a containment fence be constructed to prevent spray drift entering the stormwater catchment.

The storage and transfer of molasses currently takes place within an un-bunded area of the site. Although the stormwater management plan instructs that all transfer activities are supervised, it is proposed that an interceptor pit be constructed in the vicinity of the molasses tank so that any spillage can be contained.

A programme has been established to ensure that staff are trained to a level appropriate to their role on site.

An inspection and maintenance programme is in place at the site (including the areas of the site leased to other companies), and a "prospective incident card" has been developed so that staff have a means of reporting procedures or structures that have the potential to result in an unauthorised discharge.

A comprehensive spill contingency plan has been written to ensure that there is a planed response to any emergencies that relate to spillage of onsite chemicals.

Potential effects

There is a relatively small area of the stormwater catchment that is metalled, therefore despite the heavy vehicle movements on site, it is not expected that the concentration of suspended solids in the discharge will be high, and as a result, it is also likely that the concentration of copper and zinc in the discharge will be relatively low. Further, as in all but very high intensity rainfall events, the stormwater from this site will be discharged via the NPDC constructed wetlands, which will allow a certain amount of settling to take place.

It is considered that the main potential for adverse effects from the stormwater discharge from the site would be as a result of accidental spillage, or from an accumulation of small spills incidental to the transfer of materials on site.

Of particular concern in this catchment is the potential for a high biochemical oxygen demand (BOD) in the discharge from the molasses storage at the site. The concern is due to the fact that there are a number of other industries that contribute to this drainage system with potential sources of contaminants that exert a high biochemical oxygen demand, and it has been specifically mentioned as one of the water quality issues resulting in the Mangati Stream having been identified in Appendix IB of the RFWP, for enhancement of natural, ecological and amenity values and life supporting capacity.

14.1.2 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.

TIL Freighting Ltd holds water discharge permit **7578-1** to cover the discharge of stormwater into the Mangati Stream. This consent was originally held by Hookers Bros Investments Ltd and was transferred to TIL on 24 December 2014. It was issued by the Council on 31 May 2011 under Section 87(e) of the RMA. It is due to expire on 1 June 2026.

A summary of the conditions of permit 7578-1 is given below.

Condition 1 requires the consent holder to prevent and minimise any adverse effects.

Because stormwater generation is dependant on the rainfall event and is not always practicable for the consent holder to control, rather than limiting the discharge rate, condition 2 states the maximum stormwater catchment area is 2.60 ha.

Condition 3 requires that all above ground hazardous storage areas be bunded (including the molasses area).

Condition 4 imposes limits on the chemical concentration of the discharge, and condition 5 prohibits adverse effects on the receiving waters downstream of the discharge.

Conditions 6 and 7 require the consent holder to maintain contingency and stormwater management plans, with reviews to be undertaken at two yearly intervals.

The purpose of these conditions is:

- in the case of the management plan, to ensure that the consent holder examines the activities taking place on site, and puts appropriate controls in place to minimise the potential for stormwater contamination to occur due to routine activities, and
- in the case of the contingency plan to ensure that in the event of an unforeseen situation, the chances of a spillage resulting in an unauthorised discharge leaving the site are minimised.

For the consent holder these are also a means of documenting the way in which the "best practicable option" (as required by condition 1) has been implemented.

To ensure that the potential for environmental effects from the exercise of the consent is consistent with the information provided to the reporting officer at the time the consent conditions were drafted, condition 8 imposes a requirement for the consent holder to notify the Council of any changes at the site that may affect the discharge along with providing an assessment of the effect those changes might have on the environment.

Condition 9 provides for the consent to lapse if it not exercised and condition 10 provides for a review of the conditions of the consent.

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

14.1.3 Discharges of wastes to land

Sections 15(1)(b) and (d) of the RMA stipulate that no person may discharge any contaminant onto land if it may then enter water, or from any industrial or trade premises onto land under any circumstances, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations.

TIL Freighting Ltd holds discharge permit **6952-1** to cover the discharge of stormwater from a truck depot into and onto land in the vicinity of the Mangaone Stream in the Waiwhakaiho catchment. This consent was originally held by Hookers Bros Investments Ltd and was transferred to TIL on 24 December 2014. It was issued by the Council on 20 September 2006 under Section 87(e) of the RMA. It is due to expire on 1 June 2020.

Condition 1 requires the consent holder to prevent and minimise any adverse effects.

Because stormwater generation is dependent on the rainfall event and is not always practicable for the consent holder to control, rather than limiting the discharge rate, condition 2 states the maximum stormwater catchment area is 4.575 ha.

Conditions 3 and 4 require the provision of a stormwater management plan and contingency plan to the Council prior to the exercise of the consent.

Condition 5 requires that all stormwater is treated prior to discharge.

To ensure that the potential for environmental effects from the exercise of the consent is consistent with the information provided to the reporting officer at the time the consent conditions were drafted, condition 6 requires that the consent be exercised in accordance with the information provided at the time of application.

Condition 7 requires that all above ground hazardous storage areas be bunded.

Condition 8 prohibits adverse effects on the receiving waters.

Condition 9 requires a buffer distance of 30 m between the discharge to land, and any surface water, and prohibits any direct discharges to surface water.

Condition 10 provides for the consent to lapse if it not exercised and condition 11 provides for a review of the conditions of the consent.

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

14.2 Results

14.2.1 Water

14.2.1.1 Inspections

The TIL site was visited on 1 July, 5 August, and 24 October 2014, and 18 March and 18 May 2015.

Inspections focussed on evidence of spills, the condition of the drains and catchment area, treatment measures, and general housekeeping.

While the site was found to be generally clean and tidy during the inspections, the northern corner of the site was noted as needing to be swept during most of the site visits.

A few minor issues were raised during inspections in relation to bunding, spills and the need for installation of drain filters for silt control.

14.2.1.2 Results of discharge monitoring

There are no limits on the constituents of the discharge directed to the on site stormwater pond that discharges onto and into land in the Waiwhakaiho/Mangaone Stream catchment, and so this is not currently programmed for sampling.

Three stormwater monitoring points were identified on the TIL site for the areas of the site discharging to the Mangati Stream via the NPDC reticulated stormwater network and stormwater ponds.

All of these discharges contain roof water as well as stormwater from the ground level site surfaces. The stormwater discharged from each of these sampling sites is monitored at up to eight additional points before it reaches the Mangati Stream

(Figure 2 sites 8, 10, 14, 16, 19, 33, 37 and 38). Other discharges contribute to the flow at each of these sites.

Stormwater from the south eastern area of the site, which contains the rented storage sheds, the molasses storage and transfer area, the MPI wash pad, and Turners & Growers is sampled from a stormwater drain on Paraite Road in front of Turners & Growers southern entrance (site 46 and Figure 3, STW001133). The results from chemical monitoring at this location are given in Table 46.

The consent limits on oil and grease (15 g/m³), pH range (6-9) and suspended solids (100 g/m³) were observed as being complied with for the samples collected from the southern areas of the site during the period under review. At 7.8 g/m³, the biochemical oxygen demand concentration was just over the allowable limit of 7 g/m³ in the sample collected on 5 September 2014.

Table 46 Chemical monitoring results for TIL's stormwater discharge (outside Turners and Growers) for 2014-2015 (site 46). TRC site code STW001133

Date	BOD g/m³	Condy mS/m	DRP g/m³	O & G g/m³	рН	SS g/m³	Temp °C	Turby NTU
Consent limits	7	-	-	15	6-9	100	-	-
Number	9	9	6	5	9	4	9	9
Minimum	1.6	1.3	0.011	<0.5	6.8	4	8.4	2.2
Maximum	16	4.0	0.189	0.6	7.3	54	18.3	34
Median	4.4	2.0	0.054	0.5	7.1	12	15.0	4.0
5-Sep-14 (w)	7.8	13.7	0.256	2.5	7.6	8	13.7	3.7
18-Feb-15 (d)	b	b	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b	b
7-May-15	2.5	4.8	0.208	а	7.2	7	17.4	7.4

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b not discharging
- (d) dry weather survey (w) wet weather survey

Stormwater from the central eastern area of the site, which includes the main loading canopy and storage sheds, is sampled from a manhole on Paraite Road in front of the loading canopy (site 45 and Figure 3, STW001132). The results from chemical monitoring at this location are given in Table 47.

Table 47 Chemical monitoring results for TIL's loading canopy stormwater discharge for 2014-2015 (site 45). TRC site code STW001132

Date	BOD g/m³	Condy mS/m	DRP g/m³	O & G g/m³	рН	SS g/m³	Temp °C	Turby NTU
Consent limits	7	-	-	15	6-9	100	-	-
Number	10	10	7	7	10	10	10	10
Minimum	1.5	1.7	0.005	<0.5	6.7	11	8.5	6.5
Maximum	65	37.3	2.88	5.0	7.6	150	18.3	80
Median	5.8	4.4	0.452	0.6	7.3	40	15.2	23
5-Sep-14 (w)	b	b	b	b	b	b	b	b
18-Feb-15 (d)	b	b	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b	b
7-May-15 (w)	21	7.5	0.628	а	7.1	53	17.4	26

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b no flow during found during survey
- (d) dry weather survey (w) wet weather survey

Compliance was achieved with the consent limits for pH, suspended solids and oil and grease through out the period under review. The biochemical oxygen demand limit was exceeded on 7 May 2015.

Stormwater from the north eastern area of the site, which includes the stormwater catchment to the north and east of the buildings leased by KMC Machinery, Coca-Cola and Laminex, is sampled from a manhole on Connett Road (site 44 and Figure 3, STW001131). The results from chemical monitoring at this location are given in Table 48.

The consent limits for oil and grease (15 g/m 3), pH range (6-9) and suspended solids (100 g/m 3) were all observed as being complied with. However BOD exceeded the consented limit in the sample collected on 5 September 2014. This indicated a marked improvement in the level of BOD at this site when compared to those found in the previous results.

Table 48 Chemical monitoring results for TIL's Connett Road stormwater discharge for 2014-2015 (site 44). TRC site code STW001131

Date	BOD g/m³	Condy mS/m	DRP g/m³	O & G g/m³	рН	SS g/m³	Temp °C	Turby NTU
Consent limits	7	-	-	15	6-9	100	-	-
Number	10	10	8	5	10	10	10	10
Minimum	1.0	0.9	0.009	<0.5	6.4	2	9.4	2.2
Maximum	>50	11.2	0.330	2.6	7.2	34	17.4	25
Median	2.0	1.6	0.083	0.7	6.8	14	14.8	7
5-Sep-14 (w)	11	7.1	0.196	0.5	7.2	9	14.1	6.0
18-Feb-15 (d)	b	b	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b	b
7-May-15 (w)	5.8	4.2	0.113	a	7.1	58	17.4	32

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b not discharging at time of sampling survey
- (d) dry weather survey (w) wet weather survey

As a result of the non-compliances an incident was raised, this is discussed in the incidents section below.

14.2.2 Investigations, interventions, and incidents

In the 2014-2015 period, the Council was required to record two incidents, in association with Hooker's (who were the consent holder at the time) conditions in resource consents or provisions in Regional Plans.

1 July 2014

Analysis of samples taken during a sampling survey on 24 June 2014 and a sample taken during a compliance monitoring inspection on 1 July 2014 found that resource consent conditions were not being complied with. For the sample collected on 1 July 2014, the source of contamination was identified at the time of inspection and action was immediately taken to stop the discharge. It was found that a mechanic was working on the molasses tank in wet weather, which resulted in a spill to ground that then discharge to stormwater. An infringement notice was subsequently issued.

5 September 2014

Routine monitoring found that there were exceedances of biological oxygen demand in stormwater discharges. A letter of explanation was received from Hookers in which they attributed the exceedance to birds defecating on the roof and stock feed dust from a neighbouring site. A letter of explanation was accepted however it was noted by Council that it was likely that onsite sources of contaminants were also contributing to the BOD results. These onsite issues were also being addressed by TIL.

Council staff initiated investigations into the validity of the claims that the elevated results were due to outside sources.

14.3 Discussion

14.3.1 Discussion of site performance

Although the majority of the consent holder's goods handling activities were found to be well managed at inspection, there were a number of issues found that were associated with the storage and distribution of molasses, and on one occasion unbunded drums of liquid fertiliser were found in the stormwater catchment.

Although the liquid fertiliser storage was found to have been addressed at the following inspection, the best practicable option had not been adopted to avoid or minimise potential adverse environmental effects with regards to the storage and distribution of molasses. During inspections it was found that there were some areas of the site that may have led to stormwater contamination.

Discharge samples collected during the period under review did not comply with the biochemical oxygen demand limit on the consent. Whilst it is likely that sources outside TIL's control contributed to the elevated biochemical oxygen demand, these were being investigated and actioned by the Council (bird detritus on the building roofs and stock feed dust from the BLM Feeds site), onsite contaminant sources identified during inspections are likely to also have contributed to the exceedances.

Council officers continued to work with TIL, BLM and other potential sources of contamination to identify the prevailing source of contamination and improve practices to mitigate it. However no direct causal link could be established between the any of different potential sources of contamination and the elevated BOD results in TIL's discharge.

At the time of the preparation of this report, TIL had been issued with an abatement notice due to subsequent non-compliances in regard to BOD concentrations. It is also noted that a sample of TIL's roof water taken in the subsequent monitoring period indicated that little or no contamination from birds and or fugitive dust discharges from BLM was occurring.

14.3.2 Environmental effects of exercise of consents

No adverse environmental effects were found during the year under review as a result of the exercise of TIL's consents. Due to the conditions prevailing at the time of the sampling surveys, dilution with other stormwater resulted in the biochemical oxygen demand of the combined reticulated stormwater being at an acceptable level at the points of discharge into the NPDC ponds and/or the stream.

14.3.3 Evaluation of performance

A tabular summary of TIL's (Hooker's prior to December compliance record for the years under review is set out in Table 49 and Table 50.

Table 49 Summary of performance for TIL's Consent 6952-1

Pu	Purpose: To discharge stormwater to land in the Waiwhakaiho catchment					
Co	ndition requirement	Means of monitoring during period under review	Compliance achieved?			
1.	Adoption of best practicable option to minimise effects on the environment	Inspection and discussion with consent holder	Yes			
2.	Limits stormwater catchment area	Inspection and discussion with consent holder	Yes			
3.	Provision of stormwater management plan prior to exercise of consent	Review of Council records and of any correspondence or documents submitted	Yes			
4.	Provision of contingency plan prior to exercise of consent	Review of Council records and of any correspondence or documents submitted	Yes			
5.	All stormwater to be treated in accordance with special conditions	Inspection and sampling	Yes			
6.	Design, management and maintenance of stormwater system to be as per application	Inspection and discussion with consent holder	Yes			
7.	Above ground hazardous substance storage to be bunded	Inspection and discussion with consent holder	N/A			
8.	Direct discharge to surface water prohibited. 30 m buffer zone between discharge to land and any surface water	Observation at inspection	Yes			
9.	Provision for lapse of consent	Consent exercised	N/A			

Purpose: To discharge stormwater to land in the Waiwhakaiho catchment				
Condition requirement Means of monitoring during period under review				
Optional review provision re environmental effects	Next opportunity for review June 2014	N/A		
Overall assessment of consent compliance	High			
Overall assessment of administrative perform	mance in respect of this consent	High		

 Table 50
 Summary of performance for TIL's Consent 7578-1

Pu	Purpose: To discharge stormwater to the Mangati Stream				
Со	ndition requirement	uirement Means of monitoring during period under review			
1.	Adoption of best practicable option to minimise effects on the environment	Inspection and discussion with consent holder	No		
2.	Limits stormwater catchment area	Inspection and discussion with consent holder	Yes		
3.	Above ground hazardous substance storage to be bunded	Inspection and discussion with consent holder	Yes		
4.	Limits on chemical composition of discharge	Sampling	Two exceedances of BOD limit		
5.	Discharge cannot cause specified adverse effects surface water	Observation at inspection	Yes		
6.	Maintenance of and adherence to contingency plan, reviews to be within 2 years	Review of Council records and of any documents submitted. Plan dated September 2009 on file	Plan over due for review		
7.	Maintenance of and adherence to stormwater management plan, reviews to be within 2 years	Review of Council records and of any documents submitted. Plan dated September 2009 on file	Plan over due for review		
8.	Written notification required regarding changes to activities at the site that alters nature of discharge	Inspection and discussion with consent holder. No changes	N/A		
9.	Provision for lapse of consent	Consent exercised	N/A		
10.	Optional review provision re environmental effects or notification of changes per condition 8	Next opportunity for review June 2014	N/A		
Ov	Improvement required				
Ov	erall assessment of administrative perfor	mance in respect of this consent	Improvement Required		

N/A = not applicable or not assessed

During the year, TIL Freighting Ltd required an improvement in their level of administrative performance and environmental performance and compliance with their resource consents as defined in Section 1.1.4.

There were a number of breaches of this consent holder's biochemical oxygen demand limit, which on one occasion resulted in the issuing of an infringement notice. It also noted that updates to TIL's stormwater and contingency plans are over due.

TIL has recently been issued with an abatement notice in respect to continued noncompliances.

14.3.4 Recommendation from the 2012-2014 Biennial Report

In the 2012-2014 Biennial Report, it was recommended:

THAT monitoring programmed for consented activities of Hooker Bros Investments Ltd in the 2014-2015 year continues at the level programmed for 2012-2014.

This recommendation was implemented during the 2014-2015 monitoring period.

14.3.5 Alterations to monitoring programmes for 2015-2016

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 the obligations of the RMA in terms of monitoring emissions/discharges and effects, and subsequently reporting 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 2015-2016 the monitoring programme remains unchanged. A recommendation to this effect is attached to this report.

14.4 Recommendation

THAT monitoring programmed for consented activities of TIL Freighting Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.

15. Vector Gas

15.1 Introduction

15.1.1 Process description

Vector Gas Ltd (Vector Gas) has a warehouse and gas pipe storage yard on the southern side of Connett Road West, adjacent to the Mangati Stream. Although the stormwater discharge from this site is consented, up to the end of the 2003-2004 monitoring period the consent holder had not been included in the compliance monitoring programme for the Mangati catchment.

The area of the site is approximately 4 ha. The operation building and maintenance building along with sealed car parking area and access make up approximately 60 percent of the area. The remaining 40 percent is covered in grass. The maintenance shed is enclosed, and any washdown from inside the shed is directed to a holding system which is emptied by a licensed wastewater collector.

Discharges from the site are monitored as part of the combined discharge from the Connett Road stormwater (site 33, Figure 2), and periodically at the southern discharge point which enters the open stormwater drain below Tasman Oil Tools and Greymouth Petroleum.

The site is considered to pose only a very low environmental risk and is therefore, scheduled for two inspections per year, however on occasion additional inspections are carried out when the inspecting officer is in the area.

Consent conditions do not require Vector Gas to maintain a contingency plan.

15.1.2 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.

Vector Gas held water discharge permit **4780-1** to cover the discharge up to 608 L/s of stormwater from an administration site into the Mangati Stream. This permit was issued to Natural Gas Corporation by the Council on 24 July 1995 under Section 87(e) of the RMA. The consent expired on 1 June 2014.

The application to renew this consent was received from Vector Gas, which was effectively a company name change, rather than a change of ownership. As a result the consent was transferred, however, due to the imminent expiry of the consent, a hard copy of the consent was not issued in the new company name.

The application was received on 28 February 2014, and therefore under Section 124 of the RMA, the Council exercised its discretion and has allowed Vector Gas to continue to operate under the conditions of the expired consent until a decision is made on the renewal application.

Conditions were attached in respect of concentration of stormwater components (maximum total recoverable hydrocarbons 15 g/m^3 , pH range 6 - 9, suspended solids

100 g/m³), prohibiting specified effects in the receiving water after reasonable mixing, and provision for review of conditions.

This permit is attached to this report in Appendix I, under the name of Natural Gas Corporation of New Zealand Ltd.

15.2 Results

15.2.1 Water

15.2.1.1 Inspections

The site was inspected twice during the 2014-2015 monitoring period, on 27 July and 24 October 2014.

The inspections focussed on treatment measures, the condition of the stormwater drains, and general house keeping.

The site was found to be clean and tidy during both inspections, with drains containing clear water. On 27 July 2014 it was noted that some works had been undertaken along the boundary with Greymouth/Tasman Oil Tools, no adverse effects were evident.

15.2.2 Investigations, interventions, and incidents

In the 2014-2015 period, the Council was required to undertake additional investigations in association with Vector Gas' conditions in resource consents or provisions in Regional Plans.

On 30 September 2014 a complaint was received about smoke at the Vector site. Subsequent investigation by Council staff found no source of smoke or fire anywhere around or upwind of the site.

15.3 Discussion

15.3.1 Discussion of site performance

The site was found to be well managed throughout the 2014-2015 monitoring period, with no issues noted during inspections.

15.3.2 Environmental effects of exercise of consent

There were no adverse effects found as a result of activities undertaken at the Vector Gas site.

15.3.3 Evaluation of performance

A tabular summary of Vector Gas' compliance record for the years under review is set out in Table 51.

 Table 51
 Summary of performance for Vector Gas' Consent 4780-1

Pu	Purpose: To discharge stormwater to Mangati Stream								
Co	ndition requirement	Means of monitoring during period under review	Compliance achieved?						
1.	Limits on chemical composition of discharge	Visual assessment of discharge during inspections and sampling surveys of network discharges	Yes						
2.	Discharge cannot cause specified adverse effects beyond mixing zone	Receiving water sampling	Yes						
3.	Optional review provision re environmental effects	Consent expired June 2014	N/A						
Ov	Overall assessment of consent compliance and environmental performance in respect of this consent								
Ov	erall assessment of administrative perfor	mance in respect of this consent	High						

During the period under review, Vector Gas demonstrated a high level of environmental and administrative performance and compliance with their resource consent as defined in Section 1.1.4

15.3.4 Recommendation from the 2012-2014 Biennial Report

In the 2012-2014 Biennial Report, it was recommended:

THAT monitoring programmed for consented activities of Vector Gas Ltd in the 2014-2015 year continues at the level programmed for 2012-2014.

This recommendation was implemented during the 2014-2015 monitoring period.

15.3.5 Alterations to monitoring programmes for 2014-2015

In designing and implementing the monitoring programmes for air and 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 the obligations of the RMA in terms of monitoring emissions, discharges and their effects, and subsequently reporting 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 and/or discharging to the environment.

It is proposed that for 2015-2016 the monitoring programme remains unchanged. A recommendation to this effect is attached to this report.

15.4 Recommendation

THAT monitoring programmed for consented activities of Vector Gas Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.

16. W Abraham Ltd

16.1 Introduction

16.1.1 Process description

W Abraham Ltd (Abraham) operates a crematorium on Swans Road, Bell Block. Approximately 250 cremations occur per year in the gas-fired cremator.

The potential impact on the environment from the operation of cremators is discharges to air that contain some low level contaminants. The complete combustion of human remains, casket materials and any special belongings put with the deceased results in the emission of carbon dioxide, carbon monoxide, water vapour, nitrogen oxides, particulate, hydrogen chloride (if plastics are present), and other volatile compounds in low concentrations. The height that the stack from the cremator discharges to air is also important.

Visible Emissions

Incomplete combustion has the potential to result in visible emissions from the exhaust stack. Combustion is a consequence of time (i.e. the duration of the high temperature cycle, to ensure all material is burned completely through), the combustion temperature (which must be high enough to combust all materials), and turbulence (i.e. enough air is introduced and mixed to ensure high temperatures are present throughout the combustion chamber). Under the worst circumstances where temperatures and/or oxygen levels are too low, there is potential for black/dark smoke to be discharged. Due to the nature of activities at a crematorium site, the visible discharge of smoke from the exhaust stack is likely to be found offensive and possibly emotionally disturbing.

The controlling computer allows automated system control of the combustion process, and conditions can be altered instantaneously. The stoichiometric fuel/air ratio, greater heat, longer combustion zone and introduction of dilution air in the exhaust stream all contribute to the positive environmental performance of the cremator.

Stack test data provided by the applicant showed particulate emission results of 23-60 mg/m³ (at 11 % O_2 reference conditions), and 30-85 g/hr. The respective British guidelines are 80 mg/m³, and 120 g/hr. While the residence time in the secondary chamber of the proposed unit (1.57 seconds) is less than that specified in the British guideline (2 seconds), the actual performance, as demonstrated, indicate that this should not (and will not be allowed to) give rise to any unacceptable visible emissions.

Odour

Odours emanating from a crematorium site are also likely to be found offensive and possibly emotionally disturbing. Again, incomplete combustion (especially at low temperature) can lead to odour discharges due to partially combusted organic material. The ALL Power-Pak II Smoke-Buster 140 cremator specifications provided with the consent application noted operating temperatures of 650 – 1000 °C in the primary chamber and 760 – 1000 °C in the secondary chamber. The controlling computer for the "Smoke Buster" monitors inputs and outputs to the process and manages the combustion process ensuring any odour requirements are met.

Toxic by-products

The production of toxic by-products, such as heavy metals and dioxins, is a concern with many combustion processes. The AEE provided by Abraham at the time of application clarified this issue and noted 'minute quantities of mercury vapour from amalgam fillings, if present', can be discharged through the stack. These emissions were not considered an issue elsewhere.

No comment was made about dioxins or releases of hydrogen chloride (an acidic gas), but it was considered that, if the combustion process is complete, and PVC plastic is not combusted, then this was not expected to be an issue. PVC often contains heavy metals such as lead, cadmium and zinc as stabilisers; its elimination therefore reduces the potential for releases of these heavy metals as well as the potential for dioxins. Information viewed by Council officers confirmed the importance of removing or reducing PVC to the greatest extent practicable, in order to minimise emissions of these contaminants.

Significantly, Abraham advised that all external casket fittings made of metal or PVC would be removed prior to cremation. This removes a potential source of metals and PVC, although it is noted that most fittings are polycarbonate, which is a non-chlorinated plastic.

Particulate deposition

The reported low opacity of the smoke discharge from the ALL Power-Pak II Smoke-Buster 140 cremator indicated low levels of particulates. The controlling computer monitors particulate levels and displays these on the screen at all times. Stack test results provided for the ALL Power-Pak II Smoke-Buster 140 cremator indicated total suspended particulates of between 23 and 60 mg/m³ (at 11 % O₂ reference conditions). At this level it was not expected that there would be any adverse effects such as deposition of particulate, either off or on the crematorium site, or any cumulative effects upon soil in the vicinity of the site. Other typical sources of dust, such as surface wind erosion from farm land, landscaping or bare soil surfaces within an industrial area, vehicular emission deposits, and marine salt drift, would be comparatively far more prevalent.

Nitrogen and sulphur oxides

Nitrogen, and to a lesser extent sulphur oxides, are often by-products of the fuel combustion process. The application information indicated a gross heat input of 722 kW and a minimum discharge stack height of 5 m. Combustion facilities of this size, discharging at this height, are permitted activities according to the Regional Air Plan, except for equipment supplying direct heat to a product or material (such as in a cremation). This exclusion provides for additional measures to be put in place should other contaminants also be discharged. The compliance by Abraham with the discharge height requirements for a unit of this heat capacity means that ambient nitrogen and sulphur oxides should not be an issue at this site.

Summary

At the time of application it was noted that the adverse effects from the crematorium have the potential to be marked, given the sensitive nature of crematorium activities, and social attitudes. However, the location of the facility in an industrial area, the use of modern equipment, and proper operation should minimise environmental effects to an acceptable level. The low emission levels from a stack that was to be at least 20 metres above ground level (under the NPDC land use provisions), should not result in contaminants entering the food chain, or offending neighbours.

The requirement for an efficient combustion system is emphasised with regard to minimising these effects. From the data provided on the cremator, it is anticipated that the system would be a modern and state of the art facility. However, maintenance and effective operator training to ensure an efficient combustion process is a paramount consideration of crematorium management. The conditions of the consent (refer to Section 16.1.2, below) provide reassurance over the unit's environmental performance.

16.1.2 Air discharge permit

Section 15(1)(c) of the RMA stipulates that no person may discharge any contaminant from any industrial or trade premises into air, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations.

Abraham held air discharge permit **7147-1** to cover the discharge of emissions into the air from the operation of a crematorium including a natural gas-fired cremator. This permit was issued by the Council on 12 February 2008 under Section 87(e) of the RMA. The consent expired on 1 June 2014, however as the application to renew the consent was received on 13 September 2013, Section 124 of the RMA allowed Abraham to continue to operate under the expired consent until a decision was made on the renewal.

Abraham holds air discharge permit **7147-2** to discharge emissions into the air from the operation of a crematorium including a natural gas-fired cremator. This permit was issued by the Council on 11 May 2015 under Section 87(e) of the RMA. The consent expires on 1 June 2032.

As the consent controls emissions from a process of such a sensitive nature, whilst there are conditions controlling the rate and/or quantity of contaminants discharged (conditions 15 and 19), and limiting actual or potential off-site effects that may occur as a result of the discharge (conditions 20, 21, 22), a strong focus has been placed on the controlling the operation itself.

The majority of the conditions of this consent were written around ensuring that the cremator is designed, maintained, and operated in a way such that the emissions occurring as a result of the exercise of the consent are maintained at a practicable minimum at all times (which is a general requirement of condition 5). To this end, limits and controls were placed upon those aspects of the cremators design and operation known to minimise the potential for a range of possible adverse environmental effects that may arise from this type of activity.

More specifically these controls:

- Require the adoption of the best practicable option to prevent or minimise effects (condition 1).
- Limit the cremator design and operating conditions to ensure complete and efficient combustion is occurring (conditions 10, 12, and 13).
- Require that key indicators of the cremators performance are monitored, ensuring that the consent holder and the Council can determine whether the combustion process is occurring efficiently, and within the conditions of the consent (conditions 14, 16 and 17).
- Limit the amount of various materials (e.g. metals and PVC) that may be introduced into the cremator (conditions 8 and 9).
- Ensure all discharges occur via the stack, which must be insulated and exhaust a minimum height above ground level (conditions 6, 7, and 11).

There are also various notification and information provision requirements, so that the Council can effectively monitor the environmental performance of the consent holder's exercise of the consent (conditions 4, 13, 18, 23, and 24).

The operation must be conducted generally in accordance with the information provided in support of the consent application (condition 2), and the consent holder must notify the Council prior to making any changes that may affect the nature or quantity of the contaminants discharged (condition 3).

The remaining condition (25) contains provisions for Council to review the conditions of the consent.

A copy of these permits is attached to this report in Appendix I.

16.2 Results

16.2.1 Air

16.2.1.1 Inspections

The crematorium was visited on 2 and 16 September, and 2 October 2014, and 6 March 2015.

Visible emissions or odours were not detected upwind or downwind of the site during the routine inspections undertaken on 2 September 2014 or 6 March 2015.

Inspections on 16 September and 2 October 2014 were undertaken during a trial period of one month where the effects of decreasing the cremator preheat temperature from 800°C to 750°C was being assessed.

During both inspections there were no visible emissions (smoke) from the exhaust stack, apart from a clear heat haze being observed throughout, nor were there any odour issues noted. Opacity readings were constantly reading 0%. Compliance was achieved with all consent conditions (apart from special condition 11, which was the condition being trialled).

16.2.2 Investigations, interventions, and incidents

In the 2014-2015 period, the Council was not required to undertake significant additional investigations and interventions, or record incidents, in association with Abraham's conditions in resource consents or provisions in Regional Plans.

16.3 Discussion

16.3.1 Discussion of site performance

During the 2014-2015 monitoring period it was found that the cremator was operated in a satisfactory manner.

A trial to assess the effects of reducing the preheat temperature from 800°C to 750°C was successful, with no smoke or odour issues observed. Consent 7147-2 was subsequently granted with the reduced preheat temperature of 750°C.

16.3.2 Environmental effects of exercise of consent

There was no evidence of off site effects found at inspections, and no complaints were received by the Council. There was generally only a slight heat haze visible and no odours found during the inspections undertaken during the period under review.

16.3.3 Evaluation of performance

A tabular summary of Abraham's compliance record for the year under review is set out in Table 52.

Table 52 Summary of performance for Abraham's Consent 7147-1

Pu	rpose: To discharge emissions to air fi	rom a crematorium (replaced by 7147-2 from 11 May 201	5)	
Со	ndition requirement	Means of monitoring during period under review	Compliance achieved?	
1.	Adoption of best practicable option to minimise effects	Inspection and discussion with consent holder	Yes	
2.	Consent to be exercised in accordance with application documentation	Inspection and discussion with consent holder	Yes	
3.	Written notification required prior to exercise of consent	Check of the Council's records. Written notification received on 27 November 2008 regarding commissioning of cremator.	Yes	
4.	Processes to be managed to minimise emissions	Inspection and discussion with consent holder	Yes	
5.	Design and operation such that discharge of contaminants during cremation other than through the stack, are prevented	Inspection	Yes	
6.	Cremator and ducting to be gas tight such that discharge of gases, other than through the stack, are prevented	Inspection	Yes	
7.	Minimum stack height of 8 m above ground level	Inspection	Yes	

Со	ndition requirement	Means of monitoring during period under review	Compliance achieved?
8.	Flue and ducting to be adequately insulated to prevent specified effects	Inspection	Yes
9.	Discharges shall not result in offensive or objectionable odours at or beyond the boundary	Odour survey at inspection	Yes
10.	Definitions of offensive and objectionable odours for the purpose of condition 9	N/A	N/A
11.	Secondary chamber and it's outlet to be above 800°C, with steps to be taken to increase temperature if it falls below 870°C	Inspection and discussion with consent holder	Yes
12.	Quantity of materials listed in Australasian guidelines, to be minimised within cremator	Inspection and discussion with consent holder	Yes
13.	External metal and PVC fittings to be removed from caskets	Inspection and discussion with consent holder	Yes
14.	Consultation and necessary approvals required prior to alterations to the plant, process, or operations	Inspection and discussion with consent holder. No changes	N/A
15.	Cremator shall have two combustion zones with specified minimum residence time and temperature in second chamber. As built diagrams and drawings demonstrating compliance to be provided prior to exercising consent	Built as proposed	Yes
16.	Interlock required to prevent charging of cremator unless secondary chamber temperature is above 800°C	Confirmed at inspection	Yes
17.	Stack emissions to be free from visible smoke (definition provided)	Inspection. Slight visible emissions noted on one inspection that did not fall outside the definition of "Free from visible smoke"	Yes
18.	Limits minimum oxygen concentration at outlet of secondary chamber (6 %)	Not monitored. Meter to be installed if adverse effects noted	N/A
19.	Limits maximum carbon monoxide concentration at outlet of secondary chamber (100 mg/m³)	Not monitored. Meter to be installed if adverse effects noted	N/A
20.	Opacity of exhaust gasses to be continuously monitored and recorded	Records checked at inspection	Yes
21.	Temperature of secondary chamber to be continuously monitored and recorded	Records checked at inspection	Yes
22.	24 hrs advance notice required of maintenance that may affect specific aspects of the cremator	One advance notification received prior to commissioning of cremator	Yes

Purpose: To discharge emissions to air	from a crematorium (replaced by 7147-2 from 11 May 201	5)
Condition requirement	Means of monitoring during period under review	Compliance achieved?
23. Provision, within three months of exercise of the consent, of maintenance and calibration schedule	Review of Council records. Previously provided	N/A
24. Discharge not to result in hazardous or toxic or noxious conditions at or beyond boundary	Off-site survey at inspection	Yes
25. Provision of monitoring, calibration and process control data upon request	Viewed at inspection	N/A
26. Limits maximum downwind concentration of sulphur dioxide and nitrogen dioxide	Not assessed during period under review	N/A
27. Consent to lapse five years after granting, or longer period set by Council, if not exercised	Consent exercised	N/A
28. Opportunity for review	No further opportunities for review	N/A
Overall assessment of consent compliance	and environmental performance in respect of this consent	High
Overall assessment of administrative perfor	mance in respect of this consent	High

 Table 53
 Summary of performance for Abraham's Consent 7147-2

Pu	rpose: To discharge emissions to air f	rom a crematorium (in effect from 11 May 2015)						
Co	ndition requirement	Means of monitoring during period under review						
1.	Adoption of best practicable option to minimise effects	Inspection and discussion with consent holder	Yes					
2.	Consent to be exercised in accordance with application documentation	Inspection and discussion with consent holder	Yes					
3.	Consultation required prior to making alterations to plant, process or operations	Inspections and liaison with consent holder	Yes					
4.	Notification prior to maintenance	Inspections and liaison with consent holder	Yes					
5.	Emissions maintained to a practicable minimum	Inspections	Yes					
6.	Cremator and ducting to be gas tight such that discharge of gases, other than through the stack, are prevented	Inspections	Yes					
7.	Flue and ducting to be adequately insulated to prevent specified effects	Inspections	Yes					
8.	Reasonable steps to reduce the quantity of materials combusted	Inspections	Yes					
9.	Consent holder to remove external casket fittings containing metals or PVC prior to combustion	Inspections and liaison with consent holder	Yes					

Condition requirement	Means of monitoring during period under review	Compliance achieved?
10. Interlock required to prevent introduction of a coffin to the primary chamber unless secondary chamber temperature is above 750°C	Confirmed at inspection	Yes
11. Minimum stack height of 8 m	Inspection	Yes
12. Secondary chamber and it's outlet to be above 750°C, with steps to be taken to increase temperature if it falls below 750°C	Inspection and discussion with consent holder	Yes
13. Cremator shall have two combustion zones with specified minimum residence time and temperature in second chamber. As built diagrams and drawings demonstrating compliance to be provided prior to exercising consent	Built as proposed	Yes
Not more than two one-minute averages of the opacity readings shall exceed 20% obscuration per cremation	Inspection and discussion with consent holder	Yes
 Limits maximum carbon monoxide concentration at outlet of secondary chamber (100 mg/m³) 	Not monitored. Meter to be installed if adverse effects noted	Yes
Opacity of exhaust gasses to be continuously monitored and recorded	Records checked at inspection	Yes
17. Temperature of gasses to be continuously monitored and recorded	Records checked at inspection	Yes
18. Maintenance of a schedule of maintenance and calibration	Inspection and discussion with consent holder	N/A
 Control of emissions of CO, NO₂, PM₁₀ and SO₂ to not exceed relevant air quality standards 	Not monitored. Meter to be installed if adverse effects noted	N/A
20. Control of other emissions so not hazardous, noxious or dangerous	Inspections	Yes
21. Control of odours so not offensive or objectionable	Inspections, no complaints received	Yes
22. Definition of offensive or objectionable		N/A
23. Consent holder to undertake emission testing if requested	Not requested during period under review	N/A
24. Consent holder to provide monitoring results on request	Not requested during period under review	N/A
25. Review of consent conditions	Next opportunity for review in June 2020	N/A

During the period under review, W Abraham Ltd demonstrated a high level of environmental and high level of administrative performance and compliance with their resource consent as defined in Section 1.1.4.

16.3.4 Recommendation from the 2012-2014 Biennial Report

In the 2012-2014 Biennial Report, it was recommended:

THAT monitoring programmed for consented activities of W Abraham Ltd in the 2014-2015 year continues at the level programmed for 2012-2014.

This recommendation was implemented during the 2014-2015 monitoring period.

16.3.5 Alterations to monitoring programmes for 2015-2016

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 the obligations of the RMA in terms of monitoring emissions/discharges and effects, and subsequently reporting 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 2015-2016 the monitoring programme remains unchanged. A recommendation to this effect is attached to this report.

16.4 Recommendation

THAT monitoring programmed for consented activities of W Abraham Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.

17. Inspections at unconsented sites

There are many companies in the Mangati catchment that are not required to hold permits to discharge stormwater as the activity is permitted under Rule 23 of the RFWP (Appendix IV). Several of these companies are inspected in the 'industrial inspection round' and during the course of investigations into unauthorised discharges in the Mangati catchment.

The outcomes of these inspections are given below.

17.1 Mainland Products Ltd

This site is used by a number of trucking companies including Chill Freight Ltd as a depot for storage and distribution of milk and other packaged goods.

The site occupies an area of 0.93 ha, of which 0.35 ha is roofed or paved. The stormwater catchment around the goods transfer and truck-wash areas is directed to tradewaste sewer. The remainder discharges to the Bell Block industrial drain immediately above the outlet from the underground system.

The drainage system for the old milk processing plant developed in a confused pattern as a result of the several plant expansions and changes in processing methods. Historical dye tests carried out by the Council led to the blocking off or diversion of some process effluent drains.

A contingency plan in case of spillage was in place at the time that Mainland took the site over. The plan was part of an environmental management plan produced by Kiwi Co-operative Dairies Ltd. As monitoring during the 2007-2009 years found that there were now no hazardous substances on the site, and the Council did not require the consent to be renewed, a contingency plan was no longer required.

The site is inspected occasionally as part of the industrial inspection round, although no inspections were undertaken at the site during the period under review.

Due to periodic elevated zinc concentrations from an unidentified source being found in the discharge, monitoring of this combined discharge has continued.

17.1.1 Discharge monitoring

Stormwater discharged from Mainland's site is monitored at up to three points before it reaches the Mangati Stream (Figure 2, sites 8, 10 and 11). Other discharges contribute to the flow at each monitoring point. The primary monitoring site is at the plant boundary, at the drop-structure immediately above the outlet of the industrial stormwater drain (site 11). The results from chemical monitoring at site 11 are given in Table 54.

Stormwater from the Halliburton's site including the lower yard (formerly Hookers/Schreiber Transport) may also influence the results observed.

The discharge was sampled on three occasions during the monitoring period under review. The permitted activity limits for oil and grease, pH, and suspended solids were observed as being complied with.

Table 54Chemical monitoring results for stormwater discharged from Mainland Products beverage storage plant to Bell Block industrial drain for 2014-2015 (site 11), with a summary of previous monitoring data. TRC site code STW001048

Date	Condy mS/m	O&G g/m³	pH pH	SS g/m³	Temp Deg.C	Turby NTU	ZnAs g/m³	ZnD g/m³
Permitted activity Limits	-	15	6 - 9	100	-	-	-	-
Number	46	29	46	44	43	21	29	28
Minimum	1.2	< 0.5	6.2	2	9.8	2.8	0.016	<0.005
Maximum	20.6	83	7.6	670	22.3	540	1.71	1.44
Median	98	1.0	6.8	27	15.6	21	0.392	0.250
5-Sep-14 (w)	16.1	а	7.3	9	13.5	14	0.336	0.296
18-Feb-15 (d)	18.8	-	7.1	21	16.1	100	0.031	0.011
5 May 2015 (d)	b	b	b	b	b	b	b	b
7-May-15 (w)	5.4	а	7.1	21	17.6	15	0.306	0.230

Kev:

(d) dry weather survey (w) wet weather survey

17.2 Vause Oil Production Service

Vause Oil Production Service provides oil field services at their site at 9 De Havilland Drive. Activities at the site include oil field equipment testing, washing, maintenance and storage; and logistics.

At a previous inspection it was found that there was a multi-stage interceptor on the wash pad and a fully contained sump. Any wastewater generated is directed to the sump which is cleaned out regularly. Stormwater from the metalled top yard and sealed lower yard is directed through the interceptor prior to entering the NPDC drain, which flows to the Mangati Stream. Portable diesel tanks are stored on site, and although they are generally empty, the storage area for these tanks is bunded.

There is a 300 m deep training well on the site.

A site inspection was undertaken on 29 June 2015. The site was found to be clean and tidy at the time of inspection. The washpad and interceptor system appeared to be satisfactory. A spill kit is kept onsite. The sump inside the building on the lower site was in a good condition and the interceptors are cleaned as and when required.

a parameter not determined, no visible hydrocarbon sheen and no odour

18. Investigations, interventions, and incidents

The monitoring programme for the period under review 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, 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 (IR) 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).

There were a total of 27 unauthorised incidents recorded on the Council's database in the Mangati catchment during the 2014-2015 period.

A summary of the responsible parties, and whether or not the incident could be substantiated, is provided in Table 55.

The activities of industries monitored routinely under the Mangati Catchment Monitoring Programme accounted for 18 of the incidents, and they are therefore discussed in the section of the report describing the monitoring outcomes of the industries in question.

The remaining nine incidents are discussed further below.

Table 55 Summary of the number of unauthorised incidents discovered and complaints received relating to activities in the Mangati catchment

Company	Number of substantiated incidents/complaints	Number of unsubstantiated incidents/complaints
Mangati catchment joint monitoring programme		
ABB Ltd	0	0
BLM Feeds Ltd (now Graincorp Foods Ltd)	2	0
Greymouth Petroleum Acquisitions Company Ltd	0	0
Halliburton New Zealand Ltd	0	0
TIL Freighting	2 (water)	0
McKechnie Aluminium Solutions Ltd	0	0
MI New Zealand Ltd	0	0
Vector Gas Ltd	0	1
New Plymouth District Council	2 (water)	0
Nexans New Zealand	0	0

Company	Number of substantiated incidents/complaints	Number of unsubstantiated incidents/complaints
OMV New Zealand Ltd	0	0
Schlumberger New Zealand Ltd	1	0
Tasman Oil Tools Ltd	0	0
Tegel Foods Ltd – feed mill	2(water)	0
Tegel Foods Ltd – poultry processing plant	4(water)	3 (odour complaints)
W Abrahams Ltd	0	0
Permitted activities		
The Wisteria Co.	0	1 (air)
By Pass Developments Ltd	2(water)	0
Cygnet Land Development	1 (water)	0
J Swap Contracting Ltd *	1 (water)	0
Mangati Properties	0	1 (air)
Christine Webster	0	1 (air)
Graeme & Denis Bridger	0	1 (air)
Natural event	0	1 (coastal)
Unsourced	0	0
Total	17	9

Key: * An abatement notice and 20 infringement notices were subsequently issued to J Swap

The Wisteria Co.

On 8 July 2014 a complaint was received regarding objectionable smoke impacting on an industrial site and road corridor. Smoke was not impacting on any property beyond the site boundary during the inspection, however the workers were told to monitor the situation until the pile was burnt, and that no more vegetation was to be added to the fire. It was considered that the rules of the Regional Air Quality Plan for Taranaki (RAQP) were being complied with.

By Pass Developments Ltd (2 incidents)

On 11 August 2014, during unrelated monitoring, it was noted that insufficient silt controls were in place at two industrial subdivision sites on De Havilland Drive. An inspection found that significant rilling had occurred in places, and that silt and sediment had discharged into the Mangati Stream. A meeting was held with By Pass Developments to discuss Council concerns. As a result of the meeting the owner/contractor was instructed to undertake works to stabilise the site and install silt and sediment controls and this was subsequently carried out.

Cygnet Land Development Ltd

On 11 August 2014, during unrelated monitoring, it was found that insufficient silt controls were in place at an industrial subdivision site on Swans Road. The inspection found that significant rilling had occurred in places, and silt and sediment had discharged into the Mangati Stream. The owner of the land was instructed to undertake works to stabilise the site, and to install silt and sediment controls. This was completed satisfactorily.

J Swap Contractors Ltd

On 12 August 2014, during unrelated monitoring, it was observed that a stream bank was discoloured due to a truck-wash discharge from a contractor's site on Corbett Road. An inspection of the site found that a truck wash facility had been installed

which allowed the discharge to enter an unnamed tributary of the Mangati Stream. Staff at J Swap Contractors were advised to immediately cease the use of the truck wash, empty the ponds and remove all organic material from the area. At the time of the inspection it was also noted that burning had been occurring on site in contravention of rules in the RAQP. An abatement notice EAC-20460 was issued requiring any discharge to comply with the RFWP. A meeting was held with the company and works have been undertaken to ensure compliance with the RFWP. This discharge was thought to be the likely cause of the sewage fungus in the Mangati Stream found during routine monitoring earlier in the year. J Swap agreed to obtain a resource consent for the discharges from the site and all other discharges would go to the trade waste system. Re-inspection found that the abatement notice was being complied with. Twenty infringement notices were issued as a result of the ongoing discharges from the site.

Natural event

On 16 October 2014 a complaint was received from a member of the public regarding green material resembling effluent on Bell Block beach. The material was not present when the inspecting officer arrived at the beach, however from the complainant's description it was likely to be a naturally occurring algae known as surf diatom. When washed up on shore large numbers of the diatom give the appearance of dairy effluent.

Mangati Properties

A complaint was received on 5 December 2014 concerning the dumping of soil on to a property and the possible dust that could emanate from it at the end of James Drive, Bell Block. Investigation of the property for subdivision development found that soil and clay had been stock piled for use by Mangati Properties in the future development of a subdivision on this site. At the time of inspection there was no noticeable dust emanating from the site and no further action was required.

Christine Webster

On 13 January 2015 a complaint was received concerning smoke discharging from the property of Christine Webster. An inspection of the alleged offender's property found a small vegetation fire that was smouldering and releasing a small volume of smoke. The smoke was not considered objectionable or offensive beyond the boundary of the property and no further action was required.

Graeme & Denise Bridger

On 8 June 2015 a complaint was received concerning objectionable smoke emanating from the property of Graeme and Denise Bridger. An inspection was undertaken, some smoke was detected, however this was not found to be objectionable and no further action was taken.

19. Chemical monitoring of combined discharges

19.1 Unnamed tributary between De Havilland Drive West and Connett Road West -

Discharges from Tasman Oil Tools and Greymouth Petroleum sites, along with part of the Vector site, reach the Mangati Stream via an open drain that flows into the Mangati Stream approximately half way between De Havilland Drive West and Connett Road West.

Copper, lead and zinc are monitored at this site because it was known that these heavy metals were present in the preservation grease used in the 1980's. At that time the grease was washed from the pipes, with the wash water from this activity discharged onto land and then into the Mangati Stream via the sites' stormwater basins. Although the grease currently used does not contain these elements, it has been identified that historical practices at the sites have resulted in elevated concentrations of copper, lead and zinc at particular on-site locations and in the sediments of the open stormwater drain to the Mangati.

The results of historical sediment sampling undertaken in the Mangati Stream, in the vicinity of the discharge point of the unnamed tributary into which the De Havilland Drive pipe yards stormwater flows can be found in Technical Report 02-82. In summary, this sampling showed that there was no evidence of significant adverse environmental effects in the Mangati Stream streambed sediment as a result of current and historical activities at the pipe yards. The Council intends to continue to monitor the situation.

Table 56 Chemical monitoring results for the combined stormwater discharge – unnamed tributary downstream of De Havilland Drive for 2014-2015 (Figure 2, site 30), with summary of previous data. TRC site MGT000495

Date	Condy mS/m	CuAs g/m³	CuD g/m³	O&G g/m³	PbAs g/m³	pH pH	SS g/m³	Temp Deg.C	Turby NTU	ZnAs g/m³	ZnD g/m³
Greymouth Consent Limit	-	-		15	-	6-9	100	-	-	-	-
Tasman Tools Consent Limit			0.05	15	-	6-9	100	-	-	-	0.65
number	41	30	20	28	29	41	40	39	20	33	17
minimum	3.1	<0.01	<0.01	< 0.5	< 0.05	6.3	2	9.1	11	0.013	0.024
maximum	404	0.27	0.02	46	0.36	8.0	680	22.3	720	0.890	0.196
median	8.1	0.06	0.01	1.4	<0.05	7.0	45	15.0	210	0.220	0.057
7-May-15 (w)	8.7	0.06	0.01	а	0.05	7.2	190	16.9	200	0.222	0.041

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded a parameter not determined, no visible hydrocarbon sheen and no odour

(w) wet weather survey

During the period under review acid soluble and dissolved metal levels were generally equal to or similar to the median values recorded for this site, at the discharge point to the stream.

The level of suspended in the sample taken on 5 September 2014 exceeded the 100 g/m^3 limits imposed on both Greymouth's and Tasman Tool's consents and both of these companies were discharging at the time.

It has already been noted in previous reports that there appears to be a strong association between high levels of total metals and high suspended solids concentrations in the discharge, suggesting that the primary source of acid soluble metals is contaminated soil. It has also been found that the acid soluble zinc is generally slightly higher in relation to the suspended solids content in the discharge from the Tasman Oil Tools, than it is from the Greymouth Petroleum site.

19.2 Industrial stormwater and the wetland discharges

Twelve of the 16 licensed discharges to the Mangati Stream occur via the NPDC drainage and wetland system. The wetlands routinely discharge to the stream at up to two points immediately above the main highway (SH3).

The stormwater drainage system is designed to divert low flows, and therefore, the potentially more concentrated 'first flush' of stormwater down to the bottom of Connett Road and into pond 1. Pond 1 flows through a further two ponds (ponds 2 and 3) prior to discharge to the stream. This allows more time for settling and for natural process to reduce the concentration of some of the contaminants that may be present. The level of pond 3 is controlled by a weir at the outlet above the stream. The discharge is monitored immediately downstream of this weir (TRC site code STW002056, Figure 3; site 38, Figure 2).

Under normal conditions the remainder of the stormwater flow continues to be directed through the 'industrial drain outlet' (TRC site code STW001026, Figure 3; site 10, Figure 2) into the existing man-made watercourse, which now flows in to pond 4. Pond 4 discharges preferentially to pond 3, but will discharge directly to the stream if the water level gets sufficiently high (TRC site code STW002055, Figure 3; site 37,).

There is an extension to the existing open drain that allows stormwater to bypass the ponds altogether during very high rainfall events (TRC site code MGT000503, Figure 3; site 8, Figure 2). The drainage system is generally monitored at up to six points in order to help differentiate the effects of inflows from a large number of sources. The monitoring points are at the Mangati confluence, at the exit of the underground system to both ponds 1 and 4 and at three points where the main underground stormwater pipe runs under Connett Road. Other points may be monitored when tracing unauthorised discharges.

19.2.1 Connett Road pond one inlet (STW001055)

The Connett Road inlet to pond one is the combined discharges from industrial sites and roading serviced by the Paraite Road and Connett Road stormwater network.

The results for the Connett Road inlet to Pond 1 of the treatment system are given in Table 57.

Table 57 Chemical monitoring results for stormwater discharged to pond 1 from Connett Road for 2014-2015 (site 33), with a summary of previous monitoring data. TRC site code STW001055

Parameter:	BOD g/m³	Condy mS/m	CuAs g/m³	CuD g/m³	DRP g/m³	NH ₃ g/m ³ -N	O&G g/m³	pH pH	Temp Deg.C	Turby NTU	ZnAs g/m³	ZnD g/m³
RFWP limit	5	-	-	-	-	0.025	15	6-9	-	-	-	-
Number	16	247	11	10	11	14	44	247	77	33	12	10
Minimum	0.2	1.0	<0.01	<0.01	< 0.004	0.00003	< 0.5	4.1	10.1	0.63	0.014	0.068
Maximum	2900	335	0.03	0.02	5.33	0.01251	29	8.4	25.2	240	0.310	0.262
Median	7	20.8	0.01	0.01	0.03	0.00043	< 0.5	7.6	15.7	8	0.146	0.118
5-Sep-14 (w)	7.5	16.0	0.01	<0.01	0.034	0.00106	а	7.2	13.4	6.7	0.220	0.220
5-May-15 (d)	< 0.5	16.8	<0.01	<0.01	0.016	0.00020	а	6.7	15.4	0.66	0.027	0.024
7-May15 (w)	2.6	5.0	<0.01	<0.01	0.037	0.00034	а	6.9	17.6	6.3	0.121	0.104

Key: Results shown in bold are outside the desirable range cf Regional Freshwater Plan Rule 23

- a parameter not determined, no visible hydrocarbon sheen and no odour
- (d) dry weather survey (w) wet weather survey

There are no specific consent limits on any given contaminant in the discharge to Pond 1, however RFWP permitted activity limits are used as a guide and these are included in the table above.

The results obtained for these parameters of the combined stormwater discharges to Pond 1 were within those limits, with the exception of BOD in the sample during a wet weather survey on 5 September 2014 which was marginally above the maximum desirable concentration. On 5 September 2014 TIL, Tegel Feedmill and Schlumberger exceeded their BOD component concentrations given in their consents and this would have contributed to this slightly elevated result. All other parameters were either below or similar to the median values.

19.2.2 Industrial drain outlet (STW001026) and discharge (MGT000503)

The industrial drain outlet was sampled on four occasions. These were on 5 September 2014, 18 February 2015, 5 May 2015, and 7 May 2015. The results are given in Table 58 along with a summary of all data from the site.

Table 58 Chemical monitoring results for industrial drain outlet for 2014-2015 with a summary of previous monitoring data. TRC site code STW001026 (site 10)

Parameter	BOD	Condy	CuAs	CuD	DRP	NH3	NH4	O&G	рН	Temp	Turby	ZnAs	ZnD
raiailletei	g/m³	mS/m	g/m³	g/m³	g/m³	g/m³-N	g/m³-N	g/m³	рН	Deg.C	NTU	g/m³	g/m³
RFWP limit	5	-	-	-	-	0.025	-	15	6-9	-	-	-	-
Number	29	160	74	50	30	69	71	59	162	78	32	74	49
Minimum	0.7	1.2	<0.01	<0.01	< 0.003	0.00001	<0.003	<0.5	6.5	9.6	1.1	0.042	0.025
Maximum	330	79.7	0.62	0.11	2.86	6.1253	13.3	62	9.4	27.1	110	2.24	1.18
Median	4.5	14.9	0.04	0.02	0.035	0.00108	0.145	1.3	7.4	16.1	15	0.386	0.210
5-Sep-14 (w)	3.4	9.9	0.06	0.02	0.005	0.00026	0.071	а	7.1	13.3	62	0.186	0.102
18-Feb-15 (d)	19	29.9	0.05	0.01	0.029	0.05557	0.645	-	8.4	16.7	56	0.468	0.108
5-May-15 (d)	0.7	19.6	<0.01	<0.01	0.036	0.00134	0.496	а	6.9	15.4	8.2	0.077	0.054
7-May-15 (w)	6.6	5.9	0.02	<0.01	0.105	0.00302	0.303	а	7.4	17.6	21	0.282	0.18

Key: Results shown in bold are outside the desirable range of Regional Freshwater Plan Rule 23

- a parameter not determined, no visible hydrocarbon sheen and no odour
- (d) dry weather survey (w) wet weather survey

The sample taken on 18 February 2015 had an elevated BOD of 19 g/m³ and an elevated level of unionised ammonia. This was a dry weather run and the source of this contamination was not established during the survey itself. No discharges were occurring to the stream from pond 4 at the time sampling and therefore no immediate effect was occurring in the Mangati Stream. A subsequent dry weather survey found that the levels of BOD and unionised ammonia had reduced and were well below the RFWP guidelines and median values for the site.

A marginally elevated BOD result was also noted in the wet weather sample taken on 7 May 2015, on this date there was a high level of flow and it was therefore assumed that the industrial drain outlet was discharging flow from the high flow diversion system on Connett Road. If this was the case the elevated BOD would have been a result of inputs from consent holders and other unconsented sites and NPDC roadways, that discharge to the Paraite Road and Connett Road network. It is noted that on this particular occasion that TIL and Tegel Feedmills were in exceedance of BOD limits on their consent conditions.

Generally all other parameters were either similar to the median values or within the range of all results for this site.

The monitoring results for discharge from the industrial drain into the Mangati Stream are recorded in Table 59.

As the stormwater flows have been designed such that the industrial drain should now only flow during heavier rainfall events it would be expected that the discharge quality at this sampling point would improve due to the increased dilution potential during these events.

Overall, in recent years the quality of the stormwater discharge has shown improvement in comparison to the historical medians, particularly with lower concentrations of zinc and copper. In 2014-2015, this was generally reflected in all parameters monitored with all results.

Table 59	Chemical monitoring results for the industrial drain discharge to Mangati Stream for
	2014-2015 TRC site code MGT000503 (site 8)

Parameter:	AlAs g/m³	BOD g/m³		Condy mS/m		CuD g/m³	DO g/m³	DRP g/m³-P	NH3 g/m³-N	NH4 g/m³-N	O&G g/m³		рН	SS g/m³	Temp °C	Turby NTU	ZnAs g/m³	ZnD g/m³
RFWP limit		5							0.025		15		6-9	100				
Number	47	56	56	168	75	144	51	56	58	62	49	49	159	71	85	18	88	149
Minimum	<0.1	<0.5	<5	1.3	0.003	<0.001	2.5	<0.003	0.00001	0.017	<0.5	< 0.05	4.3	<2	9.7	2.0	0.025	<0.005
Maximum	9.1	76	120	80.4	1.63	0.150	10.7	0.293	0.03291	6.70	590	0.20	8.9	190	21.7	37	4.84	2.50
Median	0.8	3.6	14	19.8	0.04	0.010	8.2	0.024	0.00048	0.152	1.2	< 0.05	6.9	14	16.4	16	0.230	0.100
5-Sep-14 (w)	0.14	2.0	5	9.7	0.008	0.006	8.9	0.008	0.00006	0.08	а	<0.05	6.4	3	13.9	3.5	0.103	0.103
18-Feb-15 (d)	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
7-May-15 (w)	1.35	6.2	21	6.7	0.017	0.008	8.9	0.154	0.00112	0.278	а	<0.05	7.0	15	17.7	18	0.261	0.189

Key: Results shown in bold are outside the desirable range cf Regional Freshwater Plan Rule 23

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b no flow
- (d) dry weather survey (w) wet weather survey

Historical monitoring had previously shown that the component concentrations in the bypass drain had been similar to, or lower than, the pond discharges, indicating that the increased dilution present during heavy rainfall could allow the ponds to be bypassed without any detrimental effects on the water quality of the Mangati Stream.

With the exception of acid soluble aluminium, BOD and ammoniacal nitrogen all parameters were similar to or less than the median values for the site.

On one occasion BOD exceed the desired RFWP limit of 5.0 g/m³ and as mentioned before, that as this was during a wet weather run, it is assumed that the high flow diversion on Connett Road was in operation. If this was the case the elevated BOD would have been a result of inputs from consent holders that discharge to the Paraite Road and Connett Road network. It is noted that on this particular occasion that TIL and Tegel Feedmills were in exceedance of the BOD limits of their consent conditions.

The concentration of ammoniacal nitrogen whilst above the median on one occasion was not high enough to warrant concern.

Aluminium was found to be above median value but well below the historical maximum. No correspondingly elevated level of acid soluble aluminium was found at expected sources such as the McKechnie site.

19.2.3 Pond 3 and 4 discharges

The results for the treated discharge from pond 3 to the stream are given in Table 60. Historically, it has been found that, although pond 3 has been discharging to the stream on all monitoring occasions, pond 4 discharges directly to the Mangati Stream infrequently, and this was the case during the 2014-2015 period, with only two samples being collected.

Table 60 Chemical monitoring results for pond 3 discharge to the Mangati Stream for 2014-2015. TRC site code STW002056 (site 38)

Parameter:	AIAs g/m³		COD g/m³	Condy mS/m			DRP g/m³-P	ECOL /100mL	ENT /100mL	FC /100mL	NH3 g/m3-N	NH4 g/m3-N	O&G g/m³	PbAs g/m³	рН	SS g/m³		Turby NTU	ZnAs g/m³	ZnD g/m³
RFWP Limit		5									0.025		15		6-9	100				
Number	36	40	36	44	38	41	40	12	12	12	38	38	17	35	44	41	42	36	39	40
Minimum	<0.01	1.1	<5	3.8	0.002	0.001	<0.003	<7	<7	<7	<0.00001	0.007	<0.5	< 0.05	4.8	3	9.5	4.7	0.010	0.007
Maximum	0.80	150	280	43.5	0.04	0.03	1.16	8700	8700	19000	0.00452	1.48	49	< 0.05	7.5	110	24.2	41	0.348	0.335
Median	0.20	5.4	17	14.2	0.01	0.01	0.011	900	475	900	0.00056	0.151	<0.5	<0.05	6.9	14	17.6	10	0.166	0.120
5-Sep-14 (w)	0.25	6.8	23	14.9	0.011	0.008	0.009	-	-	-	0.00087	0.29	а	<0.05	7.0	13	13.7	11	0.146	0.132
18-Feb-15 (d)	0.18	5	28	24.7	0.001	<0.001	0.018	2700	160	2700	0.00244	0.434	-	<0.05	7.1	15	19.1	11	0.018	0.012
5-May-15 (d)	<0.1	0.9	8	18.9	<0.001	<0.001	0.004	180	450	180	0.00162	0.98	а	<0.05	6.7	3	15	2.9	0.063	0.056
7-May-15 (w)	0.26	5.4	18	11.4	0.011	0.006	0.05	-	-	-	0.00155	0.791	а	<0.05	6.7	5	17.3	7.4	0.155	0.139

Key: Results shown in bold are outside the desirable range of Regional Freshwater Plan Rule 23

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b no flow
- (d) dry weather survey (w) wet weather survey

Pond 3 was found to be discharging on all occasions. During the wet weather surveys it was found that the BOD concentrations were above median and exceeded the desired 5.0 g/m^3 limit. Copper, zinc and lead concentrations were found to be within acceptable limits and similar to historical medians. Ammoniacal nitrogen was found to above median on all occasions but within acceptable limits and unionised ammonia was well below the desired 0.025 g/m^3 value.

Table 61 Chemical monitoring results for pond 4 discharge to the Mangati Stream for 2014-2015. TRC site code STW002055 (site 37)

I I I I I I I	AIAs g/m³	_	COD g/m³	Condy mS/m	CuAs g/m³	CuD g/m³	DRP g/m³-P	NH3 g/m3-N	NH4 g/m3-N		PbAs g/m³	рН	SS g/m³		Turby NTU	ZnAs g/m³	ZnD g/m³
Number	19	18	19	21	20	21	20	17	17	7	17	21	20	20	17	20	20
Minimum	<0.1	2.6	6	4.2	0.010	0.004	0.003	<0.00001	0.021	<0.5	<0.05	5.5	7	11.4	5.4	0.075	0.065
Maximum	1.6	98	100	39.6	0.04	0.02	0.595	0.00176	0.534	5.2	<0.05	8.8	53	21.8	34	0.349	0.304
Median	0.50	5.1	14	9.9	0.02	0.01	0.013	0.00035	0.161	0.6	<0.05	6.7	16	15.9	13	0.222	0.202
5-Sep-14 (w)	0.33	7.6	26	16.1	0.014	0.009	0.01	0.00093	0.315	а	<0.05	7.0	18	13.5	14	0.182	0.162
18-Feb-15 (d)	р	b	b	b	b	b	b	b	b	b	р	b	b	b	b	b	b
5-May-15 (d)	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
7-May-15 (w)	0.67	8.1	33	12.5	0.014	0.007	0.083	0.00206	0.854	а	< 0.05	6.8	10	17	13	0.24	0.2

Key: Results shown in bold are outside the desirable range cf Regional Freshwater Plan Rule 23

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b no flow
- (d) dry weather survey (w) wet weather survey

The copper and zinc concentrations were similar or below median on both monitoring occasions, and lead concentrations were below detection limits.

The ammoniacal nitrogen concentrations were above the median for both results, however the concentration of unionised ammonia at the time was well below the 0.025 g/m^3 RFWP permitted activity limit in both samples.

BOD concentrations were elevated above the desired level of 5.0 g/m^3 during both wet weather surveys.

It is noted that during the wet weather surveys there were non-compliant levels of BOD found entering the pond systems from TIL, Tegel Feedmills on both sampling occasions and from Schlumberger on the survey undertaken on 5 September 2014 which may have contributed to the elevations in the levels of BOD in discharges from pond 3 and 4 during the wet weather surveys.

20. Receiving environment monitoring in the Mangati Stream

20.1 Mangati Stream chemical/bacteriological surveys

Sampling of the Mangati Stream itself was carried out on four occasions during the reporting period, concurrently with chemical surveys of the industrial stormwater drainage system. An attempt is made to sample approximately quarterly, with three runs per year being collected under wet conditions and one run being conducted during summer low flows. However, uncertain weather conditions and competing demands of other monitoring programmes often makes sampling at regular intervals difficult.

During the period under review four surveys were performed. The wet weather surveys were conducted on 5 September 2014 and 7 May 2015, while dry weather surveys were conducted on 18 February and 5 May 2015.

Six sites on the Mangati Stream were monitored. These sites traverse the industrial area and include a point at the coast. The locations of the monitoring sites are shown in Figure 2 and Figure 3, and are described in Table 62.

Runs are always undertaken from the top towards the bottom of the catchment. There are occasionally anomalies in results between sites within sampling runs, owing to differences between velocity of the stream and movement downstream of samplers, and to changing flow conditions during and after rainfall events. The results are given in Table 63.

Overall, the results are considered to provide a good indication of the range of water quality conditions in the stream at the various sites. Historically, the median values have been biased towards wet weather conditions due to the fact that the Council programmes three wet weather surveys and one dry weather survey per year.

 Table 62
 Chemical sampling sites on the Mangati Stream

Site	Location	GPS (NZTM)	Site code
Mangati above Tegel (poultry processing plant)	Below railway bridge approx 100 m above inflow from the wetland that receives Tegel discharge	E 1700106 N 5677953	MGT000485
Mangati below Tegel (poultry processing plant)	Approx 200 m below the wetland that receives Tegel's discharge and 40 m above De Havilland Drive	E 1700007 N 5678217	MGT000493
Mangati above Connett Road	Immediately above the end of Connett Road about 200 m below Greymouth Petroleum and Tasman Oil discharge	E 1699775 N 5678573	MGT000497
Mangati above industrial drain	Below pond 3 discharge and immediately above pond 4 and industrial drain direct discharges	E 1699596 N 5678691	MGT000500
Mangati below industrial drain	Approx 50 m below State Highway 3	E 1699513 N 5678787	MGT000512
Mangati at coast	Opposite NPDC sewage pumping station approx 30 m from high water mark	E 1699215 N 5680409	MGT000550

The top site is above the direct influence of the industrial area, though it is possible that deposits from aerial emissions could cause effects there. The second site is below

the influence of treated discharge from Tegel's poultry plant. Although there is a tributary that joins the Mangati Stream from the north approximately 100 m upstream of the Tegel swamp tributary that is not monitored. The third site, above Connett Road is below the influence of the industries on De Havilland Drive and above the main stormwater drain (pond) discharge points. This site would show the influence of the untreated discharge from the northern side of the poultry processing plant, Tasman Oil, Greymouth Petroleum, along with the road stormwater and permitted activities that discharge via the NPDC's reticulated stormwater outlets from De Havilland Drive on either side of the Mangati Stream. The fourth site is below the discharge from pond 3, which has been found to still be discharging even during prolonged periods of dry weather. The fifth site is below the discharges from the main stormwater drain when it either bypasses the wetlands, or discharges from pond 4. These five sites lie along a reach of about 1 km that is relatively flat, apart from the fall at the highway. The sixth site is below a steeper reach and is about 2 km further downstream, beyond the residential area, close to the mouth of the stream.

The chemical and microbiological characteristics of the stream above the industrial area are typical of a lowland stream in a pastoral catchment. In general, they have not changed significantly since monitoring began in 1992, although the BOD and dissolved reactive phosphorous do appear to be increasing in the stream at the railway site, above the industrial area, as well as through, and below, the industrial area. It also appears that there may be an emerging trend of reducing metals concentrations, particularly in dissolved copper and zinc at the site below pond 4 and the bypass drain, and at the coast.

 Table 63
 Results from chemical surveys of the Mangati Stream for 2014-2015

				Mang	ati Stream		
Parameter		Railway	Above DeHavilland Drive	Above Connett Road	Below pond 3 Discharge (formerly above industrial drain)	Below pond 4 and wetland bypass drain	At Coast
5 Sep 2014 - w	et	MGT000485	MGT000493	MGT000497	MGT000500	MGT000512	MGT000550
BOD	g/m³	3.6	3.4	3.1	4.4	5.5	4.0
Cond @20°C	mS/m	17.8	17.7	17.5	17.2	16.8	15.3
CuAs	g/m³	0.004	0.004	0.004	0.006	0.007	0.007
CuD	g/m³	0.001	0.001	0.002	0.004	0.004	0.004
DO	g/m³	8.1	8.1	1.8	8.1	8.5	9.0
DRP	g/m³ P	0.043	0.020	0.016	0.016	0.014	0.015
NH ₃	g/m³	0.00092	0.00138	0.00098	0.00103	0.00100	0.00098
NH ₄	g/m³ N	0.327	0.390	0.337	0.353	0.338	0.203
N-N-N	g/m³ N	1.35	-	-	-	-	0.87
рН	рН	7.0	7.1	7.0	7.0	7.0	7.2
SS	g/m³	39	40	31	32	28	28
Temp	Deg.C	12.9	12.9	13.3	13.4	13.5	13.9
Turby	NTU	22	21	16	15	16	17
ZnAs	g/m³	0.012	0.040	0.026	0.048	0.063	0.038
ZnD	g/m³	0.009	0.014	0.016	0.039	0.044	0.022

				Mang	ati Stream		
Parameter		Railway	Above DeHavilland Drive	Above Connett Road	Below pond 3 Discharge (formerly above industrial drain)	Below pond 4 and wetland bypass drain	At Coast
18 Feb 2015 -	dry	MGT000485	MGT000493	MGT000497	MGT000500	MGT000512	MGT000550
BOD	g/m³	5.1	3.3	2.7	4.6	1.8	1.3
BODCF		1.2	0.8	0.6	<0.5	<0.5	-
Cond @20°C	g/m³	21.8	22.3	24.7	24.4	24.0	20.5
CuAs	g/m³	0.001	<0.001	<0.001	0.002	<0.001	0.015
CuD	mS/m	0.001	<0.001	<0.001	<0.001	<0.001	0.001
DO	g/m³	2.62	2.98	2.9	3.7	4.5	5.0
DRP	g/m³ P	0.022	0.033	0.029	0.022	0.024	0.015
ECOL	/100ml	2200	8700	3100	900	1200	680
ENT	/100ml	6000	4100	2500	1700	1700	830
FC	/100ml	2300	8800	3200	900	1200	730
NH ₃	g/m³	0.00097	0.00159	-	0.00097	0.00145	0.00075
NH ₄	g/m³ N	0.202	0.410	0.189	0.180	0.172	0.054
N-N-N	g/m³ N	0.73	-	-	-	-	1.07
PERSAT	%	24.9	29	30	36	-	51
рН	рН	7.2	7.1	7.1	7.2	7.4	7.5
SS	g/m³	54	10	7.0	45	4	16
Temp	Deg.C	13.9	14.1	-	15.5	15.3	19.0
Turby	NTU	44	13	6.1	22	4.5	6.3
ZnAs	g/m³	0.005	0.007	<0.005	0.012	0.005	0.040
ZnD	g/m³	<0.005	0.007	<0.005	0.005	<0.005	0.005
5 May 2015 - d	lry	MGT000485	MGT000493	MGT000497	MGT000500	MGT000512	MGT000550
BOD	g/m³	1.3	1.7	1.4	1.3	1.4	1.0
BODCF	g/m³	<0.5	<0.5	<0.5	<0.5	-	-
Cond @20°C	g/m³	17.8	18.1	18.7	18.8	18.6	18.4
CuAs	g/m³	0.001	<0.001	0.001	0.001	0.001	0.001
CuD	mS/m	-	0.001	<0.001	<0.001	<0.001	<0.001
DO	g/m³	8.4	7.2	7.8	7.8	8.4	9.7
DRP	g/m³ P	0.014	0.012	0.012	0.006	0.006	0.006
ECOL	/100ml	1300	1100	600	650	500	400
ENT	/100ml	730	730	900	600	520	350
FC	/100ml	1300	1100	600	650	500	400
NH ₃	g/m³	0.00014	0.00016	0.00016	0.00025	0.00023	0.0003
NH ₄	g/m³ N	0.071	0.104	0.126	0.152	0.141	0.088
N-N-N	g/m³ N	1.01	-	-	-	-	1.16
PERSAT	%	81	80	76	77	82	96
рН	рН	6.8	6.7	6.6	6.7	6.7	7.0

				Mang	ati Stream		
Parameter		Railway	Above DeHavilland Drive	Above Connett Road	Below pond 3 Discharge (formerly above industrial drain)	Below pond 4 and wetland bypass drain	At Coast
SS	g/m³	5	7	8	6	6	4
Temp	Deg.C	14.0	14.0	14.7	14.8	14.7	15.4
Turby	NTU	3.4	4.0	5.8	6.0	5.3	4.8
ZnAs	g/m³	<0.005	<0.005	0.006	0.006	0.006	0.01
ZnD	g/m³	<0.005	<0.005	<0.005	<0.005	<0.005	0.007
7 May 2015 - w	ret	MGT000485	MGT000493	MGT000497	MGT000500	MGT000512	MGT000550
BOD	g/m³	2.1	3.8	<0.5	3.7	5.5	3.8
Cond @20°C	g/m³	17.0	15.9	14.0	14.2	13.0	12
CuAs	g/m³	0.003	0.006	0.009	0.009	0.018	0.01
CuD	mS/m	0.001	0.001	0.002	0.002	0.005	0.003
DO	g/m³	7.4	7.2	7.5	7.2	8.0	8.9
DRP	g/m³ P	0.019	0.027	0.018	0.021	0.051	0.019
NH ₃	g/m³	0.00040	0.00058	0.00029	0.00047	0.00074	0.00066
NH ₄	g/m³ N	0.110	0.197	0.120	0.195	0.305	0.215
N-N-N	g/m³ N	1.02	-	-	-	-	0.6
PERSAT	%	75	74	78	75	83	92
рН	рН	7.0	6.9	6.8	6.8	6.8	6.9
SS	g/m³	41	59	51	44	64	27
Temp	Deg.C	16.3	16.5	16.8	17.0	17.1	17.2
Turby	NTU	27	36	39	34	50	22
ZnAs	g/m³	0.008	0.048	0.046	0.050	0.108	0.059
ZnD	g/m³	<0.005	0.016	0.017	0.028	0.072	0.035

Results shown in bold are outside the desirable range of Regional Freshwater Plan Rule 23

- a parameter not determined, no visible hydrocarbon sheen and no odour
- b no flow
- (d) dry weather survey (w) wet weather survey

20.1.1 Biochemical oxygen demand

Longitudinal profiles of the BOD in the Mangati Stream are shown in Figure 7. In the period under review BOD concentrations typically increase slightly when comparing the concentrations between the upper site (MGT000485) and the site immediately below the industrial area (MGT000512). However improvements are noted further downstream at site MGT000550.

In all but one of the surveys, BOD results were found to be above the median values at most sites. However this may be the result of the original input concentrations at the upstream control site being elevated above the median value during the period under review.

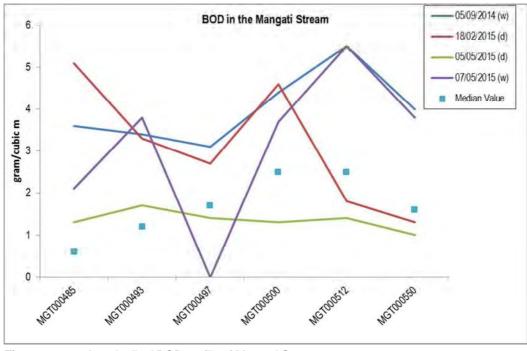


Figure 7 Longitudinal BOD profile of Mangati Stream

Key: (d) dry weather survey (w) wet weather survey

20.1.2 Suspended solids

There were reductions in suspended solids concentrations when comparing between the upstream site (MGT000485) and the site immediately below the industrial area (MGT000512) during all surveys with the exception of the wet weather survey undertaken on 7 May 2015.

Suspend solid concentrations were found to be generally above median value for each site in three of the four surveys, however it is noted that the upstream control site (MGT000485) also had elevated concentrations, indicating non-industrial inputs are also contributing to the elevated results.

Rises in suspended solid up and downstream of the inputs from Greymouth and Tasman Tools (between sites MGT000493 and 497) were not observed this period.

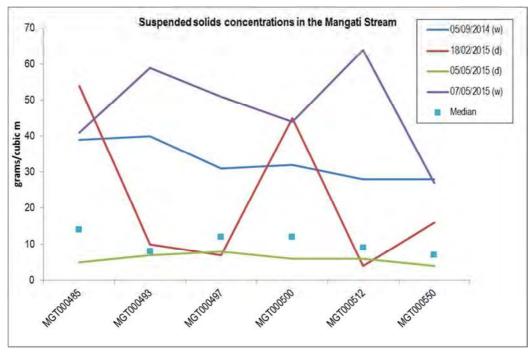


Figure 8 Longitudinal suspended solids profile of Mangati Stream

Key: (d) dry weather survey (w) wet weather survey

20.1.3 Ammoniacal nitrogen

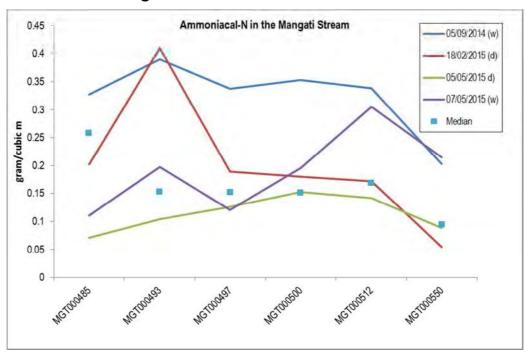


Figure 9 Longitudinal ammoniacal nitrogen profile of Mangati Stream

Key: (d) dry weather survey (w) wet weather survey

Ammonia levels were for the most part above historical medians. In three of the surveys there was a slight peak of ammoniacal nitrogen immediately downstream of Tegel's wetland (at site MGT000493) and then a downward trend as one moved down through the industrial area. In one survey on 7 September 2015 there was a second noticeable peak after the NPDC pond and industrial drain discharges

(MGT000512). In all cases the level of free ammonia was well below the $0.025~g/m^3$ RFWP limit with the highest level being $0.0016~g/m^3$ at site MGT000493 on 5 September 2014.

20.1.4 Zinc and copper

The results for the 2014-2015 period along with summaries of the monitoring data monitoring year, for acid soluble and dissolved zinc and copper concentrations in the water column of the Mangati Stream, are given in Table 64 and Table 65.

Table 64 Summary of zinc monitoring data for Mangati Stream water

Date	Above industrial area (MGT000485)		area (MGT000485)		area			ove and Drive 00493)	Abo Conne (MGT0	tt Road	Below p Discharge above the dra (MGT00	(formerly industrial in)			Mangati (MGT0	
	ZnAs g/m³	ZnD g/m³	ZnAs g/m³	ZnD g/m³	ZnAs g/m³	ZnD g/m³	ZnAs g/m³	ZnD g/m³	ZnAs g/m³	ZnD g/m³	ZnAs g/m³	ZnD g/m³				
Number	74	71	16	15	52	48	54	73	98	169	68	67				
Minimum	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.005				
Maximum	0.043	0.034	0.183	0.104	0.147	0.052	0.280	0.141	0.637	0.377	0.358	0.179				
Median	<0.005	<0.005	0.020	0.007	0.010	0.008	0.018	0.012	0.049	0.013	0.044	0.026				
5-Sep-14 (w)	0.012	0.009	0.040	0.014	0.026	0.016	0.048	0.039	0.063	0.044	0.038	0.022				
18-Feb-15 (d)	0.005	<0.005	0.007	0.007	< 0.005	< 0.05	0.012	0.005	0.005	< 0.005	0.040	0.005				
5-May-15 (d)	<0.005	<0.005	<0.005	< 0.005	0.006	< 0.05	0.006	<0.005	0.006	< 0.005	0.010	0.007				
7-May-15 (w)	0.008	<0.005	0.048	0.016	0.046	0.017	0.050	0.028	0.108	0.072	0.059	0.035				

Key: (d) dry weather survey (w) wet weather survey

 Table 65
 Summary of copper monitoring data for Mangati Stream water

Date	Above industrial area (MGT000485) CuAs, CuD,		DeHavilla	Above DeHavilland Drive (MGT000493)		Above Connett Road (MGT000497)		Below pond 3 Discharge (formerly above the industrial drain) (MGT000500)		ond 4 and bypass ain 00512)	•	at Coast 00550)
	CuAs, g/m ³	CuD, g/m³	CuAs, g/m³	CuD, g/m³	CuAs, g/m³	CuD, g/m ³	CuAs, g/m³	CuD, g/m³	CuAs, g/m³	CuD, g/m ³	CuAs, g/m³	CuD, g/m³
Number	74	77	15	15	51	53	66	80	88	177	68	72
Minimum	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Maximum	0.020	0.010	0.04	0.001	0.090	0.016	0.060	0.016	0.280	0.066	0.210	0.025
Median	0.01	0.001	<0.001	<0.001	0.010	0.002	0.010	0.003	0.010	0.003	0.010	0.005
5-Sep-14	0.004	0.001	0.004	0.001	0.004	0.002	0.006	0.004	0.007	0.004	0.007	0.004
18-Feb-15 ^d	0.001	0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	< 0.001	<0.001	0.015	0.001
5-May-15 ^d	0.001	1	<0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001
7-May-15	0.003	0.001	0.006	0.001	0.009	0.002	0.009	0.002	0.018	0.005	0.010	0.003

Key: (d) dry weather survey (w) wet weather survey

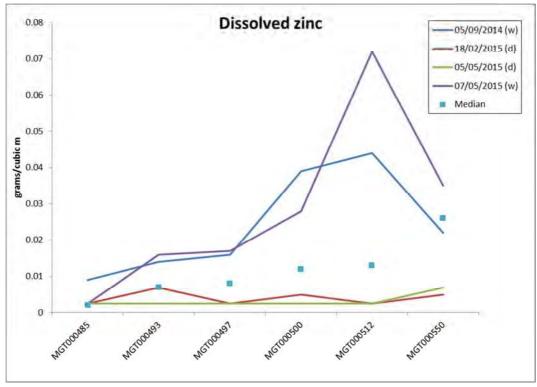


Figure 10 Longitudinal dissolved zinc profile of Mangati Stream

Key: (d) dry weather survey (w) wet weather survey

During both wet weather surveys there were increases in the concentration of dissolved zinc when comparing the sites up and downstream of the industrial drain, Pond 4 and Pond 3 discharges, however the concentrations were notably lower at the Mangati Stream site MGT000550 (Figure 10). The most significant elevation of zinc concentrations occur between sites MGT000500 and MGT000512 during wet weather surveys during which Pond 4 (STW002054) and the industrial drain (MGT000503) were discharging. Less significant elevations were noted down stream of the Pond 3 discharge (site MGT000500) and downstream of the combined discharges from de Havilland Road, Tasman Tools and Greymouth at site MGT000497.

During dry weather runs the concentrations of dissolved zinc remain relatively low and stable through out the stream system indicating that the elevated levels noted during wet weather surveys are transitory and that lower levels prevail during low and moderate flow conditions.

The concentrations of dissolved copper had similar patterns to that of dissolved zinc with wet weather surveys returning elevated results at sites MGT000500 and MGT000512 wet during weather surveys and lower more stable concentrations during dry weather surveys.

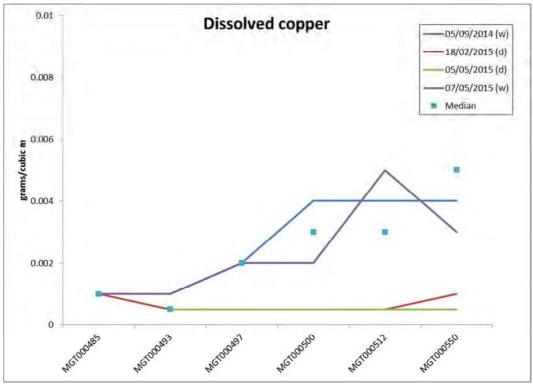


Figure 11 Longitudinal dissolved copper profile of Mangati Stream

Key: (d) dry weather survey (w) wet weather survey

There are several guidelines for zinc and copper for assessing water quality in terms of suitability for sustaining aquatic life. The United States Environmental Protection Agency (USEPA), in defining metals criteria for protection of freshwater aquatic life, has adopted the use of dissolved metals as most closely approximating the bio available fraction of metal in the water column. Previously, water quality criteria were based on total recoverable metal concentration.

The water quality criteria for dissolved copper and zinc, for water of hardness $50 \text{ g/m}^3 \text{ CaCO}_3$, are 0.005 g/m^3 for Cu and 0.058 g/m^3 for Zn respectively as a 4 day average, for chronic (long term) exposure. The corresponding criteria for acute (4-hour) exposure are 0.007 g/m^3 for Cu and 0.064 g/m^3 for Zn. Acute criteria only are applicable to wet weather sampling results, whereas both chronic and acute exposure criteria are applicable to dry weather sampling results.

During the dry weather surveys all results were below the USEPA chronic exposure guidelines for zinc and copper and were also below the ANZSECC 95% protection trigger values.

During the weather survey all results for copper were below the USEPA acute exposure guideline value of 0.007 g/m^3 . All but one result for zinc were below the USEPA acute exposure guideline value of 0.064 g/m^3 .

Additional programmed dry weather sampling is undertaken to monitoring effects of McKechnie's activities and the results from the receiving water sampling are given below in Table 66. All receiving water results were found to meet USEAP chronic exposure limits for both zinc and copper.

Table 66 Zinc and copper monitoring data for dry weather Mangati Stream water

Date		Below main industrial storm d (MGT000512)	rain
	Cond mS/m	CuD, g/m³	ZnD, g/m³
13-Oct-14	18.6	<0.001	0.010
29-Jan-15	25.1	0.002	<0.005
19-Feb-15	24.3	<0.001	<0.005
15-Jun-15	18.9	0.002	0.016
USEPA chronic limit	-	0.005	0.058

20.2 Mangati Stream biological surveys

Biological surveys produce a measure of time-integrated effects of discharges on water quality of a waterway, as opposed to the "snapshot" measure of a chemical survey.

20.2.1 Macroinvertebrate surveys

The routine surveys for the 2014-2015 monitoring period were carried out on 2 December 2014 and 12 February 2015. These were the fortieth and forty-first biannual surveys for this programme. The reports on the two surveys are attached as Appendix III. The "tributary" referred to in the reports is the main industrial storm drain.

The surveys measure the "health" of the stream in terms of the presence and abundance of benthic macroinvertebrates (bottom dwelling life) and microflora. There are eight fixed sites, as described in Table 1 and Figure 1 of Appendix III. The uppermost site is above the influence of any known industrial discharge. There are five sites above and four below the pond 3 discharge from the wetland.

The reports assess the quality of the water in terms of macroinvertebrate diversities (number of taxa), Macroinvertebrate Community Index (MCI) values, and Semi-Quantitative Macroinvertebrate Community Index (SQMCI) values.

Past biological surveys of the Mangati Stream have recorded poor macroinvertebrate communities with limited numbers of taxa and low MCI values, particularly downstream of the industrial tributary. Small, slow flowing coastal streams draining farmland and industrial areas are not expected to support a large number of macroinvertebrate taxa. High MCI values are not expected in the lowland reaches of soft-bedded streams with farmland or urban catchments because not many high scoring, 'sensitive' taxa are suited to these conditions. However, the abundance and MCI values recorded at some sites downstream of the tributary have been unusually low even for these conditions. A summary of previous results is presented with current results in Table 67 and the summary and conclusions of the macroinvertebrate survey reports are given below.

Table 67Numbers of taxa and MCI values recorded in previous surveys in the Mangati Stream, together with results of the December 2014 and February 2015 surveys

	Number		Number	s of taxa			MCI v	alues			SQMCIs	values	
Site	of previous surveys	Med	Range	Dec 2014	Feb 2015	Med	Range	Dec 2014	Feb 2015	Med	Range	Dec 2014	Feb 2015
Α	42	16	9-29	12	16	78	56-91	78	73	3.6	2.2-4.7	4.6	4.3
A2	40	16	10-29	16	16	75	57-92	76	73	3.6	1.8-4.5	4.1	4.7
A1	42	16	7-23	20	22	73	47-89	82	78	3.5	1.7-4.7	4.2	4.4
А3	40	17	8-23	8	15	69	52-81	63	71	2.6	1.6-4.6	2.5	2.6
В	48	14	3-29	9	13	69	50-86	69	68	2.5	1.1-4.5	1.8	1.8
D2	24	11	5-18	9	14	70	40-78	78	63	2.5	1.1-3.5	1.6	2.5
Е	46	10	3-22	11	17	64	44-78	67	72	2.5	1.1-3.9	2.5	3.5
F	40	11	2-22	15	18	67	30-79	71	70	2.1	1.2-4.1	1.2	3.6

On 2 December 2014 and 12 February 2015, the Council's standard 'kick-net' sampling technique was used at six established sites (four in February 2014) to collect streambed macroinvertebrates from the Mangati Stream to determine whether stormwater and wastewater discharges from the Mangati industrial area have had any adverse effects on the macroinvertebrate communities of this stream. Between two and four other sites were sampled on each occasion using the sweep sampling technique, or a combination of the sweep and kick sampling techniques. Samples were sorted and identified to provide the number of taxa (richness), MCI score and SQMCI_s score for each site.

The MCI is a measure of the overall sensitivity of the macroinvertebrate community to the effects of organic pollution in stony streams. It is based on the presence/absence of taxa with varying degrees of sensitivity to environmental conditions. The SQMCI_s takes into account taxa abundance as well as sensitivity to pollution, and may reveal more subtle changes in communities, particularly if non-organic impacts are occurring. Significant differences in either the MCI or the SQMCI_s between sites indicate the degree of adverse effects (if any) of the discharges being monitored.

The Mangati Stream is a small, slower flowing, lowland stream running through farmland, an industrial area and a residential area. As such, this stream typically supports communities commonly found in lowland, soft-bedded streams that are relatively 'tolerant' to organic pollution. The communities are usually dominated by 'tolerant' taxa and those 'moderately sensitive' taxa commonly associated with macrophytes e.g. oligochaete worms, snail (*Potamopyrgus*), and amphipod (*Paracalliope*).

Upstream of De Havilland Drive, taxa richnesses, MCI scores and SQMCI_s scores were similar to or higher than their respective medians during both the spring and summer surveys, reflecting that populations were in average to above average condition. Although at site A3, just upstream of Connett Road, there was a reduction in taxa richness, MCI score and SQMCI_s score, they were still about average for this site. Similar results were recorded at the next two sites (B and D2), while taxa richness and SQMCI_s scores at sites E and F indicated some recovery.

In the February survey, Site A3 (upstream of Connett Road), recorded a taxa richness of 15, almost twice that recorded in the December survey (8). The MCI score of 63 recorded in the spring survey was six units less than the median, and nineteen units less than that recorded upstream, a statistically significant result. Similarly, the SQMCI_s score (2.5) was 0.1 unit less than the median, but 1.7 units less than that recorded upstream. While in the summer survey the MCI score of 71 was slightly higher than the median, but seven units less than that recorded upstream. Similarly, the SQMCI_s score (2.6) was equal to the median, but 1.8 units less than that recorded upstream. In the spring survey the MCI score at sites B and D2 improved slightly from that recorded at site A3, however there was little improvement in taxa richness. In communities with low taxa richness, the MCI score is easily influenced by the addition or subtraction of a small number of taxa present as rarities. This is principally what has caused the recovery in MCI score at sites B and D2, and as such the SQMCI_s score is considered a better reflection of community health. The MCI scores at sites B and D2 deteriorated further from that recorded at site A3 in the summer survey. Site B recorded low SQMCI_s scores in both surveys indicating that the communities at sites B and D2 were in very poor health and heavily dominated by very 'tolerant' taxa.

The December survey recorded communities at sites A3, B and D2 that were suggestive of a short term but recent toxic discharge, which resulted in the loss of 'sensitive' taxa. The February survey indicated that A3 had recovered somewhat, but only to 'average' conditions, compared with the above average conditions recorded upstream. Although this suggests some on going deterioration between sites A1 and A3, it is only subtle, and subsequently difficult to determine the cause, be it due to industrial discharges, or variation in habitat. Therefore, there was no direct indication of degradation in physicochemical water quality which could be directly attributed to the stormwater discharges from the De Havilland Drive West area, Tasman Oil, and Greymouth Petroleum in this reach of the stream. However, other monitoring undertaken at around this time may provide further insight.

Site B recorded a very low SQMCI_s scores, and although the MCI score was similar to the average, this low SQMCI_s score suggests that the wetland had caused deterioration in water quality. However, this was not accompanied by the presence of undesirable heterotrophic growths. Although site D2 recorded a slightly reduced MCI score from that recorded at site B, the SQMCI_s score indicated some recovery. Therefore it is unlikely that the industrial drain, which enters between these two sites, has caused a reduction in community health.

Previous surveys have observed evidence of urbanisation of the Mangati Stream, such as bed erosion and significantly high preceding flows. Although no such erosion was noted during the February survey, the December survey did note that site B was experiencing bank undercutting and collapse, and that this was likely to be a reflection of this urbanisation. Urbanisation of the catchment must be given regard to, due to increased subdivision in the headwaters, as there is potential for an increase in the 'flashiness' of the floods experienced by the Mangati Stream. This may become apparent with the recent installation of a continuous flow and rainfall data recording station (October 2012). This impact is likely to worsen as the new industrial subdivision around the De Havilland Drive area is developed further.

Overall, the changes in community structures, numbers of taxa, and MCI values throughout the upper to mid reaches of the Mangati Stream, indicate that there have

been no significant adverse effects on macroinvertebrate communities resulting from discharges from Tegel Poultry. However, downstream of De Havilland Drive, where stormwater from De Havilland Drive West, Tasman Oil and Greymouth Petroleum enter, there was some deterioration in macroinvertebrate communities from that recorded upstream. This deterioration was relatively subtle and as such could not be attributed to a specific discharge or site. The lower discharge from the wetland ponds may have had subtle impacts on the macroinvertebrate community of site D2, as indicated by the dominance of 'tolerant' taxa in the community. The lowest two sites indicated some recovery in water quality in the survey undertaken in February, with above average community richness, MCI and SQMCI_s scores.

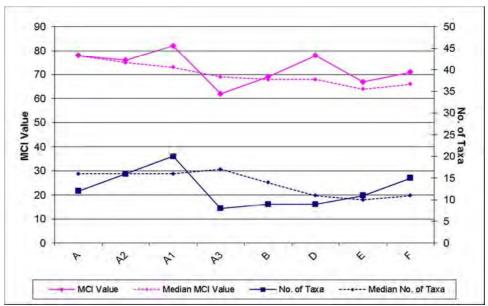


Figure 12 Numbers of taxa and MCI values recorded at sites in the Mangati Stream in the December 2014 survey

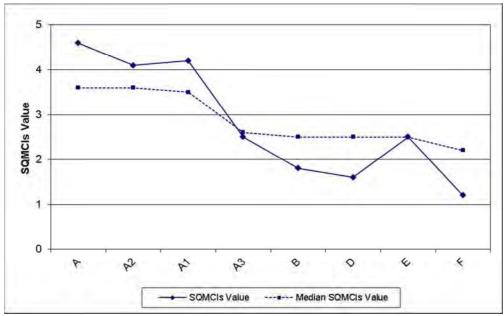


Figure 13 SQMCI_s values recorded at sites in the Mangati Stream in the December 2014 survey

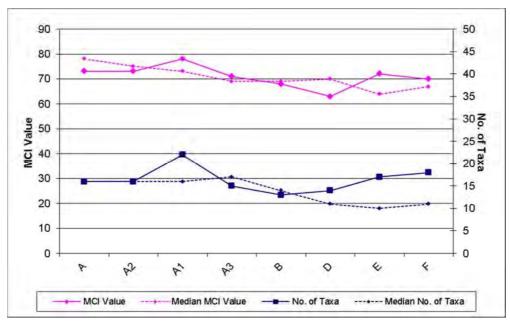


Figure 14 Numbers of taxa and MCI values recorded at sites in the Mangati Stream in February 2015 survey

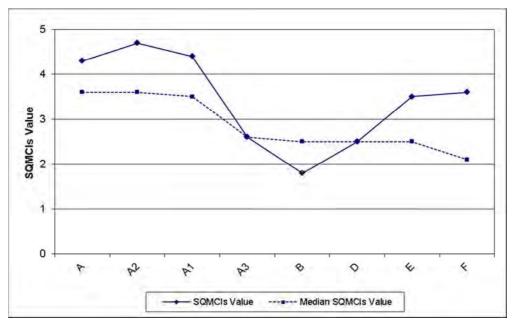


Figure 15 SQMCI_s values recorded at sites in the Mangati Stream in the February 2015 survey

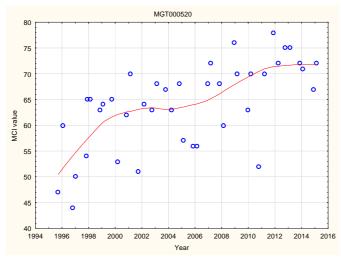
20.2.1.1 Statistical analysis of macroinvertebrate results

During the period under review a 20 year trending analysis of MCI results at two sites used in monitoring the activities in the Mangati industrial catchment was published in *Freshwater Macroinvertebrate Fauna Biological Monitoring Programme Annual State of the Environment Monitoring Report* 2014-2015 *Technical Report* 2015-66 (and Report CF622).

The sites that were trended were site A (above industrial catchment) and site E (below industrial catchment). The trending included the results obtained in the year under review.

The report noted that at site E, "A positive temporal trend in MCI scores, statistically significant (p < 0.01) prior to and after FDR analysis, indicated continued improvement coincident with better control and treatment of industrial point source discharges in the upper and mid-catchment and wetland installation (stormwater interception) in mid catchment with this improvement continuing in recent years."

This report also noted that "the trend of improvement in stream 'health' at site [E] has been much more pronounced than the trend at the site 1.5 km upstream, indicating that activities in the catchment between these two sites have had a significant positive influence".



N = 41 Kendall tau = +0.485p level = <0.0001 [>FDR, p <0.0001] Significant at p <0.05 and p <0.01after FDR application

Figure 16 LOWESS trend plot at the Te Rima Place, Bell Block (site E)

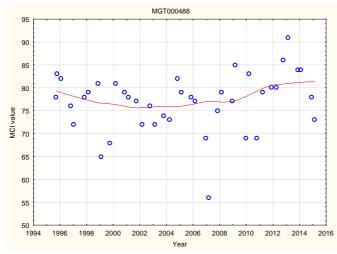


Figure 17 LOWESS trend plot of MCI data at the site downstream of the railbridge (u/s industrial catchment Site A)

N = 41 Kendall tau = + 0.127 p level = 0.241[>FDR, p = 0.322] N/S at p < 0.05

20.2.2 Fish survey

Summer spotlighting fish surveys are undertaken every three years, this is next scheduled during the 2016-2017 monitoring period.

21. Summary of recommendations

- 1. THAT monitoring programmed for the consented activities of ABB Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.
- 2. THAT monitoring programmed for the consented activities of GrainCorp Feeds Ltd (formerly BLM Feeds Ltd) in the 2015-2016 year continues at the level programmed for 2014-2015.
- 3. THAT monitoring programmed for the consented activities of Greymouth Petroleum Acquisitions Company Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.
- 4. THAT monitoring programmed for consented activities of Halliburton New Zealand Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.
- 5. THAT monitoring programmed for consented activities of McKechnie Aluminium Solutions Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.
- 6. THAT monitoring programmed for consented activities of New Plymouth District Council in the 2015-2016 year continues at the level programmed for 2014-2015.
- 7. THAT monitoring programmed for consented activities of Nexans New Zealand Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.
- 8. THAT monitoring programmed for consented activities of Schlumberger New Zealand Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.
- 9. THAT monitoring programmed for consented activities of Tasman Oil Tools Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.
- 10. THAT monitoring programmed for consented activities of TIL Freighting Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.
- 11. THAT monitoring programmed for consented activities of Tegel Foods Ltd (feed mill) in the 2015-2016 year continues at the level programmed for 2014-2015. This includes a triennially scheduled deposition gauge survey at four sites in the vicinity of the feed mill.
- 12. THAT monitoring programmed for consented activities of Tegel Foods Ltd (poultry processing plant) in the 2015-2016 year continues at the level programmed for 2014-2015 & THAT consideration be given to reinstating the unionised ammonia limit on consent 3470-3 at the next review opportunity (June 2017) if still considered necessary.
- 13. THAT monitoring programmed for consented activities of Vector Gas Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.

14. THAT monitoring programmed for consented activities of W Abraham Ltd in the 2015-2016 year continues at the level programmed for 2014-2015.

Glossary of common terms and abbreviations

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

Al* aluminium

Biomonitoring assessing the health of the environment using aquatic organisms

BOD biochemical oxygen demand. A measure of the presence of degradable

organic matter, taking into account the biological conversion of ammonia

to nitrate

BODF biochemical oxygen demand of a filtered sample

filtered carbonaceous biochemical oxygen demand. A measure of the **BODCF**

presence of dissolved degradable organic matter, excluding the biological

conversion of ammonia to nitrate

a wall around a tank to contain its contents in the case of a leak Bund

CDS condensed distiller's syrup. A dark brown syrupy liquid with similar

consistency to runny honey, which is the liquid fraction that remains after grains (principally wheat) have been fermented in the process of producing bio-ethanol in combination with yeasts and enzymes

COD chemical oxygen demand. A measure of the oxygen required to oxidise

all matter in a sample by chemical reaction

conductivity, an indication of the level of dissolved salts in a sample, Condy

usually measured at 20°C and expressed in mS/m

Cu* copper

DO dissolved oxygen

DRP dissolved reactive phosphorus

escherichia coli, an indicator of the possible presence of faecal material and E.coli

pathological micro-organisms. Usually expressed as colony forming units

per 100 millilitre sample

Ent 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

FC faecal coliforms, an indicator of the possible presence of faecal material

and pathological micro-organisms. Usually expressed as colony forming

units per 100 millilitre sample

fresh elevated flow in a stream, such as after heavy rainfall

grams per cubic metre, and equivalent to milligrams per litre (mg/L). In g/m^3

water, this is also equivalent to parts per million (ppm), but the same

does not apply to gaseous mixtures

IBC 1,000 L intermediate bulk container

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

Intervention action/s taken by Council to instruct or direct actions be taken to avoid or

reduce the likelihood of an incident occurring

action taken by Council to establish what were the circumstances/events Investigation

surrounding an incident including any allegations of an incident

IR Incident Register entry- an event recorded by the Council on the basis

that it had potential or actual environmental consequences that may

represent a breach of a consent or provision in a Regional Plan

LMP liquid mud plant L/s litres per second

MCI macroinvertebrate community index; a numerical indication of the state

of biological life in a stream that takes into account the sensitivity of the

taxa present to organic pollution in stony habitats

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 ammonium, normally expressed in terms of the mass of nitrogen (N)

NH₄ ammonium, normally expressed in terms of the mass of nitrogen (N) NH₃ unionised ammonia, normally expressed in terms of the mass of nitrogen

(N)

NNN total nitrate and nitrite nitrogen, expressed in terms of the mass of

nitrogen (N)

NO₃ nitrate, normally expressed in terms of the mass of nitrogen (N)
NTU Nephelometric Turbidity Unit, a measure of the turbidity of water
O&G oil and grease, defined as anything that will dissolve into a particular

organic solvent (e.g. hexane). May include both animal material (fats) and

mineral matter (hydrocarbons)

Pb* lead

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

RFWP Regional Freshwater Plan for Taranaki

Resource consents 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

SS suspended solids

Temp temperature, measured in °C (degrees Celsius)

Turb turbidity, expressed in NTU

XLPE cross linked polyethylene, which is hydronic tubing that is manufactured

from polyethylene plastic with a three dimensional molecular bond that

is created within the structure of the plastic

Zn* zinc

*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.

Bibliography and references

- Taranaki Regional Council (2016): *McKechnie Aluminium Solutions Ltd Monitoring Programme Annual Report* 2013-2014. Technical Report 2015-88.
- Taranaki Regional Council (2016): Freshwater Macroinvertebrate Fauna Biological Monitoring Programme Annual State of the Environment Monitoring Report 2014-2015. 2015-66 CF622.
- Taranaki Regional Council (2014): Mangati Stream Catchment Resource Consents Monitoring Programme Annual Report 2012-2014. Technical Report 2014-127. October 2015.
- Taranaki Regional Council (2013): Mangati Stream Catchment Resource Consents Monitoring Programme Annual Report 2011-2012. Technical Report 2012-88. June 2013.
- Taranaki Regional Council (2012): *Mangati Stream Catchment Resource Consents Monitoring Programme Biennial Report* 2009-2011. Technical Report 2011-07. November 2012.
- Taranaki Regional Council (2010): *Mangati Stream Catchment Resource Consents Monitoring Programme Biennial Report* 2007-2009. Technical Report 2009-74. February 2010.
- Taranaki Regional Council (2007): *Mangati Stream Catchment Resource Consents Monitoring Programme Annual Report* 2005-2006. Technical Report 2005-121. August 2007.
- Taranaki Regional Council (2006): *Mangati Stream Catchment Resource Consents Monitoring Programme Annual Report* 2004-2005. Technical Report 2005-92. March 2006.
- Taranaki Regional Council (2005): *Mangati Stream Catchment Resource Consents Monitoring Programme Annual Report* 2003-2004. Technical Report 2004-111. April 2005.
- Taranaki Regional Council (2004): *Mangati Stream Catchment Resource Consents Monitoring Programme Annual Report* 2002-2003. Technical Report 2003-96. March 2004.
- Taranaki Regional Council (2003): Mangati Stream Catchment Resource Consents Monitoring Programme Annual Report 2001-2002. Technical Report 2002-82. April 2003.
- Taranaki Regional Council (2001): *Mangati Stream Catchment Resource Consents Monitoring Programme Annual Report* 2000-2001. Technical Report 2001-52. September 2001.
- Taranaki Regional Council (2000d): *Tegel Foods Ltd (feed mill) Monitoring Programme Annual Report 1999-2000.* Technical Report 2000-60. November 2000.
- Taranaki Regional Council (2000c): *Tegel Foods Monitoring Programme Annual Report* 1999-2000. *Technical Report* 2000-58. November 2000.
- Taranaki Regional Council (2000b): *Mangati Stream Catchment Resource Consents Monitoring Programme* 1999-2000 *Report*. Technical Report 00-30. September 2000.

- Taranaki Regional Council (2000a): McKechnie Pacific Ltd Resource Consent Monitoring Programme Annual Report 1999-2000. Technical Report 00-18. August 2000.
- Taranaki Regional Council (1999d): *Tegel Foods Ltd (feed mill) Monitoring Programme Annual Report 1998-99.* Technical Report 99-70.
- Taranaki Regional Council (1999c): *Tegel Foods Monitoring Programme Annual Report* 1998-99. Technical Report 99-69.
- Taranaki Regional Council (1999b): McKechnie Pacific Ltd Resource Consent Monitoring Programme Annual Report 1997-98. Technical Report 98-68. April 1999.
- Taranaki Regional Council (1999a): Mangati Stream Catchment Resource Consents Monitoring Programme 1997-99 Report. Technical Report 99-61. August 1999.
- Taranaki Regional Council (1998b): *Tegel Foods Ltd (feed mill) Monitoring Programme Annual Report 1997-98*. Technical Report 98-66.
- Taranaki Regional Council (1998a): *Tegel Foods Monitoring Programme Annual Report* 1997-98. Technical Report 98-33.
- Taranaki Regional Council (1997f): *Tegel Foods Ltd (feed mill) Monitoring Programme Annual Report 1996-97.* Technical Report 997-39.
- Taranaki Regional Council (1997e): *Tegel Foods Monitoring Programme Annual Report* 1996-97. Technical Report 97-38.
- Taranaki Regional Council (1997d): Regional Air Quality Plan for Taranaki.
- Taranaki Regional Council (1997c): Mangati Stream Catchment Resource Consents Monitoring Programme 1996-97 Report. Technical Report 97-74. October 1997.
- Taranaki Regional Council (1997b): McKechnie Pacific Ltd Resource Consent Monitoring Programme Annual Report 1996-97. Technical Report 97-53. August 1997.
- Taranaki Regional Council (1997a): Mangati Stream Catchment Resource Consents Monitoring Programme 1995-96 Report. Technical Report 96-69. February 1997.
- Taranaki Regional Council (1996d): *Tegel Foods Monitoring Programme Annual Report* 1995-96. Technical Report 96-9.
- Taranaki Regional Council (1996c): *Tegel Foods Ltd (feed mill) Monitoring Programme Annual Report 1995-96.* Technical Report 96-10.
- Taranaki Regional Council (1996b): McKechnie Pacific Ltd Resource Consent Monitoring Programme Annual Report 1995-96. Technical Report 96-35. September 1996.
- Taranaki Regional Council (1996a): *Mangati Stream Catchment Resource Consents Monitoring Programme* 1994/95 *Report.* Technical Report 95-79. March 1996.

- Taranaki Regional Council (1995): *McKechnie Pacific Ltd Resource Consent Monitoring Programme Annual Report* 1994-95. Technical Report 95-77. December 1995.
- United States Environment Protection Agency (1995): Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants; States' Compliance: Revision of Metals Criteria. Federal Register: May 4, 1995.
- Taranaki Regional Council (1994c): *Tegel Foods Monitoring Programme Annual Report* 1994-95. Technical Report 95-34.
- Taranaki Regional Council (1994b): *Tegel Foods Ltd (feed mill) Monitoring Programme Annual Report 1994-95*. Technical Report 95-33.
- Taranaki Regional Council (1994a): *Mangati Stream Catchment Resource Consents Monitoring Programme* 1992/94 Report. Technical Report 94-30. October 1994.
- Landcare Research (1994): Environmental Effects on Surrounding Vegetation of Air Emissions from the McKechnie Metals Ltd Plant, Bell Block, New Plymouth. L E Burrows and P N Johnson. July 1994.
- Department of Health (1992): *Public Health guidelines for the safe use of sewage effluent and sewage sludge on land.* Public Health Services.

Appendix I

Resource consents held by industries in the Mangati catchment (alphabetical order)

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

Name of ABB Limited

Consent Holder: [Transformer Division]

P O Box 7050

NEW PLYMOUTH 4341

Consent Granted

Date:

19 June 2008

Conditions of Consent

Consent Granted: To discharge stormwater from a transformer manufacturing

site into the Mangati Stream at or about (NZTM)

1699489E-5678080N

Expiry Date: 1 June 2026

Review Date(s): June 2014, June 2020

Site Location: 60 Paraite Road, Bell Block, New Plymouth

Legal Description: Lot 2 DP 10693

Catchment: Mangati

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. Notwithstanding any other condition of this consent, the consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
- 2. The stormwater discharged shall be from a catchment area not exceeding 2.64 hectares.
- 3. All stormwater shall be directed for treatment through the stormwater treatment system for discharge in accordance with the special conditions of this permit.
- 4. Any above ground hazardous substances storage areas shall be bunded with drainage to sumps, or other appropriate recovery systems, and not directly to the stormwater catchment.
- 5. Constituents in the discharge shall meet the standards shown in the following table.

Constituent	Standard	
pН	Within the range of 6.0 to 9.0	
Suspended solids	Concentration not greater than 100 gm ⁻³	
Oil and grease	Concentration not greater than 15 gm ⁻³	

This condition shall apply prior to the entry of the treated stormwater into the receiving waters at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

- 6. That after allowing for a mixing zone of 20 metres extending downstream of the discharge, the discharge shall not give rise to any of the following effects in the receiving waters of the Mangati Stream:
 - 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; any significant adverse effects on aquatic life.
- 7. The consent holder shall maintain a contingency plan. The contingency plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, detail measures and procedures to be undertaken to prevent spillage or accidental discharge of contaminants not authorised by this consent and measures to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.
- 8. The consent holder shall maintain a stormwater management plan. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:
 - a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor system.
- 9. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the chemicals used or stored on site, which could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable if the consent holder does not have access to email.
- 10. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

Consent 2336-3

- 11. In accordance with section 128 and 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:
 - a) during the month of June 2014 and/or June 2020; and/or
 - b) within 3 months of receiving a notification under special condition 9 above;

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 19 June 2008

For and on behalf of Taranaki Regional Council
Director-Resource Management

DISCHARGE PERMIT

Pursuant to the RESOURCE MANAGEMENT ACT 1991 a resource consent is hereby granted by the Taranaki Regional Council

Name of ABB TRANSFORMERS

Consent Holder: [A DIVISION OF ASEA BROWN BOVERI LIMITED]

PO BOX 7050 NEW PLYMOUTH

Consent

Granted Date: 29 January 1999

CONDITIONS OF CONSENT

Consent Granted: TO DISCHARGE EMISSIONS INTO THE AIR FROM DRY

STEEL GRIT BLASTING PROCESSES AND ASSOCIATED

ACTIVITIES AT OR ABOUT GR: P19:093-400

Expiry Date: 1 June 2014

Review Date[s]: June 2002 and June 2008

Site Location: 60 PARAITE ROAD, BELL BLOCK, NEW PLYMOUTH

Legal Description: LOT 2 DP10693 BLK II PARITUTU SD

For General, Standard and Special Conditions pertaining to this consent please see reverse side of this document.

TRK995435

General conditions

- a) That on receipt of a requirement from the General Manager, Taranaki Regional Council (hereinafter the General Manager), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That 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) That 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. THAT nothing in this consent removes from the consent holder the obligations, liabilities, duties and/or responsibilities specified in section 17 of the Resource Management Act 1991 or in any part of that Act.
- 2. THAT the consent holder shall at all times adopt the best practicable option [as defined in the Resource Management Act 1991] to prevent or minimise any adverse effects on the environment.
- 3. THAT all abrasive blasting shall be carried out in the steel grit blast rooms on the consent holder's site.
- 4. THAT the dust deposition rate beyond the property boundary arising from the discharge shall be less than 4.0 g/m²/30 days.
- 5. THAT the discharge shall not give rise to any offensive, objectionable or toxic levels of odour or dust at or beyond the boundary of the property.
- 6. THAT the Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 2002 and/or June 2008, for the purpose of ensuring that the conditions adequately deal with the environmental effects arising from the exercise of this consent, which were not foreseen at the time the application was considered and which it was not appropriate to deal with at that time.

Signed at Stratford on 29 January 1999	For and on behalf of TARANAKI REGIONAL COUNCIL	
	DIRECTOR—RESOURCE MANAGEMENT	

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

Name of ABB Transformers Limited

Consent Holder: PO Box 7050

Fitzrov

New Plymouth 4341

Decision Date: 12 February 2015

Commencement Date: 12 February 2015

Conditions of Consent

Consent Granted: To discharge emissions into the air from dry steel grit

blasting processes and associated activities

Expiry Date: 01 June 2032

Review Date(s): June 2020, June 2026

Site Location: 60 Paraite Road, Bell Block

Legal Description: Lot 2 DP 10693 (Discharge source & site)

Grid Reference (NZTM) 1699481E-5678027N

Catchment: Mangati

For General, Standard and Special conditions pertaining to this consent please see reverse side of this document

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 with section 36 of the Resource Management Act 1991.

Special conditions

- 1. All abrasive blasting shall be carried out in an enclosed booth or shed.
- 2. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent, including by:
 - all abrasive blasting being conducted taking into account wind direction and wind strength, such that off-site emissions are kept to a practicable minimum; and
 - all work areas and surrounding areas being cleared of accumulations of blasting material at the end of each blasting session and by the end of each working day.
- 3. The exercise of this consent shall not give rise to any offensive, objectionable or toxic levels of dust or odour at or beyond the boundary of the property on which the abrasive blasting or associated activity is occurring.
- 4. Blasting media used for dry abrasive blasting shall contain less than 2% by dry weight dust able to pass through a 0.15 mm sieve, and sand used for dry abrasive blasting shall contain less than 5% by dry weight free silica.
- 5. All emissions from abrasive blasting, surface preparation or surface coating operations and all other associated emissions from abrasive blasting shall be contained and treated prior to discharge from any operations enclosure.
- 6. All gas ventilated or otherwise emitted from an enclosure shall be treated so that the concentration of total particulate matter is less than 125 mg/m³ (natural temperature and pressure) corrected to dry gas basis, at any time.
- 7. The dust deposition rate beyond the property boundary of the site, arising from the discharge, shall be less than $0.13 \text{ g/m}^2/\text{day}$.
- 8. The final discharge shall not contain:
 - lead (Pb) or Pb compounds at a concentration greater than 0.7 milligrams per cubic metre as Pb;
 - chromium (Cr) or Cr compounds at a concentration greater than 1.5 milligrams per cubic metre as Cr; and
 - zinc (Zn) or Zn compounds at a concentration greater than 15 milligrams per cubic metre as Zn (discharge corrected to 0 degrees Celsius and dry gas).

Consent 5435-2.0

- 9. Within three months of the granting of this consent, the site shall be operated in accordance with an Operation, Management and Maintenance Plan prepared by the consent holder and approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity. The Plan shall detail how the site will be managed to achieve compliance with the conditions of this consent and shall include as a minimum:
 - a) staff training;
 - b) general housekeeping and yard maintenance;
 - c) blasting operations;
 - d) handling of toxic substances;
 - e) monitoring and maintenance of the blasting buildings and air discharge treatment systems;
 - f) the recording of training, monitoring and maintenance undertaken;
 - g) the recording of complaints made directly to the consent holder, and
 - h) the frequency of review of the plan.
- 10. Any records kept in accordance with the Operation, Management and Maintenance Plan shall be made available to the Chief Executive, Taranaki Regional Council upon request.
- 11. This consent shall on lapse on 31 March 2020, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
- 12. 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 2020 and/or June 2026, 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 12 February 2015

For and on behalf of Taranaki Regional Council

A D McLay

Director - Resource Management

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

Name of GrainCorp Feeds Limited

Consent Holder: PO Box 5054

Westown

New Plymouth 4343

Decision Date: 31 May 2011

Commencement Date: 31 May 2011

Conditions of Consent

Consent Granted: To discharge stormwater into the Mangati Stream

Expiry Date: 1 June 2026

Review Date(s): June 2020 and/or within 3 months of receiving notification

under special condition 10

Site Location: 21 Paraite Road, Bell Block

Legal Description: Lot 2 DP 15627 (Discharge source & site)

Grid Reference (NZTM) 1699288E-5678418N

Catchment: Mangati

For General, Standard and Special conditions pertaining to this consent please see reverse side of this document

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 with section 36 of the Resource Management Act 1991.

Special conditions

- 1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
- 2. The stormwater discharged shall be from a catchment area not exceeding 0.464 ha.
- 3. By 31 July 2011 all stormwater from the loading/unloading areas shall be directed through the stormwater diversion system.
- 4. Any significant volumes of hazardous substances [e.g. bulk fuel, liquid stock feeds] on site shall be:
 - a) contained in a double skinned tank, or
 - b) stored in a dedicated bunded area with drainage to sumps, or to other appropriate recovery systems, and not directly to the site stormwater system.
- 5. Constituents of the discharge shall meet the standards shown in the following table.

<u>Constituent</u>	<u>Standard</u>
рН	Within the range 6.0 to 9.0
suspended solids	Concentration not greater than 100 gm ⁻³
oil and grease	Concentration not greater than 15 gm ⁻³
5 day total biochemical oxygen demand	Concentration not greater than 25 gm ⁻³
total available chlorine	1 gm ⁻³

This condition shall apply before entry of the treated stormwater into the receiving waters at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

- 6. After allowing for reasonable mixing, within a mixing zone extending 20 metres downstream of the discharge point, the discharge shall not, either by itself or in combination with other discharges, give rise to any or all of the following effects in the receiving water:
 - 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. After allowing for reasonable mixing, within a mixing zone extending 20 metres downstream of the discharge point, the discharge shall not, either by itself or in combination with other discharges, give rise to a filtered carbonaceous biochemical oxygen demand in the Mangati Stream exceeding 2 gm⁻³.

Consent 7707-1

- 8. By 31 July 2011 the consent holder shall provide, and thereafter maintain, a satisfactory contingency plan. The contingency plan shall be adhered to in the event of a spill or emergency and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, detail measures and procedures to be undertaken to prevent spillage or accidental discharge of contaminants not authorised by this consent and measures to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.
- 9. By 31 July 2011 the consent holder shall provide, and thereafter maintain, a satisfactory stormwater management plan. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:
 - a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor systems.

A Stormwater Management Plan template is available in the Environment section of the Taranaki Regional Council's web site www.trc.govt.nz.

- 10. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the chemicals used or stored on site, that could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to worknotification@trc.govt.nz.
- 11. This consent shall lapse on 30 June 2016, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
- 12. 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:
 - a) during the month of June 2014 and/or June 2020; and/or
 - b) within 3 months of receiving a notification under special condition 10 above;

for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 2 July 2015

For and on behalf of
Taranaki Regional Council
A D McLay
Director - Resource Management

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

Name of Greymouth Petroleum Acquisition Company Limited

Consent Holder: P O Box 3394

NEW PLYMOUTH 4341

Consent Granted

Date:

1 June 2010

Conditions of Consent

Consent Granted: To discharge treated stormwater from a pipeyard used for

the cleaning and storage of casing and drilling equipment, and the storage of hazardous substances, onto and into land in circumstances where it may enter the Mangati Stream at or about (NZTM) 1699849E-5678405N

Expiry Date: 1 June 2026

Review Date(s): June 2014, June 2020

Site Location: 15 De Havilland Drive, Bell Block

Legal Description: Lot 4 DP 15326

Catchment: Mangati

General condition

a. The consent holder shall pay to the Taranaki Regional Council [the 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. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
- 2. The stormwater discharged shall be from a catchment area not exceeding 1.5 hectares.
- 3. All stormwater, except for that which is directed to tradewaste, shall be directed for treatment through the stormwater treatment system for discharge in accordance with the special conditions of this consent.
- 4. Constituents of the discharge shall meet the standards shown in the following table.

Constituent	<u>Standard</u>
pН	Within the range 6.0 to 9.0
suspended solids	Concentration not greater than 100 gm ⁻³
oil and grease	Concentration not greater than 15 gm ⁻³

This condition shall apply before entry of the treated stormwater into the receiving waters at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

- 5. After allowing for reasonable mixing, within a mixing zone extending 20 metres downstream of the point where the discharge enters water, the discharge shall not, either by itself or in combination with other discharges, give rise to any or all of the following effects in the Mangati Stream:
 - 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.
 - 6. All on site operations, maintenance activities and contingency measures shall be undertaken in accordance with the GMP Environmental Limited Pipeyard Environmental Management Plan dated February 2010 or any subsequent reviews.

- 7. The consent holder shall review the GMP Environmental Limited Pipeyard Environmental Management Plan prior to making any changes to the processes or operations undertaken at the site and/or on receiving written notice from the Taranaki Regional Council of:
 - the requirement to review the Plan;
 - the matters which shall be addressed within the plan review; and
 - the reasons or anticipated results of the matters requiring review.

The reviewed Plan shall document all operations, maintenance activities and contingency measures and shall be submitted for approval to the Chief Executive, Taranaki Regional Council, acting in a certification capacity, at least two weeks prior to making any changes to the operations on site and/or within one month of receiving written notice of the requirement to review the Plan.

8. 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 2014 and/or June 2020, 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 1 June 2010

For and on behalf of Taranaki Regional Council	
Director-Resource Management	

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

Name of Halliburton New Zealand

Consent Holder: P O Box 7160

NEW PLYMOUTH 4341

Decision Date: 23 June 2008

Commencement

Date:

23 June 2008

Conditions of Consent

Consent Granted: To discharge stormwater from an industrial site, used for

an oil field service operation, into the Mangati Stream at or

about (NZTM) 1699312E-5678527N

Expiry Date: 1 June 2026

Review Date(s): June 2014, June 2020 and/or within 3 months of reciving a

notification under special condition 10

Site Location: Paraite Road/Connett Road, Bell Block

Legal Description: Lot 1 DP 9985 Lot 1 DP 10362

Catchment: Mangati

For General, Standard and Special conditions pertaining to this consent please see reverse side of this document

Page 1 of 4

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. Notwithstanding any other condition of this consent, the consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
- 2. The stormwater discharged shall be from a catchment area not exceeding 2.02 hectares.
- 3. All stormwater shall be directed for treatment through the stormwater treatment system for discharge in accordance with the special conditions of this permit.
- 4. Any above ground hazardous substances storage areas shall be bunded with drainage to sumps, or another appropriate recovery system, and not directly to the stormwater catchment.
- 5. Constituents in the discharge shall meet the standards shown in the following table.

Constituent	<u>Standard</u>
pН	Within the range 6.0 to 9.0
Suspended solids	Concentration not greater than 100 gm ⁻³
Oil and grease	Concentration not greater than 15 gm ⁻³
Chloride	Concentration not greater than 50 gm ⁻³
BOD	Concentration not greater than 5gm ⁻³
Unionised ammonia	Concentration not greater than 0.025gm ⁻³

This condition shall apply prior to the entry of the treated stormwater into the receiving waters at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

- 6. After allowing for a mixing zone of 20 metres extending downstream of the discharge, the discharge shall not give rise to any of the following effects in the receiving waters of the Mangati Stream:
 - 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. The consent holder shall construct and maintain an adequate discharge sampling point, within three months of the granting of this consent, to the satisfaction of the Chief Executive, Taranaki Regional Council.
- 8. The consent holder shall maintain a contingency plan. The contingency plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, detail measures and procedures to be undertaken to prevent spillage or accidental discharge of contaminants not authorised by this consent and measures to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.
- 9. The consent holders shall maintain an operational and management plan. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:
 - a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor system.
- 10. The consent holder shall notify the Chief executive, Taranaki Regional Council, prior to making any changes in the processes undertaken at the site, or the chemicals used or stored on site, which could alter the nature of the discharge. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environment effects of any changes, and to be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable if the consent holder does not have access to email.
- 11. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

Consent 2337-3

- 12. In accordance with section 128 and 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:
 - a) during the month of June 2014 and/or June 2020; and/or
 - b) within 3 months of receiving a notification under special condition 10 above;

for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 1 October 2012

For and on behalf of	
Taranaki Regional Council	
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	—
Director-Resource Management	

Name of McKechnie Aluminium Solutions Limited

Consent Holder: Private Bag 2007

NEW PLYMOUTH 4342

Consent Granted

Date:

2 November 2007

Conditions of Consent

Consent Granted: To discharge stormwater [including cooling water] from an

industrial site into an unnamed tributary of the Mangati

Stream at or about (NZTM) 1699261E-5678255N

Expiry Date: 1 June 2026

Review Date(s): June 2014, June 2020

Site Location: Paraite Road, Bell Block, New Plymouth

Legal Description: Lot 1 DP 9212, Lot 1 DP 10008 & Lot 2 DP 330342

Catchment: Mangati

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

- 1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
- 2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of application 5010. In the case of any contradiction between the documentation submitted in support of application 5010 and the conditions of this consent, the conditions of this consent shall prevail.
- 3. The stormwater discharge shall be from a catchment not exceeding 5 hectares.
- 4. After allowing for a mixing zone of 10 metres, the discharge shall not give rise to any of the following effects in the receiving waters of the Mangati Stream:
 - (a) the production of any conspicuous oil or grease films, scums or foams or floatable or suspended matter;
 - (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 effect on aquatic life;
 - (f) the temperature of water shall not exceed 25°C.
- 5. Components of the discharge shall not exceed the following concentrations:

pH (range) 6.0-9.0 oil and grease 15 g/m^3 suspended solids 100 g/m^3

6. The consent holder shall maintain a contingency plan that details action to be taken in the event of accidental discharge or spillage of contaminants to ensure that the effects are minimised.

Consent 3139-3

- 7. The consent holder shall maintain a stormwater management plan detailing the management and discharge of stormwater and cooling water to ensure that any effects on the Mangati Stream are minimised. This shall include any capital works planned to be undertaken.
- 8. The consent holder shall comply with the procedures, requirements, obligations and all other matters specified in the management plan except with the specific agreement of the Chief Executive, Taranaki Regional Council. In the case of any contradiction between the management plan and the conditions of this consent, the conditions of this resource consent shall prevail.
- 9. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
- 10. 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 2014 and/or June 2020, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 4 March 2010

For and on behalf of
Taranaki Regional Council
C
Director-Resource Management
Director-Resource Management

Name of

New Plymouth District Council

Consent Holder:

Private Bag 2025 NEW PLYMOUTH

Consent Granted

Date:

11 September 2002

Conditions of Consent

Consent Granted: To discharge up to 5200 litres/second of stormwater from

industrial sealed areas and roofs through piped stormwater systems into the Mangati Stream at or about GR:

P19:096-404

Expiry Date: 1 June 2020

Review Date(s): June 2004, June 2008, June 2014

Site Location: Connett/Paraite Roads, Bell Block, New Plymouth

Legal Description: Lot 1 DP 10763 Blk II Pariututu SD

Catchment: Mangati

Consent 4302-2

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council (hereinafter the Chief Executive), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

- 1. This consent shall be exercised generally in accordance with the information submitted in support of application 1663 and to ensure the conditions of this consent are maintained.
- 2. The consent holder shall adopt the best practicable option to prevent or minimise any actual or likely adverse effect on the environment associated with the discharge.
- 3. Within 6 months of the granting of this consent a general outline of the methods, specifications, operating guidelines or other measures which represent the best practicable option will be supplied by the consent holder to the satisfaction of the Chief Executive, Taranaki Regional Council. This is also to include details of the proposed construction and timing of the third wetland pond and thereafter will be attached to this consent as Schedule A.
- 4. The consent holder shall be responsible for preventing, where possible, and mitigating any erosion which occurs as a result of the exercise of this consent.
- 5. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review within three months of receipt of the report specified in special condition 3 and/or during the month of June 2004 and/or June 2008 and/or June 2014, 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 11 September 2002

For and on behalf of	
Taranaki Regional Council	
Director-Resource Management	

Name of Nexans New Zealand Limited

Consent Holder: Private Bag 2021

New Plymouth 4342

Decision Date: 25 June 2008

Commencement Date: 25 June 2008

Conditions of Consent

Consent Granted: To discharge stormwater and cooling water from an electric

wire and cable manufacturing site into the Mangati Stream

Expiry Date: 1 June 2026

Review Date(s): June 2020 and/or within 3 months of receiving a notification

under special condition 10

Site Location: Paraite Road, Bell Block

Legal Description: Lot 2 DP 338778

Grid Reference (NZTM) 1699510E-5678500N

Catchment: Mangati

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. Notwithstanding any other condition of this consent, the consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
- 2. The stormwater discharges shall be from a catchment area not exceeding 6.24 hectares.
- 3. Any above ground hazardous substances storage areas shall be bunded with drainage to sumps, or other appropriate recovery systems, and not directly to the stormwater catchment.
- 4. Constituents in the discharge shall meet the standards shown in the following table.

Constituent	Standard	
рН	Within the range of 6.0 to 6.9	
Suspended solids	Concentration not greater than 100 gm ⁻³	
Oil and grease	Concentration not greater than 15 gm ⁻³	

This condition shall apply prior to the entry of the treated stormwater into the receiving waters at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

- 5. After allowing for reasonable mixing, within a mixing zone extending 20 metres downstream of the discharge point, the discharge shall not, either by itself or in combination with other discharges, give rise to any or all of the following effects in the Mangati Stream:
 - 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.

Consent 4497-3

- 6. The consent holder shall maintain a contingency plan. The contingency plan shall be adhered to at all time and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, detail measures and procedures to be undertaken to prevent spillage or accidental discharge of contaminants not authorised by this consent and measures to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.
- 7. The consent holder shall maintain stormwater and management plan. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:
 - a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor system.
- 8. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the chemicals used or stored on site, which could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and to be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable if the consent holder does not have access to email.
- 9. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
- 10. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:
 - a) during the month of June 2014 and/or June 2020; and/or
 - b) within 3 months of receiving a notification under special condition 10 above;

for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 21 May 2015

For and on behalf of Taranaki Regional Council

A D McLay **Director - Resource Management**

DISCHARGE PERMIT

Pursuant to the RESOURCE MANAGEMENT ACT 1991 a resource consent is hereby granted by the Taranaki Regional Council

Name of OLEX CABLES [NEW ZEALAND]

Consent Holder: PRIVATE BAG 2021 NEW PLYMOUTH 4620

Consent

Granted Date: 30 November 1998

CONDITIONS OF CONSENT

Consent Granted: TO DISCHARGE EMISSIONS INTO THE AIR FROM AN

ELECTRIC WIRE AND CABLE MANUFACTURING PLANT AND ASSOCIATED ACTIVITIES AT OR ABOUT GR: P19:096-404

Expiry Date: 1 June 2014

Review Date[s]: June 2002 and June 2008

Site Location: 69 PARAITE ROAD, BELL BLOCK

Legal Description: PT LOT 1 DP12538 & LOT 2 DP10218 BLK II PARITUTU SD

TRK985417

General conditions

- a) That on receipt of a requirement from the General Manager, Taranaki Regional Council (hereinafter the General Manager), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That 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) That 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. THAT the consent holder shall at all times adopt the best practicable option to prevent or minimise any actual or likely adverse effect on the environment arising from the discharge of contaminants into the air from the site. 'Best practicable option' [as defined in section 2 of the Resource Management Act 1991] shall be determined by the Taranaki Regional Council.
- 2. THAT the consent holder shall at all times operate, maintain, supervise, monitor and control all processes so that emissions authorised by this consent are maintained at the minimum practicable level.
- 3. THAT prior to undertaking any alterations to the plant, processes or operations as described in the application which may significantly change the nature or quantity of contaminants emitted from the sire, the consent holder shall consult with the General Manager, Taranaki Regional Council, and shall obtain any necessary approvals under the Resource Management Act 1991.
- 4. THAT the consent holder shall control all emissions to the atmosphere from the plant, in conjunction with any other emissions from the site in order that the maximum ground level concentration for any particular contaminant arising from the exercise of this consent, measured at or beyond the boundary of the site is not increased above background levels:
 - a) by more than 1/30th of the relevant Occupational Threshold Value-Time Weighted Average, or by more than the Short Term Exposure Limit at any time; or
 - b) if no Short Term Exposure Limit is set, by more than three times the Time Weighted Average at any time [Workplace Exposure Standards and Biological Exposure Indices for New Zealand, 1992, Department of Labour].
- 5. THAT the discharge shall not be noxious, dangerous, offensive or objectionable, at or beyond the boundary of the property, in the opinion of at least one enforcement officer of the Taranaki Regional Council.

TRK985417

6. THAT the Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 2002 and/or June 2008, for the purpose of ensuring that the conditions adequately deal with the environmental effects arising from the exercise of this consent, which were not foreseen at the time the application was considered and which it was not appropriate to deal with at that time.

Signed at Stratford on 30 November 1998	8
	For and on behalf of TARANAKI REGIONAL COUNCIL
	DIRECTOR—RESOURCE MANAGEMENT

Name of Nexans New Zealand Limited

Consent Holder: Private Bag 2021

New Plymouth 4342

Decision Date: 24 February 2015

Commencement Date: 24 February 2015

Conditions of Consent

Consent Granted: To discharge emissions into the air from an electric wire and

cable manufacturing plant and associated activities

Expiry Date: 1 June 2032

Review Date(s): June 2020, June 2026 and in accordance with special

condition 8

Site Location: 69 Paraite Road, Bell Block

Legal Description: Lot 1 DP 435659 (Discharge source & site)

Grid Reference (NZTM) 1699564E-5678312N

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 with section 36 of the Resource Management Act 1991.

Special conditions

- 1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
- 2. Any discharge to air from the exercise of this consent shall not give rise to any offensive, objectionable or toxic levels of dust or odour at or beyond the boundary of the property.
- 3. The consent holder shall control all emissions of carbon monoxide, nitrogen dioxide, fine particles (PM₁₀) and sulphur dioxide to the atmosphere from the site, in order that the maximum ground level concentration of any of these contaminants arising from the exercise of this consent measured under ambient conditions does not exceed the relevant ambient air quality standard as set out in the Resource Management (National Environmental Standards for Air Quality Regulations, 2004) at or beyond the boundary of the property on which the site is located.
- 4. That the consent holder shall control all emissions to the atmosphere from the site of contaminants other than carbon dioxide, carbon monoxide, and nitrogen oxides, in order that the maximum ground level concentration for any particular contaminant arising from the exercise of this consent, measured at or beyond the boundary of the site is not increased above background levels:
 - a. by more than 1/30th of the relevant Workplace Exposure Standard-Time Weighted Average (exposure averaged over a duration as specified for the Workplace Exposure Standard-Time Weighted Average), or by more than 1/10th of the Workplace Exposure Standard-Short Term Exposure Limit over any short period of time (all terms as defined in Workplace Exposure Standards, 2010, Department of Labour); or
 - b. if no Short Term Exposure Limit is set, by more than the General Excursion Limit at any time (all terms as defined in Workplace Exposure Standards, 2010, Department of Labour).
- 5. Prior to undertaking any alterations to the plant, processes or operations, which may significantly change the nature or quantity of contaminants emitted to air from the site, the consent holder shall first consult with the Chief Executive, Taranaki Regional Council, and shall obtain any necessary approvals under the Resource Management Act 1991.

Consent 5417-2.0

- 6. The consent holder shall maintain a permanent record of any complaints received alleging adverse effects from or related to the exercise of this consent. This record shall include the following, where practicable:
 - a) the name and address of the complainant, if supplied;
 - b) date, time and details of the alleged event;
 - c) weather conditions at the time of the alleged event (as far as practicable);
 - d) investigations undertaken by the consent holder in relating to the complaint and any measures adopted to remedy the effects of the incident/complaint; and
 - e) measures put in place to prevent occurrence of a similar incident.

The consent holder shall make the complaints record available to officers of Taranaki Regional Council, on request.

- 7. The consent holder shall provide to the Taranaki Regional Council during November of each year, for the duration of this consent, a report reviewing any technological advances in the reduction or mitigation of emissions, how these might be applicable and/or implemented at the plant, and the costs and benefits of these advances;
- 8. 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:
 - a) during the month of June 2020 and/or June 2026; and/or
 - b) within 3 months of any consultation under special condition 5 above;

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.

For and on behalf of

Transferred at Stratford on 21 May 2015

Taranaki Regional Council
A D McLay
Director - Resource Management

Name of OMV New Zealand Limited

Consent Holder: P O Box 2621

WELLINGTON 6140

Review Completed

Date:

21 August 2008 [Granted: 7 February 1996]

Conditions of Consent

Consent Granted: To discharge up to 125 litres/second of treated stormwater

from a transport depot into an unnamed tributary of the Mangati Stream at or about (NZTM) 1699411E-5678351N

Expiry Date: 1 June 2014

Site Location: Paraite Road, Bell Block

Legal Description: Lot 3 DP 15627

Catchment: Mangati

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

Condition 1 [changed]

1. Constituents in the discharge shall meet the standards shown in the following table:

Constituent	Standard
рН	Within the range 6.0 to 9.0
Suspended solids	Concentration not greater than 100 gm-3
Oil and grease	Concentration not greater than 15 gm ⁻³
Ammoniacal nitrogen	Concentration not greater than 10 gm ⁻³
BOD	Concentration not greater than 16 gm ⁻³

This condition shall apply prior to the entry of the treated stormwater into the receiving waters at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

Conditions 2 to 4 [unchanged]

- 2. That after allowing for reasonable mixing the discharge shall not give rise to any of the following effects in the receiving waters of the unnamed tributary of the Mangati Stream:
 - (i) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - (ii) any conspicuous change in the colour or visual clarity;
 - (iii) any emission of objectionable odour;
 - (iv) the rendering of fresh water unsuitable for consumption by farm animals;
 - (v) any significant adverse effects on aquatic life, habitats, or ecology;
 - (vi) any undesirable biological growths.

Consent 3913-2

- 3. That the consent holder shall prepare a contingency plan to be approved by the Chief Executive, Taranaki Regional Council, to show the effect of hydrocarbon or toxic substance spill and measures to contain and deal with such spillages; this plan to be provided by 1 March 1997.
- 4. That the Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during June 2002 and/or June 2008 for the purpose of ensuring that the conditions are adequate to deal with any adverse effects of the discharge on the receiving environment.

Condition 5 [new]

- 5. Before 30 November 2008 the consent holder shall prepare and thereafter maintain a stormwater management plan. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:
 - a) on site hazardous substance storage;
 - b) general housekeeping; and
 - c) management of the interceptor systems.

Transferred at Stratford on 17 December 2013

For and on behalf of
Taranaki Regional Council
Director-Resource Management

Name of Schlumberger New Zealand Limited

Consent Holder: PO Box 7146

New Plymouth 4341

Decision Date

(Change):

08 June 2010

Commencement Date

(Change):

08 June 2010 (Granted Date: 23 March 2002)

Conditions of Consent

Consent Granted: To discharge treated stormwater from a synthetic liquid mud

plant and storage site into the Mangati Stream

Expiry Date: 01 June 2020

Review Date(s): Within three months of receiving a notification under special

condition 8

Site Location: 68-92 Paraite Road, Bell Block

Legal Description: Lot 1 DP 20999 & Lot 1 DP 11201

Grid Reference (NZTM) 1699611E-5678151N and/or 1699565E-5678094N and/or

1699605E-5678163N and/or 1699631E-5678166N

Catchment: Mangati

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 with section 36 of the Resource Management Act 1991.

Special conditions

- 1. The consent holder shall at all times adopt the best practicable option, as defined in the Resource Management Act 1991, to prevent or minimise any adverse effects of the discharge on the receiving environment.
- 2. The maximum stormwater catchment area shall be no more than 1.77 ha.
- 3. The consent holder shall ensure that the discharge from the Liquid Mud Plant is treated and managed in the manner described in the MI SWACO *Paraite Road Facility Stormwater Management Plan* issue [A, 0, document number NZ-HSE-707], or to no lesser standard in an alternative system, as approved in writing by the Chief Executive, Taranaki Regional Council.
- 4. Constituents in the discharge shall meet the following standards:

<u>Constituent</u>	<u>Standard</u>
pH	Within the range 6.0 to 9.0
Oil & grease	Concentration not greater than 15 gm ⁻³
suspended solids	Concentration not greater than 100 gm ⁻³
Biochemical oxygen demand	Concentration not greater than 7 gm ⁻³
Unionised ammonia	Concentration not greater than 0.025 gm ⁻³

This condition shall apply prior to the discharge of the stormwater into the receiving environment, at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

- 5. After allowing for reasonable mixing, within a mixing zone extending 20 metres downstream of the discharge point, the discharge shall not give rise to any of the following effects in the receiving waters of the Mangati Stream:
 - 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.
- 6. By 8 September 2010 the consent holder shall provide an updated contingency plan, which shall thereafter be maintained by means of reviews at not more than 2 yearly intervals. The contingency plan shall be adhered to in the event of a spill or emergency and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, detail measures and procedures to be undertaken to prevent spillage or accidental discharge of contaminants not authorised by this consent and measures to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.

Consent 5987-1

- 7. The consent holder shall maintain a stormwater management plan, which shall be reviewed at not more than 2 yearly intervals. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:
 - a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor system.

A Stormwater Management Plan template is available in the Environment section of the Taranaki Regional Council's web site www.trc.govt.nz.

- 8. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the chemicals used or stored on site that could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to worknotification@trc.govt.nz.
- 9. 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:
 - a) during the month of June 2008 and/or June 2014; and/or
 - b) within 3 months of receiving a notification under special condition 8 above;

for the purpose of ensuring that the conditions are adequate to deal with any actual or potential adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 10 December 2014

For and on behalf of
Taranaki Regional Council
· ·
A D McLay
Director - Resource Management

Name of Schlumberger New Zealand Limited

Consent Holder: PO Box 7146

New Plymouth 4341

Decision Date (Review): 27 August 2008

Commencement Date

(Review):

27 August 2008 (Granted Date: 4 July 2002)

Conditions of Consent

Consent Granted: To discharge treated washwater and stormwater from a

storage and maintenance premises for oil field exploration

equipment into the Mangati Stream

Expiry Date: 01 June 2020

Review Date(s): Within 3 months of receiving a notification under special

conditon 2

Site Location: 94 Paraite Road, Bell Block, New Plymouth

Legal Description: Lot 2 DP 20437 Lot 2 DP 20999 Blk II Paritutu SD

Grid Reference (NZTM) 1699611E-5677951N

Catchment: Mangati

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

Condition 1 [unchanged]

1. This consent shall be exercised in accordance with the information submitted in support of application 1914, and special conditions 3, 4 and 7 below, and to ensure the conditions of this consent are maintained.

Condition 2 [changed]

2. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes in the processes undertaken at the site, or the chemicals used or stored on site, which could alter the nature of the discharge. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and to be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable if the consent holder does not have access to email.

Conditions 3 to 7 [unchanged]

- 3. The consent holder shall prepare and maintain an operation, management and maintenance plan to the satisfaction of the Chief Executive, Taranaki Regional Council, detailing the procedures in place to ensure effective performance of the washwater treatment system.
- 4. The consent holder shall prepare and maintain a stormwater management plan to the satisfaction of the Chief Executive, Taranaki Regional Council, controlling the items and methods by which storage in the stormwater catchment may occur.

5. The following concentrations shall not be exceeded within the discharge effluent:

Component	Concentration
pH (range)	6.0-9.0
suspended solids	100 gm ⁻³
oil and grease	15 gm ⁻³
dissolved copper	0.05 gm ⁻³
dissolved lead	0.2 gm ⁻³
dissolved zinc	0.65 gm ⁻³

This condition shall apply prior to the entry of the discharge into the receiving waters of the unnamed tributary, at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

- 6. After allowing for a 20 metre mixing zone extending downstream of the discharge point the discharge shall not give rise to any of the following effects in the receiving waters of the Mangati Stream:
 - 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. Within three months of the granting of this consent, the consent holder shall prepare and maintain a contingency plan to the satisfaction of the Chief Executive, Taranaki Regional Council, outlining measures and procedures undertaken to prevent spillage or accidental discharge of contaminants, and procedures to be carried out should such a spillage or discharge occur.

Condition 8 [changed]

- 8. 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:
 - a. during the month of June 2014; and/or
 - b. within 3 months of receiving a notification under special condition 2 above;

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.

Consent 6032-1

Condition 9 [new]

9. There shall be no discharge of wastes containing surfactants, solvents, or any other degreasing agents.

Transferred at Stratford on 10 December 2014

For and on behalf of Taranaki Regional Council

A D McLay

Director - Resource Management

Name of Tasman Oil Tools Limited

Consent Holder: PO Box 3140

NEW PLYMOUTH 4312

Decision Date (Review): 05 August 2014

Commencement Date

(Review):

05 August 2014

(Granted Date: 26 November 2001)

Conditions of Consent

Consent Granted: To discharge up to 112 litres/second of stormwater including

washdown water from a storage and maintenance yard for oil field drilling equipment into an unnamed tributary of the

Mangati Stream

Expiry Date: 01 June 2020

Review Date(s): Within 3 months of receiving notification under special

condition 4

Site Location: 13 De Havilland Drive, Bell Block

Legal Description: Lot 3 DP 14795 (Discharge source & site)

Grid Reference (NZTM) 1699760E-5678367N

Catchment: Mangati

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 with section 36 of the Resource Management Act 1991.

Special conditions

- 1. This consent shall be exercised generally in accordance with the information submitted in support of application 1566 and to ensure the conditions of this consent are maintained.
- 2. The consent holder shall keep and make available to the Chief Executive, Taranaki Regional Council, upon request, records of the date, frequency and duration of all washing conducted outside the constructed washpad; such records to be kept for at least 12 months.
- 3. The consent holder shall notify the Chief Executive, Taranaki Regional Council 48 hrs prior to yard washings being undertaken for periods in excess of 8 hours in any seven day period.
- 4. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes in the processes undertaken at the site, or the chemicals used or stored on site, which could alter the nature of the discharge. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and to be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable if the consent holder does not have access to email.
- 5. The stormwater treatment system shall be maintained to the satisfaction of the Chief Executive, Taranaki Regional Council.
- 6. The following concentrations shall not be exceeded within the discharge effluent:

Component	Concentration
pH (range)	6.0-9.0
suspended solids	100 gm ⁻³
oil and grease	15 gm ⁻³
dissolved copper	0.05 gm ⁻³
dissolved lead	0.2 gm ⁻³
dissolved zinc	0.65 gm ⁻³

This condition shall apply prior to the entry of the treated stormwater into the receiving waters of the unnamed tributary, at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

Consent 4812-2.1

- 7. After allowing for a 20 metre mixing zone extending downstream of the discharge point the discharge shall not give rise to any of the following effects in the receiving waters of the Mangati Stream:
 - 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.
- 8. The consent holder shall prepare and maintain a contingency plan to the satisfaction of the Chief Executive, Taranaki Regional Council, outlining measures and procedures undertaken to prevent spillage or accidental discharge of contaminants, and procedures to be carried out should such a spillage or discharge occur.
- 9. 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:
 - a. during the month of June 2014; and/or
 - b. within 3 months of receiving a notification under special condition 4 above;

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.

- 10. There shall be no discharge of wastes containing surfactants, solvents, or any other degreasing agents.
- 11. Before 30 November 2008 the consent holder shall prepare and thereafter maintain a stormwater management plan. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:

For and on behalf of

- a) on site hazardous substance storage;
- b) general housekeeping; and
- c) management of the interceptor systems.

Signed at Stratford on 05 August 2014

Taranaki Regional Council
O
ADMI
A D McLay
Director - Resource Management

Name of Tegel Foods Limited Consent Holder: Private Bag 2015

NEW PLYMOUTH 4340

Decision Date: 12 February 2014

Commencement Date: 12 February 2014

Conditions of Consent

Consent Granted: To discharge stormwater from a stock/poultry feed

manufacturing site to the New Plymouth District Council

stormwater drainage network

Expiry Date: 01 June 2026

Review Date(s): June 2017, June 2020, June 2023 and/or within 3 months of

receiving a notification under special condition 10

Site Location: 39 & 57 Paraite Road, Bell Block

Legal Description: Lots 1 & 2 DP 346597 (Discharge source & site)

Grid Reference (NZTM) 1699389E-5678203N

Catchment: Mangati

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 with section 36 of the Resource Management Act 1991.

Special conditions

- 1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent. Specifically this includes ensuring that 5 day total Biochemical Oxygen Demand (BOD) of the discharge is as low as practically achievable.
- 2. The stormwater discharged shall be from a catchment area not exceeding 2 hectares.
- 3. Constituents of the discharge shall meet the standards shown in the following table.

Constituent	<u>Standard</u>
рН	Within the range 6.0 to 9.0
suspended solids	Concentration not greater than 100 gm ⁻³
total recoverable hydrocarbons	Concentration not greater than 15 gm ⁻³
5 day total Biochemical Oxygen Demand (BOD) until 30 November 2014	Concentration not greater than 50 gm ⁻³
5 day total Biochemical Oxygen Demand (BOD) after 30 November 2014	Concentration not greater than 25 gm ⁻³

This condition shall apply before entry of the treated stormwater into the New Plymouth District Council pipe at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

- 4. After allowing for reasonable mixing, within a mixing zone extending 20 metres downstream of the discharge point, the discharge shall not, either by itself or in combination with other discharges, give rise to any or all of the following effects in the receiving water:
 - 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.
- 5. Before 30 November 2014, the consent holder shall empty the tank and pipe the waste water to the New Plymouth District Council's municipal trade waste system.
- 6. Before 1 April 2014 the consent holder shall provide, for certification by the Chief Executive of the Taranaki Regional Council, details of a performance based improvement programme outlining monitoring, trigger values, inspections, corrective actions, roles and responsibilities and performance reporting to be undertaken by the consent holder to demonstrate compliance with special condition 1.

Consent 2335-4.0

- 7. A copy of the performance report required by condition 6 shall be provided to the Taranaki Regional Council by 1 July each year.
- 8. The consent holder shall maintain a contingency plan that details measures and procedures to be undertaken to prevent spillage or any discharge of contaminants not authorised by this consent. The contingency plan shall be followed in the event of a spill or unauthorised discharge and shall be certified by the Chief Executive, Taranaki Regional Council as being adequate to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.
- 9. Within three months of the granting of this consent, the consent holder shall prepare and maintain a stormwater management plan that documents how the site is to be managed to minimise the contaminants that become entrained in the stormwater. This plan shall be followed at all times, shall be certified by the Chief Executive, Taranaki Regional Council, and shall include but not necessarily be limited to:
 - a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor system.

A Stormwater Management Plan template is available in the Environment section of the Taranaki Regional Council's web site www.trc.govt.nz.

- 10. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the materials used or stored on site that could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to consents@trc.govt.nz.
- 11. 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:
 - a) during the month of June 2017 and/or June 2020 and/or June 2023; and
 - b) within 3 months of receiving a notification under special condition 10 above.

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 12 February 2014

For and on behalf of Taranaki Regional Council

A D McLay

Director - Resource Management

Name of

Consent Holder:

Tegel Foods Limited Private Bag 2015 NEW PLYMOUTH

Consent Granted

Date:

23 November 2001

Conditions of Consent

Consent Granted: To discharge emissions into the air from the milling and

blending of grain and/or animal meals together with

associated activities at or about GR: P19:094-399

Expiry Date: 1 June 2020

Review Date(s): June 2008, June 2014

Site Location: 39/57 Paraite Road, Bell Block, New Plymouth

Legal Description: Lots 3 & 4 DP 11072 Blk II Paritutu SD

General conditions

- a) That on receipt of a requirement from the Chief Executive, Taranaki Regional Council (hereinafter the Chief Executive), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That 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) That the consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

- 1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment.
- 2. No alteration shall be made to plant equipment or processes which may substantially alter the nature, quantity or likelihood of discharges to atmosphere without prior consultation with the Chief Executive, Taranaki Regional Council.
- 3. Within three months of the granting of this consent the consent holder shall prepare and maintain to the satisfaction of the Chief Executive, Taranaki Regional Council a management plan addressing the measures adopted to prevent an accumulation of dust within the stormwater catchment as a result of normal operations and emission incidents.
- 4. The discharge concentration of dust from any point source shall be less than 125 mg/m³ normal temperature and pressure (NTP).
- 5. The dust deposition rate beyond the property boundary arising from the discharge shall be less than $4.0 \text{ g/m}^2/30 \text{ days}$.
- 6. Any discharge to air from the premises shall not give rise to any offensive, objectionable, noxious or toxic levels of dust or odour at or beyond the boundary of the property, and in any case, suspended particulate matter shall not exceed 3 mg/m³ (measured under ambient conditions) beyond the boundary of the site.
- 7. The consent holder shall keep, and make available to the Chief Executive, Taranaki Regional Council, upon request, a record of the time, duration and cause of all dust or smoke emissions incidents having actual or potential off-site impacts.
- 8. As far as is practicable yard areas of the site shall be cleared of accumulations of dust.

Consent 4038-6

9. 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 2008 and/or June 2014, 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 23 November 2001

For and on behalf of Taranaki Regional Council	
Director-Resource Management	

Name of TIL Freighting Limited

Consent Holder: Private Bag 2039

New Plymouth 4342

Decision Date: 20 September 2006

Commencement Date: 20 September 2006

Conditions of Consent

Consent Granted: To discharge stormwater from a truck depot into and onto

land in the vicinity of the Mangaone Stream in the

Waiwhakaiho catchment

Expiry Date: 01 June 2020

Site Location: 26 Paraite Road, New Plymouth

Legal Description: Lot 1 DP 9791 & Lot 1 DP 330342

Grid Reference (NZTM) 1699110E-5678250N

Catchment: Waiwhakaiho

Tributary: Mangaone

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

- 1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects of the discharge on any water body.
- 2. The maximum stormwater catchment area shall be no more than 4.575 hectares.
- 3. Prior to the exercise of this consent, the consent holder shall provide for the written approval of the Chief Executive, Taranaki Regional Council, a stormwater management plan.
- 4. Prior to the exercise of this consent, the consent holder shall provide for the written approval of the Chief Executive, Taranaki Regional Council, site specific details relating to contingency planning for the truck depot.
- 5. All stormwater to be discharged under this consent shall be directed for treatment through the stormwater treatment system for discharge in accordance with the special conditions of this consent.
- 6. The design, management and maintenance of the stormwater system shall be generally undertaken in accordance with the information submitted in support of application 4350. In the case of any contradiction between the documentation submitted in support of application 4350 and the conditions of this consent, the conditions of this consent shall prevail.
- 7. Any above ground hazardous substances storage areas shall be bunded with drainage to sumps, or other appropriate recovery systems, and not to the stormwater catchment.

Consent 6952-1

- 8. The discharge shall not give rise to any of the following effects in the receiving waters:
 - 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) any significant adverse effects on aquatic life.
- 9. The discharge onto and into land shall occur a minimum of 30 metres from any surface water body. Discharge shall be onto and into land and there shall be no direct discharge to surface water.
- 10. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
- 11. 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 2008 and/or June 2014, 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.

For and on bobalf of

Transferred at Stratford on 11 December 2014

For and on benan or
Taranaki Regional Council
O
A D McLay
Director - Resource Management
Director - Resource management

Name of TIL Freighting Limited

Consent Holder: Private Bag 2039

New Plymouth 4342

Decision Date: 20 April 2010

Commencement Date: 20 April 2010

Conditions of Consent

Consent Granted: To discharge stormwater from a truck depot into the Mangati

Stream

Expiry Date: 01 June 2026

Review Date(s): June 2020

Site Location: 24-26 Paraite Road, Bell Block

Legal Description: Lot 1 DP 9791 Pt Lot 1 DP 330342

Grid Reference (NZTM) 1699264E-5678299N and/or 1699239E-5678364N and/or

1699149E-5678391N

Catchment: Mangati

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 with section 36 of the Resource Management Act 1991.

Special conditions

- 1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
- 2. The stormwater discharged shall be from a catchment area not exceeding 2.60 ha.
- 3. Any significant volumes of hazardous substances [e.g. bulk fuel, molasses] on site shall be:
 - a) contained in a double skinned tank, or
 - b) stored in a dedicated bunded area with drainage to sumps, or to other appropriate recovery systems, and not directly to the site stormwater system.
- 4. Constituents of the discharge shall meet the standards shown in the following table.

<u>Constituent</u>	<u>Standard</u>
pH	Within the range 6.0 to 9.0
suspended solids	Concentration not greater than 100 gm ⁻³
Oil & grease	Concentration not greater than 15 gm ⁻³
Biochemical oxygen demand	Concentration not greater than 7 gm ⁻³

This condition shall apply before entry of the treated stormwater into the receiving waters at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

- 5. After allowing for reasonable mixing, within a mixing zone extending 20 metres downstream of the discharge point, the discharge shall not, either by itself or in combination with other discharges, give rise to any or all of the following effects in the Mangati Stream:
 - 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.
- 6. The consent holder shall maintain a contingency plan, which shall be reviewed at not more than 2 yearly intervals. The contingency plan shall be adhered to in the event of a spill or emergency and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, detail measures and procedures to be undertaken to prevent spillage or accidental discharge of contaminants not authorised by this consent and measures to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.

Consent 7578-1

- 7. The consent holder shall maintain a stormwater management plan, which shall be reviewed at not more than 2 yearly intervals. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:
 - a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor system.

A Stormwater Management Plan template is available in the Environment section of the Taranaki Regional Council's web site www.trc.govt.nz.

- 8. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the chemicals used or stored on site, that could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable if the consent holder does not have access to email.
- 9. This consent shall lapse on 30 June 2015, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
- 10. 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:
 - a) during the month of June 2012 and/or June 2014 and/or June 2020; and/or
 - b) within 3 months of receiving a notification under special condition 8 above;

for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 11 December 2014

For and on behalf of Taranaki Regional Council

A D McLay

Director - Resource Management

Name of Tegel Foods Limited Consent Holder: Private Bag 2015

NEW PLYMOUTH 4340

Decision Date: 23 December 2013

Commencement Date: 23 December 2013

Conditions of Consent

Consent Granted: To discharge stormwater from a poultry processing plant site

to the New Plymouth District Council drainage network

Expiry Date: 1 June 2026

Review Date(s): June 2017, June 2020, June 2023 and in accordance with

special condition 9

Site Location: 91-95 Paraite Road, Bell Block

Legal Description: Lot 1 DP 10331 Pt Sec 14 Blk II Paritutu SD

(Discharge source & site)

Grid Reference (NZTM) 1700090E-85678021N

Catchment: Mangati

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 1991.

Special conditions

- 1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent. Specifically this includes ensuring that 5 day total Biochemical Oxygen Demand (BOD) of the discharge is as low as practically achievable.
- 2. The total catchment area discharged from this consent and consent 7389-1 shall not exceed 4.3 hectares.
- 3. Constituents of the discharge shall meet the standards shown in the following table.

<u>Constituent</u>	<u>Standard</u>
pH	Within the range 6.0 to 9.0
suspended solids	Concentration not greater than 100 gm ⁻³
total recoverable hydrocarbons	Concentration not greater than 15 gm ⁻³
Free chlorine	Concentration not greater than 0.2 gm ⁻³
5 day total Biochemical Oxygen Demand (BOD)	Concentration not greater than 15 gm ⁻³

This condition shall apply before entry of the treated stormwater into the New Plymouth District Council pipe at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

- 4. After allowing for reasonable mixing, within a mixing zone extending 20 metres downstream of the point of discharge to the Mangati Stream, the discharge shall not, either by itself or in combination with other discharges, give rise to any or all of the following effects in the receiving water:
 - 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.

- 5. Before 28 February 2014, the consent holder shall prepare and submit to the Council an accurate stormwater network analysis for the site. The analysis shall be prepared by a suitably qualified person. The stormwater network analysis shall include but not necessarily be limited to:
 - a) confirmation of the flow paths for the stormwater from the various stormwater ingress points, to the outlet points, under the different potential rainfall intensities;
 - b) the potential for deposition of solids within the stormwater system given the competing flow paths; and
 - c) the effect this may have on the preferential stormwater flow paths and stormwater quality.
- 6. The consent holder shall maintain a contingency plan that details measures and procedures to be undertaken to prevent spillage or any discharge of contaminants not authorised by this consent. The contingency plan shall be followed in the event of a spill or unauthorised discharge and shall be certified by the Chief Executive, Taranaki Regional Council as being adequate to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.
- 7. The consent holder shall maintain a stormwater management plan that documents how the site is to be managed to minimise the contaminants that become entrained in the stormwater. This plan shall be followed at all times, shall be certified by the Chief Executive, Taranaki Regional Council, and shall include but not necessarily be limited to:
 - a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor system.

A Stormwater Management Plan template is available in the Environment section of the Taranaki Regional Council's web site www.trc.govt.nz.

8. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the materials used or stored on site that could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to consents@trc.govt.nz.

Consent 3470-4.0

- 9. 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:
 - a) during the month of June 2017 and/or June 2020 and/or June 2023;
 - b) within 3 months of providing the information required by special condition 5 above; and
 - c) within 3 months of receiving a notification under special condition 8 above.

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 23 December 2013

For and on behalf of	
Taranaki Regional Council	
D' Marian Marian	_
Director-Resource Management	

Name of Tegel Foods Limited Consent Holder: Private Bag 2015

NEW PLYMOUTH 4340

Decision Date: 16 June 2014

Commencement Date: 16 June 2014

Conditions of Consent

Consent Granted: To discharge emissions into the air from the processing of

animal matter and associated processes

Expiry Date: 01 June 2032

Review Date(s): June 2020, June 2026

Site Location: 91 Paraite Road, Bell Block

Legal Description: Lot 1 DP 10331 Pt Sec 14 Blk II Paritutu SD

(Discharge source & site)

Grid Reference (NZTM) 1699798E-5678097N

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 with section 36 of the Resource Management Act 1991.

Special conditions

- 1. That at all times the consent holder shall adopt the best practicable option (as defined in section 2 of the Resource Management Act 1991) to prevent or minimise any actual or likely adverse effect on the environment associated with the discharge of contaminants into the air from the site.
- 2. That prior to undertaking any alterations to the plants processes, operations, equipment or layout, as specified in the original application for this consent or any subsequent application to change consent conditions, which may significantly change the nature or quantity of contaminants emitted from the site, the consent holder shall consult with the Chief Executive, Taranaki Regional Council, and shall obtain any necessary approvals under the Resource Management Act 1991 and its amendments.
- 3. The discharges authorised by this consent shall not give rise to an odour at or beyond the boundary of the site that is offensive or objectionable.
- 4. No offal or blood collected from carcasses shall be discharged to the wastewater holding pond.
- 5. The consent holder shall maintain and regularly update a 'Contingency Plan' that details measures and procedures that will be undertaken in the event of plant equipment failure or any other loss of processing or transportation capacity. The plan shall be approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity as being adequate to avoid, remedy or mitigate the environmental effects of such an event.
- 6. The site shall be operated in accordance with an 'Operations and Maintenance plan' prepared by the consent holder and approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity. The plan shall detail how the site will be managed to achieve compliance with the conditions of this consent and shall include but not be limited to:
 - a. The identification of key personnel responsible for managing air discharges and implementing the Operations and Maintenance;
 - b. A description of the activities on the site and the main potential sources of odour emissions;
 - A description of storage and treatment procedures (including specification of storage times and preservative dosing concentrations) for ensuring that only high quality raw material is processed;
 - d. The identification and description of the odour and dust mitigation measures in place;
 - e. A description of the use and maintenance of the Wastewater treatment pond;

Consent 4026-3.0

- f. The identification and description of relevant operating procedures and parameters that need to be controlled to minimise emissions;
- g. A description of monitoring and maintenance procedures for managing the odour mitigation measures including record keeping of control parameters and maintenance checks; and
- h. Details of staff training proposed to enable staff to appropriately manage the odour mitigation measures.
- 7. 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 2020 and/or June 2026, 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 16 June 2014

For and on behalf of Taranaki Regional Council

A D McLay

Director - Resource Management

Name of Tegel Foods Limited Consent Holder: Private Bag 2015

New Plymouth 4340

Decision Date: 24 October 2014

Commencement Date: 24 October 2014

Conditions of Consent

Consent Granted: To discharge poultry processing wastes by burial into land in

the vicinity of the Mangati Stream in emergency

circumstances only

Expiry Date: 01 June 2032

Review Date(s): June 2020 and/or June 2026

Site Location: 91 Paraite Road, Bell Block

Legal Description: Lot 1 DP 10331 Pt Sec 14 Blk II Paritutu SD (site of

discharge)

Grid Reference (NZTM) 1699935E-5678077N

Catchment: Mangati

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 with section 36 of the Resource Management Act 1991.

Special conditions

- 1. This consent shall only be exercised in an emergency situation when there are no reasonable alternatives. No discharge shall occur unless the Chief Executive, Taranaki Regional Council (or his/her delegate) has confirmed that it complies with this requirement.
- 2. Before exercising the consent, the consent holder shall advise the Chief Executive, Taranaki Regional Council (CETRC), of:
 - Details of the emergency,
 - Why alternative disposal methods are unavailable,
 - Estimated volume of material,
 - Location of burial pits,
 - Estimated duration of emergency,

The discharge shall than only occur after the CETRC (or his/her delegate) has confirmed that the proposed discharge complies with condition 1. In confirming that the proposal complies with condition 1, the CETRC may limit the duration or scale of the discharge and require the information listed above to be updated for the discharge to be extended

- 3. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any actual or likely adverse effect on the environment associated with the discharge of contaminants from the site, including but not limited to effects on any water body or soil.
- 4. All burial trenches shall be located no closer than 25 metres to any surface water body.
- 5. All burial trenches shall be constructed so that the base is located above the level of groundwater.
- 6. The consent holder shall maintain records of any disposal including date, type of waste discharged, volume of waste discharged per day and the location waste was discharged, and shall make these records available to the Chief Executive, Taranaki Regional Council, upon request.

Consent 5494-2.0

- 7. The consent holder shall maintain and regularly update a 'Burial Management Plan' that has been approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity. The plan shall detail how the burial will be managed to achieve compliance with the conditions of this consent and shall include as a minimum:
 - a. Circumstances when the consent may be exercised,
 - b. Procedure for advising the CETRC to determine compliance with condition 1,
 - c. What information will be provided to the CETRC in order for him/her to determine compliance with condition 1,
 - d. The identification of key personnel responsible for managing and implementing the emergency burial;
 - e. The design of the burial pits; and
 - f. The area in which the burial pits can be located.
 - g. The location of pits in which material has been disposed of.
 - h. On-going management of the burial areas.

Any changes to the plan shall not take effect until they have been approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity.

- 8. This consent shall lapse on 01 June 2032, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
- 9. 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 2020 and/or June 2026, 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 24 October 2014

For and on behalf of Taranaki Regional Council

A D McLay

Director - Resource Management

Name of Tegel Foods Limited Consent Holder: Private Bag 2015

New Plymouth 4340

Decision Date

(Change):

17 April 2015

Commencement Date

(Change):

17 April 2015 (Granted: 20 May 2005)

Conditions of Consent

Consent Granted: To take and use groundwater from a bore for food

processing and washdown purposes

Expiry Date: 1 June 2038

Review Date(s): June 2020, June 2026, June 2032

Site Location: 91 Paraite Road, Bell Block

Legal Description: Lot 1 DP 10331 Pt Sec 14 Blk II Paritutu SD

Grid Reference (NZTM) 1699868E-5677951N

Catchment: Mangati

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 undertaken in general accordance with the documentation submitted in support of application 2939 and shall ensure the efficient and effective use of water. In the case of any contradiction between the documentation submitted in support of application 2939 and the conditions of this consent, the conditions of this consent shall prevail.
- 2. The volume of groundwater abstracted shall not exceed 3000 cubic metres per day at a rate not exceeding 35 litres per second.
- 3. The abstraction shall be managed so that the water level in the bore does not fall below 35 metres below ground level at any time.
- 4. The consent holder shall maintain a record of the abstraction including date, pumping hours and daily volume abstracted and make these records available to the Chief Executive, Taranaki Regional Council, no later than 31 July of each year, or earlier upon request.
- 5. The consent holder shall install and maintain a water meter and on the pump system, approved by the Chief Executive, Taranaki Regional Council, for the purposes of recording the abstraction.
- 6. This consent shall be subject to monitoring by the Taranaki Regional Council and the consent holder shall meet all reasonable costs associated with the monitoring.
- 7. This consent shall lapse on 20 May 2020, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

Consent 6357-1.2

8. 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 2008 and/or June 2014 and/or June 2020 and/or June 2026 and/or June 2032, 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 17 April 2015

For and on behalf of Taranaki Regional Council

A D McLay **Director - Resource Management**

Name of Tegel Foods Limited Consent Holder: Private Bag 2015

NEW PLYMOUTH 4340

Decision Date

30 July 2012

(Review):

Review Completed

Date:

30 July 2012 (Granted: 30 March 2009)

Conditions of Consent

Consent Granted: To discharge stormwater from a poultry processing plant

via a wetland into the Mangati Stream at or about (NZTM)

1700060E-5678081N

Expiry Date: 1 June 2026

Review Date(s): June 2012, June 2014, June 2020

Site Location: 91-95 Paraite Road, Bell Block

Legal Description: Lot 1 DP 10331 Pt Sec 14 Blk II Paritutu SD

(Discharge source & site)

Catchment: Mangati

For General, Standard and Special conditions pertaining to this consent please see reverse side of this document

Page 1 of 4

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

- 1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
- 2. The stormwater discharged shall be from a catchment area not exceeding 2.6 hectares.
- 3. All stormwater shall be directed for treatment through the stormwater treatment system, which includes a wetland of approximately 6224 m², for discharge in accordance with the special conditions of this permit. The consent holder shall regularly inspect and maintain the wetland to ensure that it provide the necessary stormwater treatment at all times.
- 4. Any above ground hazardous substances storage areas shall be bunded with drainage to sumps, or other appropriate recovery systems, and not directly to the stormwater catchment.
- 5. Constituents of the discharge from the wetland shall meet the standards shown in the following table.

<u>Constituent</u>	<u>Standard</u>
Unionised ammonia	Concentration not greater than 0.025 gm ⁻³
BOD	Concentration not greater than 15gm ⁻³
Oil and grease	Concentration not greater than 15 gm ⁻³
pH range	Within the range 6-9
Suspended solids	Concentration not greater than 100 gm ⁻³

This condition shall apply at the point at which the discharge exits the wetland, at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

- 6. The discharge, from the point at which the flow from the wetland enters the Mangati Stream, shall not, either by itself or in combination with other discharges, give rise to any or all of the following effects in the receiving water:
 - 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. The discharge, either by itself or in combination with other discharges shall not cause the concentration of filtered carbonaceous 5 day BOD to exceed 2 gm⁻³ in the Mangati Stream.
- 8. The wetland shall be maintained to a standard that ensures maximum effluent treatment, to the satisfaction of the Chief Executive, Taranaki Regional Council.
- 9. The consent holder shall complete all fencing and riparian planting in accordance with Riparian Management Plan [RMP450] before 31 December 2010.
- 10. The consent holder shall maintain a contingency plan. The contingency plan shall be adhered to in the event of a spill or emergency and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, detail measures and procedures to be undertaken to prevent spillage or accidental discharge of contaminants not authorised by this consent and measures to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.
- 11. The consent holder shall maintain a stormwater management plan. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:
 - a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor system.
- 12. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the chemicals used or stored on site, which could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable if the consent holder does not have access to email.

Consent 7389-1

- 13. 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:
 - a) during the month of June 2012 and/or June 2014 and/or June 2020; and/or
 - b) within 3 months of receiving a notification under special condition 12 above;

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 30 July 2012

For and on behalf of
Taranaki Regional Council
O
Director-Resource Management

DISCHARGE PERMIT

Pursuant to the RESOURCE MANAGEMENT ACT 1991 a resource consent is hereby granted by the Taranaki Regional Council

Name of NATURAL GAS CORPORATION OF NEW ZEALAND LIMITED Consent Holder: PRIVATE BAG 2020 NEW PLYMOUTH 4620

Consent

Granted Date: 24 July 1995

CONDITIONS OF CONSENT

Consent Granted:TO DISCHARGE UP TO 608 LITRES/SECOND OF STORMWATER FROM AN ADMINISTRATION SITE INTO THE MANGATI STREAM AT OR ABOUT GR: P19:098-404

Expiry Date: 1 June 2014

Review Date[s]: June 2002 and June 2008

Site Location: 38-48 CONNETT ROAD WEST BELL BLOCK

Legal Description:LOT 1 DP12815 BLK II PARITUTU SD

Catchment: MANGATI 393.000

TRK954780

GENERAL CONDITIONS

- (a)That on receipt of a requirement from the General Manager, Taranaki Regional Council (hereinafter the General Manager), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- (b)That 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)That 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;
- (ii)charges for the carrying out of the Council's functions under section 35 in relation to this consent; and (iii)charges authorised by regulations.

SPECIAL CONDITIONS

1)THAT components of the discharge shall not exceed the following concentrations:

pH [range] 6 - 9 Oil and grease 15 gm⁻³ Suspended solids 100 gm⁻³

This condition shall apply prior to the entry of the stormwater into the Mangati Stream at a designated sampling point approved by the General Manager, Taranaki Regional Council.

- 2)THAT the discharge shall not give rise, beyond a reasonable mixing zone, to any or all of the following effects in the receiving water:
 - (a)the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - (b)any conspicuous change in 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.
- 3)THAT the Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 2002 and/or the month of June 2008 for the purpose of ensuring that the consent conditions are adequate to deal with any adverse effects of the discharge on the environment.

Signed at Stratford on 24 July 1995		
· ·	For and on behalf of	
	TARANAKI REGIONAL COUNCIL	
	OPERATIONS MANAGER	

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

Name of W Abraham Limited

Consent Holder: P O Box 4016

Taranaki Mail Centre NEW PLYMOUTH 4340

Consent Granted

Date:

12 February 2008

Conditions of Consent

Consent Granted: To discharge emissions into the air from the operation of a

crematorium including a natural gas-fired cremator at or

about 2610328E-6240273N

Expiry Date: 1 June 2014

Review Date(s): June 2010

Site Location: 13 Swans Road, Bell Block, New Plymouth

Legal Description: Lot 13 DP 378981

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

- 1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
- 2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of application 4738. In the case of any contradiction between the documentation submitted in support of application 4738 and the conditions of this consent, the conditions of this consent shall prevail.
- 3. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least seven days prior to the initial exercise of this consent. Notification shall include the consent number and a brief description of the activity consented and be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable only if the consent holder does not have access to email.
- 4. The consent holder shall at all times operate, maintain, supervise, monitor and control all processes so that emissions authorised by this consent are maintained at a practicable minimum.
- 5. The cremator shall be designed and operated in order to prevent the discharge of smoke, fumes or other contaminants to air during the charging of the cremator, other than through the discharge stack.
- 6. The cremator and all duct work shall be constructed and maintained leak proof and gas tight to prevent the discharge of gases from the duct work or cremator, other than through the stack.
- 7. The minimum stack height for the discharge of exhaust emissions from the cremator shall be eight metres above ground level.
- 8. The stack flue and duct work leading to the stack shall be adequately insulated to avoid or minimise the condensation of liquids or the formation of soot smuts.

- 9. That the discharges authorised by this consent shall not give rise to an odour at or beyond the boundary of the site that, in the opinion of at least one enforcement officer of the Taranaki Regional Council, is offensive or objectionable.
- 10. For the purposes of condition 9, without restriction, an odour shall be deemed to be offensive or objectionable if:
 - a. it is held to be so in the opinion of an enforcement officer of the Taranaki Regional Council, having regard to the duration, frequency, intensity and nature of the odour; and/or
 - b. an officer of the Taranaki Regional Council observes that an odour is noticeable, and either it lasts longer than ten (10) minutes continuously, or it occurs frequently during a single period of more than one (1) hour; and/or
 - c. no less than three individuals from at least two different properties, each declare in writing that an objectionable or offensive odour was detected beyond the boundary of the site, provided the Council is satisfied that the declarations are not vexatious and that the objectionable or offensive odour was emitted from the site at the frequency and duration specified in (b). Each declaration shall be signed and dated and include:
 - i. the individuals' names and addresses;
 - ii. the date and time the objectionable or offensive odour was detected;
 - iii. details of the duration, frequency, intensity and nature of the odour that cause it to be considered offensive or objectionable;
 - iv. the location of the individual when it was detected; and
 - v. the prevailing weather conditions during the event.
- 11. The cremator shall be operated so that the temperature within or at the outlet from the secondary chamber exceeds 800°C at all times that a cremation is taking place (i.e. from the moment of introduction of a casket into the primary chamber). If the temperature within or at the outlet from the secondary chamber falls below 870°C while a cremation is taking place, the operator shall take all practicable steps or the controls shall be automatically set so as to return and maintain the temperature to or above 870°C.
- 12. The consent holder shall take all reasonable steps to reduce and minimise the quantity of materials [such as PVC, metals, and other materials listed in the guidelines published by the Australasian Cemeteries and Crematoria Association (May 2004): *Contents of coffins delivered for cremation*] combusted within the cremator.
- 13. The consent holder shall remove all external casket fittings containing metals or PVC prior to cremation
- 14. Prior to undertaking any alterations to the plant, process, or operations, as specified in application 4738, including accompanying documentation, which may significantly change the nature or quantity or concentration of contaminants emitted from the site, the consent holder shall consult with the Chief Executive Taranaki Regional Council, and shall obtain any necessary approvals under the Resource Management Act 1991 and any amendments.

- 15. The cremator shall be designed and constructed with both a primary combustion and a secondary combustion zone. The secondary chamber shall be sized so as to have a minimum residence time of 1.57 seconds at 870°C. The consent holder shall provide certified 'as-built' drawings and calculations demonstrating compliance with this condition to the Chief Executive, Taranaki Regional Council, prior to exercise of the consent
- 16. The cremator shall be interlocked so as to prevent the introduction of a coffin to the primary chamber unless the temperature in the secondary combustion zone exceeds 800°C.
- 17. Emissions from the cremator stack shall be free from visible smoke. "Free from visible smoke" is defined as at all times adopting the best practicable option to prevent and eliminate visible smoke, and in any case not allowing more than two one-minute averages of opacity exceeding 20%, or Ringelmann Scale 1, during any cremation cycle.
- 18. The concentration of oxygen at the outlet from the secondary combustion chamber shall exceed 6% (actual conditions) at all times.
- 19. The concentration of carbon monoxide at the outlet from the secondary combustion chamber shall not exceed 100 mg/m^3 (expressed at reference conditions 0°C and 101.3 kPa).
- 20. The opacity in the exhaust gases at the outlet of the secondary chamber or exhaust ducting shall be continuously monitored and recorded.
- 21. The temperature of gases within or at the outlet of the secondary chamber shall be continuously monitored and recorded.
- 22. The Taranaki Regional Council shall be notified at least 24 hours prior to any visit to the site by any agent of the supplier of the cremator or of the consent holder for the purpose of any maintenance that may affect or include the calibration, monitoring, or process control of the cremator.
- 23. The consent holder shall within three months of the first exercise of this consent provide the Taranaki Regional Council with a schedule of maintenance and calibration of the unit including but not limited to its controlling, recording, and monitoring equipment and systems.
- 24. The consent holder shall not discharge any contaminant to air from the site at a rate or a quantity such that the contaminant, whether alone or in combination with other contaminants, is or is liable to be hazardous or toxic or noxious at or beyond the boundary of the site.
- 25. The consent holder shall provide to the Chief Executive of the Taranaki Regional Council, upon request, all monitoring, calibration and process control data whether generated and held by an operator, any automated process control systems, or any agent of the consent holder.

Consent 7147-1

- 26. That without limitation or restriction to condition 24, the consent holder shall not discharge any contaminant at a rate or a quantity such that the discharge causes the ambient concentration of sulphur dioxide downwind to exceed 350 μ g m⁻³ (measured as a 60-minute average), or the ambient concentration of nitrogen dioxide downwind to exceed 200 μ g m⁻³ (measured as a 60-minute average).
- 27. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
- 28. The Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 2010 for the purpose of:
 - a) adding, amending or deleting any limit on discharge or ambient concentrations of any contaminant or contaminants; and/or
 - b) requiring the consent holder to adopt the best practicable option to remove or reduce any adverse effect on the environment caused by any discharge to the environment; and/or
 - c) requiring the consent holder to install, calibrate and/or maintain any monitoring and/or recording device to monitor combustion conditions or environmental performance of the cremator including but not limited to devices for the measurement and/or recording of oxygen and/or carbon monoxide within the secondary combustion chamber and/or exhaust stack; and/or
 - d) ensuring that the conditions are adequate to deal with any adverse effects of the discharge on the environment arising from the exercise of this consent which were 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 12 February 2008

For and on behalf of
Taranaki Regional Council
Director-Resource Management

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

Name of W Abraham Limited

Consent Holder: PO Box 4016

New Plymouth 4340

Decision Date: 11 May 2015

Commencement Date: 11 May 2015

Conditions of Consent

Consent Granted: To discharge emissions into the air from the operation of a

crematorium including a natural gas-fired cremator

Expiry Date: 1 June 2032

Review Date(s): June 2020, June 2026

Site Location: 10 Swans Road, Bell Block

Legal Description: Lot 2 DP 429053 (Discharge source & site)

Grid Reference (NZTM) 1700244E-5678513N

For General, Standard and Special conditions pertaining to this consent please see reverse side of this document

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 with section 36 of the Resource Management Act 1991.

Special conditions

- 1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any actual or likely adverse effects on the environment arising from discharges to air from the site.
- 2. The consent holder shall undertake the activity in general accordance with the application for this consent (7147-2.0) and the application for the expired consent (7147-1.0). If there is a conflict between the applications the later application shall prevail, and if there is a conflict between the applications and consent conditions the conditions shall prevail.
- 3. Prior to undertaking any alterations to the plant, process, or operations, which may significantly change the nature or quantity or concentration of contaminants emitted from the site, the consent holder shall consult with the Chief Executive, Taranaki Regional Council, and shall obtain any necessary approvals under the Resource Management Act 1991 and any amendments.
- 4. The consent holder shall notify the Chief Executive, Taranaki Regional Council, shall at least 2 working days before any maintenance that may affect or include the calibration, monitoring, or process control of the cremators. Notification shall include the consent number and a brief description of the work to be done, and be emailed to worknotification@trc.govt.nz.
- 5. The consent holder shall at all times operate, maintain, supervise, monitor and control all processes so that emissions authorised by this consent are maintained at a practicable minimum.
- 6. The cremators and all duct work shall be maintained leak proof and gas tight to prevent the discharge of gases from the duct work or cremator, other than through the stack.
- 7. The stack flue and duct work leading to the stack shall be adequately insulated to avoid, as far as practicable, the condensation of liquids or the formation of soot smuts.
- 8. The consent holder shall take all reasonable steps to reduce and minimise the quantity of materials (such as PVC, metals, and other materials listed in the guidelines published by the Australasian Cemeteries and Crematoria Association (May 2004): *Contents of coffins delivered for cremation*) combusted within the cremator.
- 9. The consent holder shall remove all external casket fittings containing metals or PVC prior to cremation.

- 10. The cremator shall be interlocked so as to prevent the introduction of a coffin to the primary chamber unless the temperature in the secondary combustion zone exceeds 750°C.
- 11. The minimum stack height for the discharge of exhaust emissions from the cremator shall be eight metres above ground level.
- 12. The cremator shall be operated so that the temperature within or at the outlet from the secondary chamber exceeds 750°C at all times that a cremation is taking place (i.e. from the moment of introduction of a casket into the primary chamber). If the temperature within or at the outlet from the secondary chamber falls below 750°C while a cremation is taking place, the operator shall take all practicable steps or the controls shall be automatically set so as to return and maintain the temperature to or above 750°C.
- 13. The cremator shall maintain both a primary combustion and a secondary combustion zone. The secondary chamber shall be sized so as to have a minimum residence time of 1.57 seconds at 750°C. The consent holder shall provide certified 'as-built' drawings and calculations demonstrating compliance with this condition to the Chief Executive, Taranaki Regional Council, prior to exercise of the consent.
- 14. In any one cremation cycle not more than two one-minute averages of the opacity readings shall exceed 20% obscuration or Ringelmann Scale 1.
- 15. The concentration of carbon monoxide at the outlet from the secondary combustion chamber shall not exceed 100 mg/m³ (expressed at reference conditions 0°C and 101.3 kPa).
- 16. The consent holder shall continuously record the opacity in the exhaust gases at the outlet of the secondary chamber or exhaust ducting.
- 17. The consent holder shall continuously record the temperature of gases within or at the outlet of the secondary chamber.
- 18. The consent holder shall maintain the schedule of maintenance and calibration of the cremator including but not limited to its controlling, recording, and monitoring equipment and systems.
- 19. The consent holder shall control all emissions of carbon monoxide, nitrogen dioxide, fine particles (PM10) and sulphur dioxide to the atmosphere from the site, in order that the maximum ground level concentration of any of these contaminants arising from the exercise of this consent measured under ambient conditions does not exceed the relevant ambient air quality standard as set out in the Resource Management (National Environmental Standards for Air Quality Regulations, 2004) at or beyond the boundary of the property.
- 20. The consent holder shall control all emissions to the atmosphere from the site of contaminants other than those expressly provided for under special condition 19, in order that they do not individually or in combination with other contaminants cause a hazardous, noxious, dangerous, offensive or objectionable effect at or beyond the boundary of the property.

- 21. The discharges authorised by this consent shall not give rise to an odour at or beyond the boundary of the site that is offensive or objectionable.
- 22. For the purposes of special conditions 20 and 21, without restriction, an odour shall be deemed to be offensive or objectionable if:
 - a. it is held to be so in the opinion of an enforcement officer of the Taranaki Regional Council, having regard to the duration, frequency, intensity and nature of the odour; and/or
 - b. an officer of the Taranaki Regional Council observes that an odour is noticeable, and either it lasts longer than ten (10) minutes continuously, or it occurs frequently during a single period of more than one (1) hour; and/or
 - c. no less than three individuals from at least two different properties, each declare in writing that an objectionable or offensive odour was detected beyond the boundary of the site, provided the Taranaki Regional Council is satisfied that the declarations are not vexatious and that the objectionable or offensive odour was emitted from the site at the frequency and duration specified in (b). Each declaration shall be signed and dated and include:
 - i. the individuals' names and addresses:
 - ii. the date and time the objectionable or offensive odour was detected;
 - iii. details of the duration, frequency, intensity and nature of the odour that cause it to be considered offensive or objectionable;
 - iv. the location of the individual when it was detected; and
 - v. the prevailing weather conditions during the event.
- 23. At the written request of the Chief Executive, Taranaki Regional Council, the consent holder shall undertake emission test on discharges from the cremator. This emission testing shall:
 - a. be undertaken for all pollutants that are requested to be tested in writing by the Chief Executive, Taranaki Regional Council, for the volumetric flow of combustion gases, and for the oxygen concentration at the exit of the secondary chambers and at the test ports;
 - for each sample, be conducted over a complete cremation cycle, commencing as soon typical operating conditions have achieved, ending once calcining is complete, and over a period of at least one hour; and
 - b. comprise not less than three separate samples for each type of emission test undertaken, and shall have the concentration results corrected to 0 (zero) degrees Celsius, 1 (one) atmosphere pressure and on a dry gas basis.
- 24. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, upon request, all monitoring (including results of all tests, relevant operating parameters, raw data, all calculations, assumptions and an interpretation of the results), and calibration and process control data whether generated and held by an operator, any automated process control systems or any agent of the consent holder.

Consent 7147-2.0

- 25. The Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 2020 and/or June 2026 for the purpose of:
 - a) adding, amending or deleting any limit on discharge or ambient concentrations of any contaminant or contaminants; and/or
 - requiring the consent holder to adopt the best practicable option to remove or reduce any adverse effect on the environment caused by any discharge to the environment; and/or
 - c) requiring the consent holder to calibrate and/or maintain any monitoring and/or recording device to monitor combustion conditions or environmental performance of the cremator including but not limited to devices for the measurement and/or recording of oxygen and/or carbon monoxide within the secondary combustion chamber and/or exhaust stack; and/or
 - d) ensuring that the conditions are adequate to deal with any adverse effects of the discharge on the environment arising from the exercise of this consent which were 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 11 May 2015

For and on behalf of
Taranaki Regional Council

A D McLay

Director - Resource Management

Appendix II

Results of chemical monitoring of the Mangati Stream and industrial drainage system

5 September 2014 – wet weather run

Ste	Code	AlAs	BOD	BODF	COD	Condy	CuAs	CuD	DO	DRP	ECOL	ENT	FC	NH ₃	NH_4	NNN	O&G	PbAs	рН	SS	Temp	Turby	ZnAs	ZnD
Mangati below railway	MGT000485		3.6			17.8	0.004	0.001	8.1	0.043				0.00092	0.327	1.35			7.0	39	12.9	22	0.012	0.009
Tegel poultry to swamp	STW001053		11		34	7.2				0.269				0.00961	0.908		а		7.6	61	12.2	82		
Tegel swamp tributary	MGT000489		7.6			17			6.9	0.039				0.00328	0.762				7.2	40	12.4	41		
Mangati below Tegel	MGT000493		3.4			17.7	0.004	0.001	8.1	0.02				0.00138	0.39				7.1	40	12.9	21	0.04	0.014
Tegel P to De Hav. Dr. W	STW001129		4.5			2.7				0.053				0.01134	1.45		0.6		7.4	3	14.3	0.91		
Tegel P to De Hav. Dr. E	STW001128		1.3			18.2				0.234				0.00156	0.099		а		7.7	23	14.5	9.2		
De Havilland Drive West	STW001054		3.9			6.4				0.095				0.00151	0.411		а		7.1	24	13.4	34		
Tasman Oil Tools	STW001057					8.2	0.12	0.02									а	0.05	7.4	43	12.3	130	0.309	0.088
Connett Road	STW001055		7.5			16	0.01	< 0.001		0.034				0.00106	0.228		а		7.2		13.4	6.7	0.22	0.22
Mangati above Connett Road	MGT000497		3.1			17.5	0.004	0.002	1.8	0.016				0.00098	0.337				7.0	31	13.3	16	0.026	0.016
Tegel feed mill	STW001015		>70	>28	160	18.4				0.526	170000	4300000	170000	0.00574	2.36		1.1		6.9	150	14.0	32		
MCK Metals east drain	STW001014	0.59				4.3	0.06	0.04									1.3	< 0.05	7.3	16	13.6	12	0.508	0.437
TIL – Turners&Growers	STW001133		7.8			13.7				0.256							2.5		7.6	8	13.7	3.7		
MCK Northern stormwater	STW001028	0.06				2.2	0.02	0.02									а		7.2	<2	13.4	1.3	0.69	0.65
TIL to Connett Road	STW001131		11			7.1				0.196							0.5		7.2	9	14.1	6		
Upper Connett Road	STW001012		5.8			5.8											а		7.3		13.8	9.6		
OMV	IND002013		16	5.4	48	5.4				0.027	12000	150000	12000	0.00073	0.25		а		7.0	9	13.4	36		
Middle Connett Road	STW001010		5.4			8.6									0.461		а		6.7		14.2	7		
Central Drain	STW001011					23.4									0.154		а		7.3		14.1	16		
Schlumberger (MI NZ mud plant)	STW002071		>100		570	301								0.00016	0.038		4.2		7.2	31	12.1	10		
Schlumberger	STW001056				42	6.6		0.01									а	< 0.05	7.6	12	12.9	14		0.195
Schlumberger (ex MI NZ)	STW001118		3.9			12.6								0.00116	0.11		0.6		7.6	46	12.2	74		
ABB Transformers	STW001017					20.1	<0.01	<0.01									3	<0.05	7.5	15	12.6	14	0.322	0.284
Lower Connett Road	STW001052		5.4			12											а		6.9		14.2	7.2		
Nexans Cables	STW001025					2.2	0.02	0.01									а		7.1		13.4	1.4	0.118	0.082
Mainland Products	STW001048					16.1											а		7.3	9	13.5	14	0.336	0.296
Industrial drain outlet	STW001026		3.4			9.9	0.06	0.02		0.005				0.00026	0.071		а		7.1		13.3	62	0.186	0.102
NPDC wetlands pond 3	STW002056	0.25	6.8		23	14.9	0.011	0.008		0.009				0.00087	0.29		а	< 0.05	7.0	13	13.7	11	0.146	0.132
Mangati below pond 3	MGT000500		4.4			17.2	0.006	0.004	8.1	0.016				0.00103	0.353				7.0	32	13.4	15	0.048	0.039
NPDC wetlands pond 4	STW002055	0.33	7.6		26	16.1	0.014	0.009		0.01				0.00093	0.315		а	< 0.05	7.0	18	13.5	14	0.182	0.162
Industrial drain at Mangati	MGT000503	0.14	2.0		5	9.7	0.008	0.006	8.9	0.008				0.00006	0.08		а	< 0.05	6.4	3	13.9	3.5	0.103	0.103
Mangati below industrial drain	MGT000512		5.5			16.8	0.007	0.004	8.5	0.014				0.001	0.338				7.0	28	13.5	16	0.063	0.044
Mangati at coast	MGT000550		4.0			15.3	0.007	0.004	9.02	0.015	4600		4800	0.00098	0.203	0.87			7.2	28	13.9	17	0.038	0.022

18 February 2015 – dry weather run

Ste	Code	AlAs	BOD	BODCF	BODF	CL	COD	Condy	CuAs	CuD	DO	DRP	ECOL	ENT	FC	NH ₃	NH ₄	NNN	0&G	PbAs	PERS	рН	SS	Temp	Turb	ZnAs	ZnD
Mangati below railway	MGT000485		5.1	1.2				21.8	0.001	0.001	2.62	0.022	2200	6000	2300	0.00097	0.202	0.73			24.9	7.2	54	13.9	44	0.005	< 0.005
Tegel poultry to swamp	STW001053		11				18	19.2				0.077				0.00712	0.189					8	2	17.2	1.9		
Tegel swamp tributary	MGT000489		2	0.6				19.8			3.92	0.063				0.00302	0.989				35.9	7	8	14.0	7.3		
Mangati below Tegel	MGT000493		3.3	8.0				22.3	< 0.001	< 0.001	2.98	0.033	8700	4100	8800	0.00159	0.41				28.9	7.1	10	14.1	13	0.007	0.007
Tegel P to De Hav. Dr. W manhole Pipe A	STW001129		10					21.2				1.04				0.13339	6.9		<0.5			7.6	5	20.4	2.4		
Mangati above Connett Road	MGT000497		2.7	0.6				24.7	< 0.001	< 0.001	2.9	0.029	3100	2500	3200		0.189				29.7	7.1	7		6.1	< 0.005	< 0.005
Tegel feed mill	STW001015		11		2.2	15000		3550				0.028	30000	93000	30000	0.01408	1.31		<0.5			7.4	70	18.6	14		
Upper Connett Road	STW001012		6.7					4370											< 0.5			7.6		18.3	6.5		
Mainland Products	STW001048							18.8														7.1	21	16.1	100	0.031	0.011
Industrial drain outlet	STW001026		19					29.9	0.05	0.01		0.029				0.05557	0.645					8.4		16.5	56	0.468	0.108
NPDC wetlands pond 3	STW002056	0.18	5				28	24.7	0.001	< 0.001		0.018	2700	160	2700	0.00244	0.434			< 0.05		7.1	15	19.1	11	0.018	0.012
Mangati below pond 3	MGT000500		4.6	< 0.5				24.4	0.002	< 0.001	3.65	0.022	900	1700	900	0.00097	0.18				36.4	7.2	45	15.5	22	0.012	0.005
Mangati below industrial drain	MGT000512		1.8	< 0.5				24	<0.001	< 0.001	4.53	0.024	1200	1700	1200	0.00145	0.172					7.4	4	15.3	4.5	0.005	< 0.005
Mangati at coast	MGT000550		1.3					20.5	0.015	0.001	5.01	0.015	680	830	730	0.00075	0.054	1.07			51.2	7.5	16	19	6.3	0.04	0.005

5 May 2015 - dry weather run

Ste	Code	AlAs	BOD	BODF	COD	Condy	CuAs	CuD	DO	DRP	ECOL	ENT	FC	NH ₃	NH ₄	NNN	O&G	PbAs	PERSAT	рН	SS	Temp	Turby	ZnAs	ZnD
Mangati below railway	MGT000485		1.3	< 0.5		17.8	0.001		8.4	0.014	1300	730	1300	0.00014	0.071	1.01			81	6.8	5	14.0	3.4	< 0.005	< 0.005
Tegel swamp tributary	MGT000489		1.4	0.5		22.3			4.3	0.038				0.00061	0.633				41	6.5	9	14.0	12		
Mangati below Tegel	MGT000493		1.7	<0.5		18.1	<0.001	< 0.001	8.3	0.012	1100	730	1100	0.00016	0.104				80	6.7	7	14.0	4	< 0.005	< 0.005
De Havilland Drive West	STW001054		1.1			24.5				0.11				0.00005	0.139		а			6.0	<2	17.3	1.1		
Mangati above Connett Road	MGT000497		1.4	< 0.5		18.7	0.001	< 0.001	7.8	0.012	600	900	600	0.00016	0.126				76	6.6	8	14.7	5.8	0.006	< 0.005
Connett Road	STW001055		< 0.5			16.8	<0.01	< 0.01		0.016				0.0002	0.12		а			6.7		15.4	0.66	0.027	0.024
Upper Connett Road	STW001012		2.8			36.2					<2	6000	<2				а			7.7		16.9	7.8		
Lower Connett Road	STW001052		8.0			20.6											а			6.8		17.3	3		
Industrial drain outlet	STW001026		0.7			19.6	<0.01	< 0.01		0.036				0.00134	0.496		a			6.9		15.4	8.2	0.077	0.054
NPDC wetlands pond 3	STW002056	<0.1	0.9		8	18.9	<0.001	< 0.001		0.004	180	450	180	0.00162	0.98		а	< 0.05		6.7	3	15	2.9	0.063	0.056
Mangati below pond 3	MGT000500		1.3	<0.5		18.8	0.001	< 0.001	7.8	0.006	650	600	650	0.00025	0.152				77	6.7	6	14.8	6	0.006	< 0.005
Mangati below industrial drain	MGT000512		1.4	< 0.5		18.6	0.001	< 0.001	8.4	0.006	500	520	500	0.00023	0.141				82	6.7	6	14.7	5.3	0.006	< 0.005
Mangati at coast	MGT000550		1.0			18.4	0.001	< 0.001	9.7	0.006	400	350	400	0.0003	0.088	1.16			96	7.0	4	15.4	4.8	0.01	0.007

7 May 2015 - wet weather run

7 Way 2015 – We	Code	AlAs	BOD	BOD	CO	Condy	CuAs	CuD	DO	DRP	ECOL	ENT	FC	NH ₃	NH ₄	NNN	0&G	PbAs	Persat	рН	SS	Temp	Turby	ZnAs	ZnD
Mangati below railway	MGT000485	711/13	2.1	DOD	00	17	0.003	0.001	7.4	0.019	LOOL	LIVI	10	0.0004	0.11	1.02	Odo	1 6/13	75	7.0	41	16.3	27	0.008	< 0.005
Tegel poultry to swamp	STW001053		9.2		43	7.3	0.000	0.001		0.229				0.01944	0.41		а			8.1	74	17.3	60	0.000	101000
Tegel swamp tributary	MGT000489		7.2			14.5			7.3	0.1				0.00136	0.569				76	6.8	46	16.9	42		
Mangati below Tegel	MGT000493		3.8			15.9	0.006	0.001	7.2	0.027				0.00058	0.197				74	6.9	59	16.5	36	0.048	0.016
Tegel P to De Hav. Dr. E manhole	STW001128		2			4.4				0.078				0.00091	0.148		а			7.2	7	17.3	3.3		
Tegel P to De Hav. Dr. W manhole Pipe B	STW001130		3.3			3.5				0.077				0.00101	0.257		а			7.0	12	17.4	8.1		
Tegel P to De Hav. Dr. W manhole Pipe A	STW001129		4.9			5				0.158				0.001	0.161		а			7.2	37	17.4	20		
De Havilland Drive West	STW001054		2.4			4.7				0.049				0.00039	0.096		а			7.0	19	17.7	16		
Tasman Oil Tools	STW001057					7.4	0.13	0.01									< 0.5	< 0.05		7.2	140	17.1	150	0.311	0.065
Greymouth Petroleum	IND001012					9.7	0.09	<0.01									а	0.14		7.4	430	16.6	490	0.382	0.013
Below Greymouth	MGT000495					8.7	0.06	0.01									а	0.05		7.2	190	16.9	200	0.222	0.041
Mangati above Connett Rd	MGT000497		<0.5			14	0.009	0.002	7.5	0.018				0.00029	0.12				78	6.8	51	16.8	39	0.046	0.017
Connett Road	STW001055		2.6			5	< 0.01	<0.01		0.037				0.00034	0.106		а			6.9		17.6	6.3	0.121	0.104
Tegel feed mill	STW001015		54	22	180	8				0.519	190000	1500000	190000	0.00047	0.234		< 0.5			6.7	120	17.5	59		
MCK Metals east drain	STW001014	0.28				5.1	0.03	0.02									a	< 0.05		6.9	5	17.7	5.3	0.455	0.415
TIL – Turners and Growers	STW001133		2.5			4.8				0.208							a			7.2	7	17.4	7.4		
TIL – loading canopy	STW001132		21			7.5				0.628							a			7.1	53	17.4	26		
MCK Northern stormwater	STW001028	<0.1				4.1	0.02	<0.01									a			6.9	<2	17.7	1.5	0.403	0.393
TIL to Connett Road	STW001131		5.8			4.2				0.113							a			7.1	58	17.4	32		
Halliburtons washpad	STW002042					21.9											40			8.0	55	16.8			
Upper Connett Road	STW001012		7.8			5											а			7.0		17.5	13		
OMV	IND002013		2.9	1.6	22	5.2				0.025	12000	97000	12000	0.00018	0.071		< 0.5			6.8	60	17.5	30		
BLM Feeds	STW001138		3.7			7.4											а			7.2	30	17.5	28		
Below OMV	STW001018		4.6			6.8				0.043					0.028		а			7.2		17.5	32		
Middle Connett Road	STW001010		8.9			5									0.317		<0.5			6.9		17.5	20		
Schlumberger mud plant	STW002071		1.4			5.9								0.00018	0.047		а			7.0	31	17.2	12		
Schlumberger	STW001056				<5	4.3		<0.01									a	< 0.05		7.0	16	17.3	5.5		0.099
MI NZ	STW001118		7.9			5.6								0.00163	0.42		а			7.0	39	17.2	40		
ABB Transformers	STW001017					4.6	<0.01	<0.01									а	< 0.05		6.9	10	17.3	11	0.242	0.194
Conveyorquip	STW001051					4.5											< 0.5			7.0	13	17.4	9.4		
Lower Connett Road	STW001052		5.6			5.1											a			7.0		17.5	17		
Nexans	STW001025					3.2	<0.01	<0.01							0.124		< 0.5			6.8		17.5	2.2	0.048	0.044
Halliburtons lower yard	STW001009		3.4			9.6		<0.01						0.0051	0.03		a			8.7	430	17.4	540	0.413	
Mainland Products	STW001048					5.4											а			7.1	21	17.6	15	0.306	0.230
Industrial drain outlet	STW001026		6.6			5.9	0.02	<0.01		0.105				0.00302	0.303		a			7.4		17.6	21	0.282	0.180
NPDC wetlands pond 3	STW002056	0.26	5.4		18	11.4	0.011	0.006		0.05				0.00155	0.791		а	< 0.05		6.7	5	17.3	7.4	0.155	0.139
Mangati below pond 3	MGT000500		3.7			14.2	0.009	0.002	7.2	0.021				0.00047	0.195				75	6.8	44	17.0	34	0.05	0.028
NPDC wetlands pond 4	STW002055	0.67	8.1		33	12.5	0.014	0.007		0.083				0.00206	0.854		a	< 0.05		6.8	10	17.0	13	0.24	0.200
Industrial drain at Mangati	MGT000503	1.35	6.2		21	6.7	0.017	0.008	8.9	0.154				0.00112	0.278		a	< 0.05	93	7.0	15	17.7	18	0.261	0.189
Mangati below industrial drain	MGT000512		5.5			13	0.018	0.005	8	0.051				0.00074	0.305				83	6.8	64	17.1	50	0.108	0.072
Mangati at coast	MGT000550		3.8			12	0.01	0.003	8.9	0.019				0.00066	0.215	0.6			92	6.9	27	17.2	22	0.059	0.035

Appendix III Biomonitoring reports

To Job Manager, Scott Cowperthwaite **From** Freshwater Biologist, Bart Jansma

Report No BJ271 **Doc No** 1593911

Date 4 November 2015

Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, December 2014

Introduction

The Mangati Stream is a small, lowland stream, running through Bell Block in North Taranaki. The upper reaches of this stream drain the area of farmland between Paraite Road and Corbett Road, approximately five kilometres from the coast. The farmland to the south (inland) and east of this catchment area feeds the Mangaoraka Stream.

Between the New Plymouth – Marton railway and Devon Road (along the mid reaches of the Mangati Stream) is an industrial area, which has been the source of a number of spillages in past years resulting in fish kills. The stream is capable of supporting significant native fish communities including members of the native eel, galaxiid (whitebait group) and bully families. Stormwater and wastewater discharges from this area are the primary concern in this biological monitoring programme.

The following consents relate to discharges to the Mangati Stream.

ABB Transformers	2336
Shaycar Trust	3913
Conveyorquip	5964
Greymouth Petroleum	4664
MI NZ Ltd	5987
Natural Gas Corp	4780
MCK Metals Pacific Ltd	3139
New Plymouth District Council	4302
Olex Cables	4497
Halliburton New Zealand Ltd	2337
Schlumberger Seaco Ltd	6032
Tasman Oil Tools	4812
Tegel Foods - Stock food	2335
Tegel Foods - Poultry plant	3470
• •	

This December 2014 survey was undertaken as the first of two surveys scheduled for the 2014-2015 monitoring year. Macroinvertebrate surveys have been undertaken in the Mangati Stream since 1992, and those reports discussing surveys undertaken between 1992 and 2001 are referenced in TRC, 2009. Results of other surveys performed in the Mangati Stream since the 2001-2002 monitoring years are discussed in various reports listed in the references in this report.

Methods

Eight established sampling sites in the Mangati Stream catchment (Table 1, Figure 1) were sampled on 2 December 2014. 'Kick samples' were collected at all sites in the current survey. Depending on the amount of macrophyte habitat present, some sites are occasionally surveyed using the 'sweep sampling' technique. This can produce different results when compared with a kick sample, often with lower index scores. These sampling techniques are very similar to Protocol C1 (hard-bottomed, semi-quantitative) (kick-sample) and Protocol C2 (soft-bottomed, semi-quantitative) (vegetation-sweep) of the New Zealand Macroinvertebrate Working Group (NZMWG) protocols for macroinvertebrate samples in wadeable streams (Stark et al, 2001).

 Table 1
 Biomonitoring sites in the Mangati Stream catchment

Site	Site code	Location	GPS
Α	MGT000488	Mangati Stream, 20 m upstream of swampy tributary	E1700095 N5678043
A2	MGT000490	Mangati Stream, 100 m downstream of swampy tributary	E1700062 N5678084
A1	MGT000491	Mangati Stream, 50 m upstream of De Havilland Drive	E1700018 N5678166
A3	MGT000497	Mangati Stream, 10 m above Connett Road	E1699775 N5678573
В	MGT000500	Mangati Stream above the industrial tributary, below wetland	E1699596 N5678691
D2	MGT000512	Mangati Stream, 20 m downstream SH3	E1699513 N5678787
E	MGT000520	Mangati Stream, 400 m below Devon Road	E1699385 N5679103
F	MGT000550	Mangati Stream, 50 m above Bell Block beach	E1699215 N5680409

Samples were preserved with Kahle's Fluid for later sorting and identification under a stereomicroscope according to Taranaki Regional Council methodology using protocol P1 of NZMWG protocols for sampling macroinvertebrates in wadeable streams (Stark et al. 2001). Macroinvertebrate taxa found in each sample were recorded as:

R (rare) = less than 5 individuals;

C (common) = 5-19 individuals;

A (abundant) = estimated 20-99 individuals; VA (very abundant) = estimated 100-499 individuals; XA (extremely abundant) = estimated 500 individuals or more.

Stark (1985) developed a scoring system for macroinvertebrate taxa according to their sensitivity to organic pollution in stony New Zealand streams (HBMCI). Recently, a similar scoring system has been developed for macroinvertebrate taxa found in soft bottomed streams (Stark and Maxted, 2004, 2007) (SBMCI). The SBMCI has been used in a number of biomonitoring reports since its inception, and results to date suggest that it is not as effective at assessing the impacts of organic pollution as the HBMCI. For example, results from the February 2008 Mangati survey found a relatively unchanged SBMCI score at a site which had thick growths of sewage fungus (Jansma, 2008b). Therefore this index is considered less appropriate for the assessment of macroinvertebrate communities possibly affected by industrial discharges. Any subsequent reference to MCI refers to the HBMCI.

Highly 'sensitive' taxa were assigned the highest scores of 9 or 10, while the most 'tolerant' forms scored 1 and 0.1 in hard bottomed and soft bottomed streams respectively. The sensitivity scores for certain taxa found in hard bottomed streams have been modified in accordance with Taranaki experience. After extensive use of the MCI, categories were assigned to the sensitivity scores, to clarify their 'relative' sensitivity e.g. taxa that scored between 1 and 4 inclusive are considered tolerant (see Table 3).

By averaging the scores obtained from a list of taxa taken from one site and multiplying by a scaling factor of 20, a Macroinvertebrate Community Index value was obtained. The MCI is a measure of the overall sensitivity of macroinvertebrate communities to the effects of organic pollution. More 'sensitive' communities inhabit less polluted waterways.

A gradation of biological water quality conditions based upon MCI ranges has been adapted for Taranaki streams and rivers (TRC, 2013) from Stark's classification (Stark, 1985 and Boothroyd and Stark, 2000). This is as follows:

Grading	MCI	Code
Excellent	>140	
Very Good	120-140	
Good	100-119	
Fair	80-99	
Poor	60-79	
Very Poor	<60	

A semi-quantitative MCI value (SQMCI $_{\rm s}$) has also been calculated for the taxa present at each site by multiplying each taxon score by a loading factor (related to its abundance), totalling these products, and dividing by the sum of the loading factors (Stark 1998 and 1999). The loading factors were 1 for rare (R), 5 for common (C), 20 for abundant (A), 100 for very abundant (VA) and 500 for extremely abundant (XA). Unlike the MCI, the SQMCI $_{\rm s}$ is not multiplied by a scaling factor of 20, so that its corresponding range of values is 20x lower.

Where necessary, sub-samples of periphyton (algae and other micro flora) were also taken from the macroinvertebrate samples and scanned under 40-400x magnification to determine the presence or absence of any mats, plumes or dense growths of bacteria, fungi or protozoa ('undesirable biological growths') at microscopic level. The presence of masses of these organisms can be an indicator of organic enrichment within a stream.

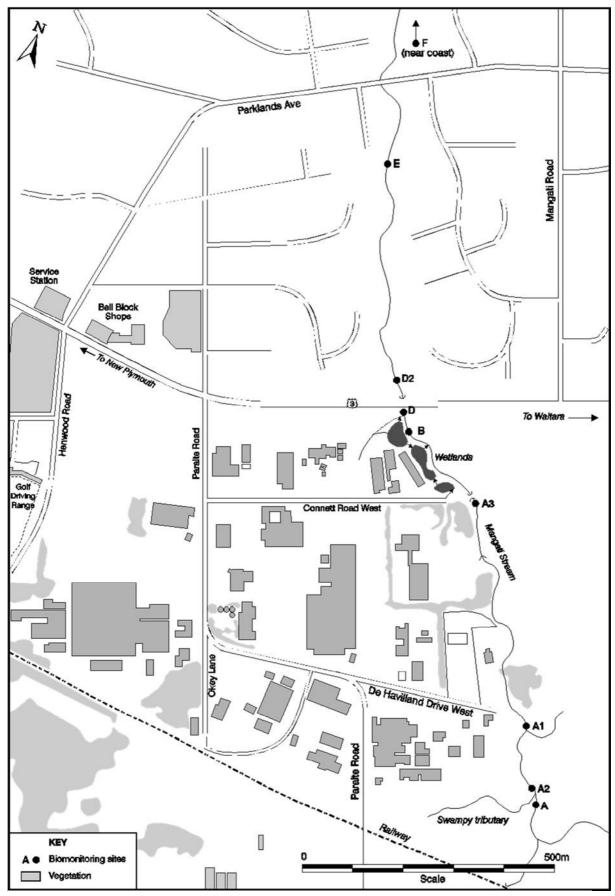


Figure 1 Sampling sites in the Mangati Stream catchment

Results

The 'industrial tributary' referred to in this report drains into the Mangati Stream immediately upstream of Devon Road (SH3), and receives stormwater and cooling water from the Bell Block industrial area. This tributary is now diverted into a series of wetland ponds to assist with treatment of the discharge (Figure 1). These ponds also receive stormwater from the Connett Road catchment, and are designed to discharge from a common point. As a result, site B monitors any potential impacts from the wetland discharge in comparison with site A3 (upstream of Connett Road). The wetland began operating in June 2004, with the flow from the 'industrial drain' directed into the two lower ponds for treatment prior to discharge to the Mangati Stream via pond 3. However, provision to progressively bypass this system during high tributary flows remains and therefore the site D2 has been used to monitor any effects of the discharges from pond 4 and this 'industrial tributary' discharge.

At the time of this early to mid-morning survey, water temperatures in the Mangati Stream ranged from 12.4 to 15.2°C. All sites had a moderate flow of clear, uncoloured water, with water speeds ranging from steady to swift. Typically most of the Mangati Stream sites are very weedy throughout the channel being dominated by weed such as reed sweet grass (*Glyceria maxima*). Sites D2 and E have been the exception, due to the shade provided by the riparian vegetation, and this continued at the time of this survey, although shading at site E was reduced slightly due to tree felling. Sites A and A3 were overgrown by reed sweet grass growth, whereas the site B just upstream of SH3 was experiencing bank erosion and collapse.

At site A1, the stream had previously been moved to enable the installation of a culvert, for the extension of De Havilland Drive. This new channel is now relatively stable, but due to being more incised than previously, it is unlikely that macrophytes will again be as abundant as prior to these works. However, macrophytes were present to a smaller degree, being primarily reed sweet grass. It is also important to note that a number of unnamed tributaries have been piped, as part of the development of an industrial subdivision. As a result, where these tributaries enter the Mangati Stream, smothering by iron oxide may eventuate. Some iron oxide and/or silt was observed in the current survey at sites A, A2, A3, B and D2. Other potential impacts that may occur from this piping activity include sharp flow variations at times of rain, especially if large areas are made impermeable, which could cause significant habitat instability. As already noted above, site B was actively eroding at the time of this survey.

With regards to periphyton growth, no algae was observed at site A, with slippery films observed at sites A2, A1 and A3, while mats were patchy at sites B, D2, E, and F. Patches of filamentous algae were also noted at site E while they were widespread at site F. In terms of substrate, site A, A2, and A3 were dominated by hard clay with some silt, while cobbles and gravels dominated sites A1, B, D2 and E, although site E also had a fair proportion of hard clay. At site F gabion baskets were sampled, as this was the most suitable habitat available.

Macroinvertebrate communities

Past biological surveys of the Mangati Stream have recorded poor macroinvertebrate communities with limited numbers of taxa and low MCI values, particularly downstream of the industrial tributary. Small, slow flowing coastal streams draining farmland and industrial areas are not expected to support a large number of macroinvertebrate taxa [e.g. median of 17 taxa: range from 1 to 28 taxa (TRC 1999, updated 2014)]. However, in past

surveys the numbers found at some sites downstream of the industrial area have been unusually low. High MCI values are not expected in the lowland reaches of small, soft-bedded streams with farmland or urban catchments because not many high scoring, 'sensitive' taxa are suited to these conditions [e.g. median score of 78 units: range from 47 to 103 units (TRC 1999, updated 2014)]. However, the values recorded at some sites downstream of the tributary have also been unusually low even for these conditions. Previous results are presented in full in Table 2 with a summary of previous and current results presented in Table 3.

Table 2 Numbers of taxa and MCI values recorded in previous surveys in the Mangati Stream, together with results of the December 2014 survey

Site	Number of previous surveys	Nu	ımbers of	taxa	MCI values			SQMCI _s values		
		Median	Range	Dec 2014	Median	Range	Dec 2014	Median	Range	Dec 2014
Α	41	16	9-29	12	78	56-91	78	3.6	2.2-4.7	4.6
A2	39	16	10-29	16	75	57-92	76	3.6	1.8-4.5	4.1
A1	41	16	7-23	20	73	47-89	82	3.5	1.7-4.7	4.2
A3	39	17	9-23	8	69	52-81	63	2.6	1.6-4.6	2.5
В	47	14	3-29	9	68	50-86	69	2.5	1.1-4.5	1.8
D2	23	11	5-18	9	68	40-77	78	2.5	1.1-3.5	1.6
Ε	45	10	3-22	11	64	44-78	67	2.5	1.1-3.9	2.5
F	39	11	2-22	15	66	30-79	71	2.2	1.3-4.1	1.2

Numbers of taxa and MCI scores recorded by the current survey in the Mangati Stream are illustrated in Figure 2.

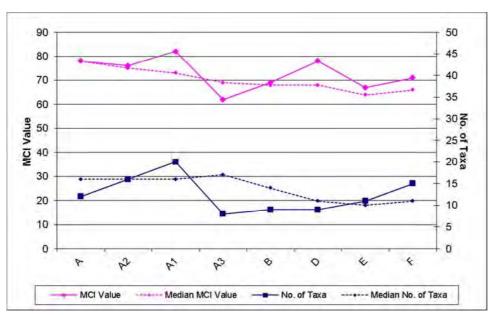


Figure 2 Numbers of taxa and MCI values recorded at sites in the Mangati Stream by the current survey

 Table 3
 Macroinvertebrate fauna of the Mangati Stream sampled on 2 December 2014.

	Site Number	1401	Α	A2	A1	A3	В	D2	E	F	
Taxa List	Site Code	MCI	MGT000488	MGT000490	MGT000491	MGT000497	MGT000500	MGT000512	MGT000520	MGT000550	
	Sample Number	score	FWB14363	FWB14364	FWB14365	FWB14366	FWB14367	FWB14368	FWB14369	FWB14370	
PLATYHELMINTHES (FLATWORMS)	Cura	3	-	R	R	R	-	-	-	-	
NEMERTEA	Nemertea	3	R	-	R	-	-	-	-	R	
NEMATODA	Nematoda	3	-	-	-	-	R	R	R	-	
ANNELIDA (WORMS)	Oligochaeta	1	С	VA	VA	XA	VA	XA	XA	XA	
	Lumbricidae	5	R	-	R	-	-	R	-	-	
MOLLUSCA	Physa	3	-	R	-	R	-	-	-	-	
	Potamopyrgus	4	А	XA	XA	XA	А	VA	XA	С	
	Sphaeriidae	3	-	С	R	-	-	-	-	R	
CRUSTACEA	Cladocera	5	-	-	-	-	-	-	-	R	
	Ostracoda	1	-	-	-	С	R	-	-	R	
	Isopoda	5	-	R	R	-	С	-	-	-	
	Paracalliope	5	VA	XA	XA	-	-	R	-	R	
	Talitridae	5	-	-	-	-	R	-	-	-	
	Paratya	3	-	-	-	-	-	-	-	R	
EPHEMEROPTERA (MAYFLIES)	Austroclima	7	С	С	С	R	R	R	R	-	
	Zephlebia group	7	-	R	-	-	-	-	-	-	
ODONATA (DRAGONFLIES)	Xanthocnemis	4	-	-	-	R	-	-	-	-	
COLEOPTERA (BEETLES)	Dytiscidae	5	R	-	-	-	-	-	-	-	
TRICHOPTERA (CADDISFLIES)	Hydrobiosis	5	-	-	С	-	-	R	С	С	
	Oxyethira	2	-	R	-	-	-	-	R	А	
	Triplectides	5	-	С	С	-	-	-	R	R	
DIPTERA (TRUE FLIES)	Hexatomini	5	-	-	R	-	-	-	-	-	
	Limonia	6	-	-	R	-	-	-	-	-	
	Paralimnophila	6	-	-	R	=	-	-	-	-	
	Zelandotipula	6	R	-	-	-	-	-	-	R	
	Chironomus	1	-	-	-	=	-	-	R	-	
	Maoridiamesa	3	-	-	R	=	-	-	-	-	
	Orthocladiinae	2	С	С	А	А	VA	А	А	А	
	Polypedilum	3	R	С	С	-	R	-	-	-	
	Tanypodinae	5	-	R	-	-	-	-	-	-	
	Empididae	3	R	R	R	-	-	С	Α	R	
	Austrosimulium	3	С	VA	С	-	-	-	-	-	
	Tanyderidae	4	-	-	-	-	-	-	R	-	
ACARINA (MITES)	Acarina	5	-	-	R	-	-	-	-	С	
	-	No of taxa	12	16	20	8	9	9	11	15	
MCI 78 SQMCIs 4.6 EPT (taxa) 1				76	82	63	69	78	67	71	
				4.1	4.2	2.5	1.8	1.6	2.5	1.2	
				3	3	1	1	2	3	2	
	0	%EPT (taxa)	8	19	15	13	11	22	27	13	
'Tolerant' taxa		'Moderately sensitive' taxa			'Highly sensitive' taxa						
	D De	R - Rare C - Common A - Abundant			VA – Very Abundant XA – Extremely Abundant						

R = Rare

C = Common

A = Abundant

VA = Very Abundant

XA = Extremely Abundant

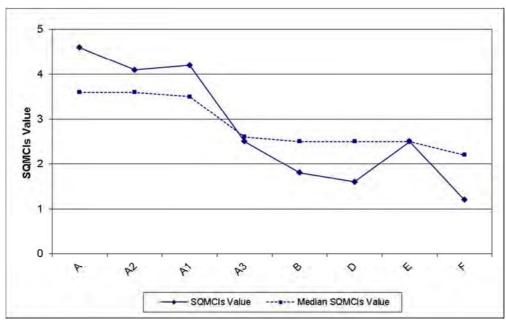


Figure 3 SQMCI_s values recorded at sites in the Mangati Stream by the current survey

Site A (MGT000488)

Twelve taxa were found at this site near the head of the catchment above the industrial area, five taxa fewer than found by the previous (summer) survey, and four taxa fewer than the historical median for this site (Table 3, Figure 2). This reduced richness reflected the frequent freshes that preceded this survey, resulting in frequent disturbance to the substrate and scouring out of invertebrates. Although there were macrophytes present on the edges of the stream, due to the incised nature of the stream there were no macrophytes actually within the wetted area. The community was characterised by one 'tolerant' taxon [snail (*Potamopyrgus*)] and one 'moderately sensitive' taxon [very abundant amphipod (*Paracalliope*)]. These taxa were typical 'generalists' found in weedy, steady-flowing, softer-bottomed habitats, typical of low gradient, lowland streams.

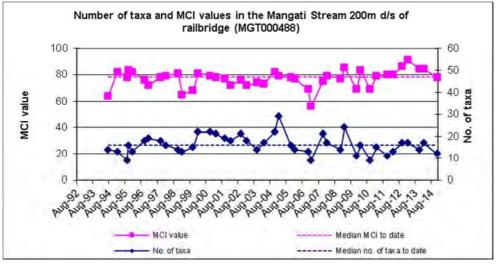


Figure 4 Numbers of taxa and MCI values recorded at site A to date

The MCI value of 78 ('poor' ecological health (TRC, 2013) reflected the significant proportion of 'tolerant' taxa in the community at this site (58%). This was six units less than the score recorded by the previous (summer) survey, but within the range of scores recorded over the

last few years. This result was equal to the median of 41 previous surveys but was a slight reversal of the improvement recorded over the last four surveys (Table 3, Figure 4). The presence of only one abundant 'sensitive' taxon suggested reduced preceding physicochemical water quality conditions. However there were few other taxa recorded in abundance, and this resulted in a moderate SQMCI_s score of 4.6 units which was near the maximum value recorded to date. However, observations made at the time of sampling indicated that habitat was somewhat limited, due to the vigorous growth of *Glyceria maxima* (reed sweet grass) on the banks completely shading the stream, with little light reaching the bed. As a result there was limited habitat with no periphyton growth. This restriction of habitat coupled with the frequent preceding flushing flows is likely to have been the primary drivers behind the reduced numerical abundances within all but one 'sensitive' taxon.

Site A2 (MGT000490)

A moderately rich community (16 taxa) was recorded at this site, equal to the median for this site but seven less than recorded by the previous (summer) survey (Table 3, Figure 5). However there was a small decrease in MCI score (76 units) from this previous summer survey, with the current score only one unit higher than the median for this site (Table 3). This score was only two units below that recorded at site A, due to a lower proportion of 'sensitive' taxa (37%) in the community than recorded upstream. The community was dominated by only one 'moderately sensitive' taxon [extremely abundant amphipod (*Paracalliope*)] and three 'tolerant' taxa [oligochaete worms, snail (*Potamopyrgus*), and sandfly larvae (*Austrosimulium*) (Table 2). The resultant SQMCI_s score of 4.1 units was similar to that recorded upstream and only 0.4 unit less than the highest score recorded at this site to date. The slight increase in the number of taxa found was coincident with improved habitat due primarily to less reed sweet grass cover, allowing some algal growth. This will have also contributed to the changes in characteristic taxa and individual taxon abundances recorded between sites A and A2.

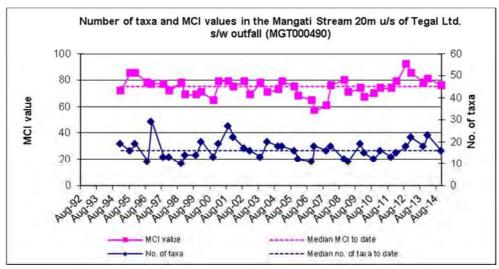


Figure 5 Numbers of taxa and MCI values recorded at site A2 to date

The SQMCI_s and MCI scores were marginally higher than their medians for this site (Table 3), and as a result, not considered to indicate a deleterious influence from the Tegel wetland discharges through this reach of the stream.

Site A1 (MGT000491)

An improved richness (20 taxa) was recorded at this site downstream of industrial stormwater discharges and about 100 m below site A2 compared with the previous spring 2013 survey richness (10 taxa), and that recorded upstream. It was however slightly less than that recorded in the previous summer 2014 survey (23), but was four taxa more than the median richness and amongst the highest richness found to date at site A1 (Figure 6). This site has stabilised well since the stream was moved in 2008 to accommodate the installation of a culvert downstream.

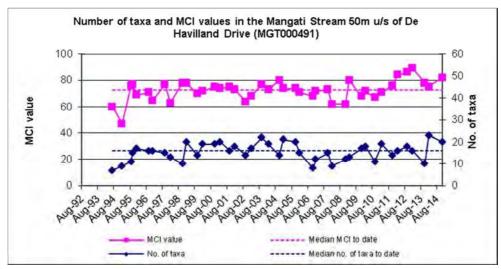


Figure 6 Numbers of taxa and MCI values recorded at site A1 to date

The MCI score recorded by the current survey was 82 units (indicative of 'fair' biological health (TRC, 2013)), which was seven units higher than that recorded by the previous (summer) survey and six units higher than the score at site A2, due to an increased proportion of 'moderately sensitive' taxa in the community (50%). The current score was nine units higher than the median score for this site (Table 3, Figure 6), indicating a relatively healthy community health for this site.

Despite the more varied substrate, there were minimal significant differences in individual taxon abundances from those recorded at site A2. The abundant taxa at this site included one 'moderately sensitive' taxon [extremely abundant amphipod (*Paracalliope*)] and three 'tolerant' taxa [oligochaete worms, extremely abundant snail (*Potamopyrgus*), orthoclad midges] (Table 2). Overall, this resulted in a small increase in the SQMCI_s score (4.2 units) which was 0.7 unit higher than the median. As there were no decreases from the SQMCI_s and MCI scores recorded upstream, despite habitat changes, there were no obvious indications of any significant deterioration in biological health from that found at site A2.

Site A3 (MGT000497)

Only eight taxa were recorded at this site, 500 m downstream of site A1. This richness was nine taxa fewer than that recorded by the previous (summer) survey and the long term median for this site, and was also the lowest richness recorded at this site to date (Figure 7, Table 3). The community was characterised by only three 'tolerant' taxa [oligochaete worms, snails (extremely abundant *Potamopyrgus*) and orthoclad midges], a reduction from that recorded by the previous summer survey, especially with regard to 'sensitive' taxa. There were five significant changes in individual taxon abundances from site A1 with the main change being the complete loss of *Paracalliope* amphipod, a 'moderately sensitive' taxon which was extremely abundant at site A1 (Table 2). Although it was noted at the time of sampling

that this site was completely overgrown and shaded by reed sweet grass, and that only a small area was sampled, this large reduction in taxa richness and taxon abundance may be indicative of some sort of external influence. It should also be noted that there may also have been some influence from the farmland through which the Mangati Stream flows at this site as there is often unrestricted stock access to the stream.

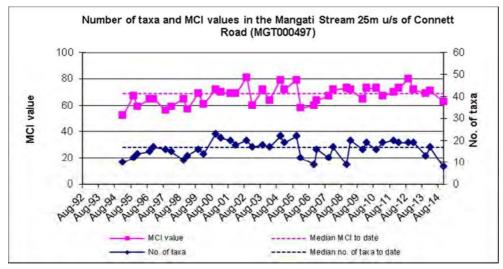


Figure 7 Numbers of taxa and MCI values recorded at site A3 to date

This community also had a significantly reduced MCI score (63) compared with the score at site A1 (Stark, 1998), due to a large reduction (38%) in the proportion of 'sensitive' taxa present. This score was nineteen units less than that recorded at site A1 upstream, eight units less than that recorded in the previous survey, and six units less than the long term median for this site. This is the lowest MCI score recorded at this site since December 2006, and goes against the pattern of above or near-to median scores generally observed at this site since 2007 (Figure 7). The SQMCI_s score (2.5 units) was similar to the median for this site (Table 3) but significantly less than that recorded in the previous (summer) survey and that recorded at site A1 in the current survey. This is primarily due to the near complete loss of 'sensitive' taxa, as some of these taxa were abundant at this site in the previous survey, and at the upstream site in the current survey.

Changes in habitat and sampling technique have often resulted in a significant difference in MCI and SQMCI_s scores between adjacent sites, but the degree of change in MCI and SQMCI_s scores between site A1 and A3, may be more reflective of a recent deterioration in water quality at site A3 than indicative of habitat variability. There was no evidence of this deterioration being related to sustained nutrient enrichment, as there were no undesirable heterotrophic growths recorded at this site. Instead, it is suggestive of a short term but recent toxic discharge, which resulted in the loss of 'sensitive' taxa. Unfortunately observations made at the time of sampling did not provide any indication of such a discharge, and as such it cannot be conclusively stated that such a discharge has in fact occurred. Therefore, there was no direct indication of degradation in physicochemical water quality which could be directly attributed to the stormwater discharges from the De Havilland Drive West area, Tasman Oil, and Greymouth Petroleum in this reach of the stream. However, other monitoring undertaken at around this time may provide further insight.

Site B (MGT000500)

There was little change in the number of taxa in the stream reach between site A3 (8 taxa) and site B (9 taxa), in which the wetland that receives discharges from a large industrial area discharges to the Mangati Stream. The current richness recorded at site B was five taxa less than the median, and other than in 2010, when a pollution incident resulted in only 5 taxa being recorded, there has not been a lower richness recorded since 1995 (Figure 8, Table 3).

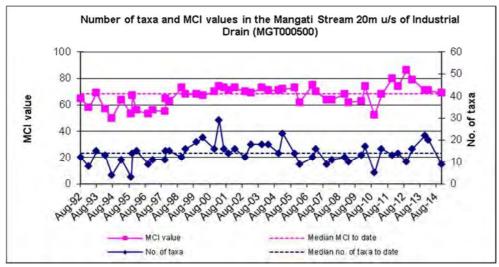


Figure 8 Numbers of taxa and MCI values recorded at site B to date

The community at site B comprised a high proportion (67%) of 'tolerant' taxa resulting in an MCI score of 69 units. This was similar to that recorded by the two previous (spring and summer) surveys and it was one unit higher than the long term median (Figure 8, Table 3). This indicates that the community was of a similar health to that recorded previously, despite the low taxa richness, although this health is still classed as 'poor' (TRC, 2013).

However, only three taxa dominated this community and these were all 'tolerant' taxa, [oligochaete worms, snail (*Potamopyrgus*), and orthoclad midges]. As with site A3 upstream, *Paracalliope* amphipods were again absent, despite being abundant in the previous survey. This resulted in a low SQMCI_s score (1.8 units) which was 0.7 unit lower than that recorded at site A3, and also the long term median for this site (Tables 2 and 3). The primary cause of this decline in score was a reduced abundance of the slightly less 'tolerant' snail *Potamopyrgus*. This score was significantly less than that recorded in the previous survey, by 1.8 units (Stark, 1998). This suggested that there may have been some deterioration in water quality at this site, similar to that recorded upstream at site A3. It should be noted that there was a change in sampling methodology at this site during this survey, and also some bank erosion noted at the time of sampling. This may also have contributed to the decrease in SQMCI_s score.

Site D2 (MGT000512)

A poor richness (9 taxa) was also recorded at site D2, below the industrial drain and wetlands high flow level outlet from pond 4. This richness was four taxa less than that recorded by the previous (summer) survey and two less than the median for this site (Figure 9, Table 2). The community was dominated by the same 'tolerant' taxa as at sites A3 and B, and as with sites A3 and B, no 'sensitive' taxa were present in abundance (Table 3). The community contained an improved proportion (44%) of 'moderately sensitive' taxa which was reflected by the MCI score (78 units). Although this is the highest MCI score recorded at this site to date (Figure 9), it was driven by the presence of four 'moderately sensitive' but rare taxa. As these taxa were only present as rarities (less than five individuals), this may be

a slightly misleading result. When compared with site B (Table 3), there was an insignificant nine unit increase in MCI score (Stark, 1998), suggestive of some improvement in community health between the two sites.

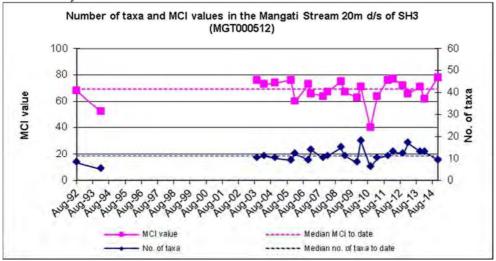


Figure 9 Numbers of taxa and MCI values recorded at site D2 to date

There were two significant changes in individual taxon abundances between adjacent sites B and D2 although overall there was only a small decrease in SQMCI_s score (of 0.2 unit) at site D2 (Figure 3). This result (1.6 units) was a very low score, and primarily related to the extreme abundance of the very 'tolerant' oligochaete worms. The decrease in 'sensitive' taxa numbers and abundance suggested that there was a deleterious influence on the community at site D2, similar to that recorded at sites A3 and B.

Although the MCI and SQMCI_s scores are giving contrasting results, it should be noted that MCI scores can be somewhat misleading when there is low taxa richness. This is because when there is low taxa richness, the introduction of one moderately sensitive individual can significantly influence the MCI score. Therefore, in this case it is considered that the SQMCI_s score provides a better indication of community health, and as such it is considered that there was a reduction in community health at this site at this time.

Site E (MGT000520)

A downstream increase of two taxa in richness was found at site E (11 taxa), which was one taxon more than the median richness for this site (Table 3, Figure 10). This community was characterised by four 'tolerant' taxa [extremely abundant oligochaete worms and snail (*Potamopyrgus*), algal-piercing caddisfly (*Oxyethira*), and sandfly (*Austrosimulium*)], representing a change in only one characteristic taxon compared with the community at the nearest upstream site D2. There were no significant differences in individual taxon abundance found between sites D2 and E, although it is worth noting that *Potamopyrgus* snails increased in abundance from very abundant at site D2 to extremely abundant at site E.

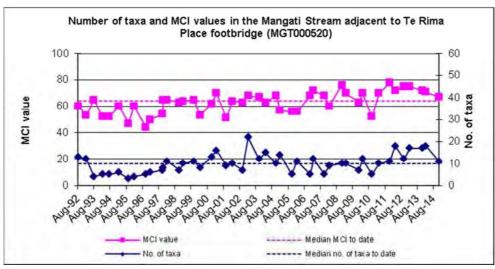


Figure 10 Numbers of taxa and MCI values recorded at site E to date

An increased proportion of 'tolerant' taxa in the community (73%) resulted in an insignificant nine unit decrease from the MCI score recorded at site D2. This MCI score (67 units) was an insignificant three units higher than the long term median, and is the eighth consecutive above median score recorded at this site (Table 3, Figure 10). This represented a continued recovery from the biological health recorded by the spring 2010 survey when impacts from a poor quality wetland discharge appeared to have extended as far as this site. The SQMCI_s value (2.5 units) recorded a 1.3 unit decrease from that recorded by the previous (summer) survey, a statistically significant result (Stark, 1998). However, this was significantly higher than that recorded at site D2 in the current survey, and equal to the long term median for this site (Table 3). Overall this may suggest that the influence of the reduced water quality likely responsible for deterioration at site A3, B and D2 did not extend as far as site E.

Site F (MGT000550)

Taxa richness (15 taxa) was very slightly lower than that recorded by the previous (summer) survey and four taxa higher than the historical median richness (Figure 11, Table 3). This was considered to indicate continued recovery from the significant habitat loss caused by erosion of the stream bed and banks by high flows and possibly high seas documented by the survey of spring 2011.

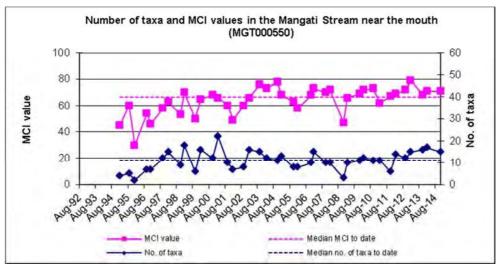


Figure 11 Numbers of taxa and MCI values recorded at site F to date

Only three taxa were abundant, once again all 'tolerant' taxa [extremely abundant oligochaete worms, algal-piercing caddisfly (*Oxyethira*) and orthoclad midge larvae]. The MCI score of 71 units at site F reflected the significant proportion (60%) of 'tolerant' taxa in the community. This MCI score was an insignificant five units higher than the historical median score and four units higher than that recorded at site E. There were four significant changes in individual taxon abundances from site E (Table 2), the most significant being a decreased abundance of *Potamopyrgus* snails, which was likely to have been related to changes in habitat. This resulted in a statistically significant 1.3 unit drop in SQMCI_s score (1.2) from the score at site E. This SQMCI_s value was 1.0 unit less than the historical median for this site, and is the lowest to be recorded at this site to date. It is also the lowest score recorded in this survey (Table 3).

The MCI result for this site was above the median but insignificantly different to the scores recorded at sites B, D2, and E. The SQMCI_s score on the other hand reflects a community overwhelmingly dominated by very 'tolerant' taxa. It is considered that this is principally a reflection of the habitat sampled (gabion baskets covered in green filamentous algae), suggesting that there had been little impact on the macroinvertebrate community health (which remained in the 'poor' generic category (TRC, 2013), but typical of small lowland streams) at this site, approximately 1.8 km downstream from the industrial area and wetland discharge.

Summary and Conclusions

On 2 December 2014, the Council's standard 'kick-net' sampling technique was used at eight established sites to collect streambed macroinvertebrates from the Mangati Stream to determine whether stormwater and wastewater discharges from the Mangati industrial area have had any adverse effects on the macroinvertebrate communities of this stream. Samples were sorted and identified to provide the number of taxa (richness), MCI score and SQMCIs score for each site.

The MCI is a measure of the overall sensitivity of the macroinvertebrate community to the effects of organic pollution in stony streams. It is based on the presence/absence of taxa with varying degrees of sensitivity to environmental conditions. The SQMCI_s takes into account taxa abundance as well as sensitivity to pollution, and may reveal more subtle changes in communities, particularly if non-organic impacts are occurring. Significant differences in either the MCI or the SQMCI_s between sites indicate the degree of adverse effects (if any) of the discharges being monitored.

The Mangati Stream is a small slower flowing, lowland stream running through farmland, an industrial area and a residential area. As such, this stream typically supports communities commonly found in lowland, soft-bedded streams, which are relatively 'tolerant' to organic pollution. The communities are usually dominated by 'tolerant' taxa and those 'moderately sensitive' taxa commonly associated with macrophytes e.g. oligochaete worms, snail (*Potamopyrgus*), and amphipod (*Paracalliope*).

Upstream of De Havilland Drive, taxa richnesses, MCI scores and SQMCI_s scores were similar to or higher than their respective medians, reflecting that populations were in average to above average condition. However, at site A3, just upstream of Connett Road, there was a sharp reduction in taxa richness, MCI score and SQMCI_s score. Similar results were recorded at the next two sites (B and D2), while sites E and F indicated some recovery.

Site A3, upstream of Connett Road recorded a taxa richness of 8, less than half the median richness for this site. The MCI score of 63 was six units less than the median, and nineteen units less than that recorded upstream, a statistically significant result. Similarly, the SQMCI_s score (2.5) was 0.1 unit less than the median, but 1.7 units less than that recorded upstream. Although the MCI score at sites B and D2 improved slightly from that recorded at site A3, there was little improvement in taxa richness, and further deterioration in SQMCI_s score. In communities with low taxa richness, the MCI score is easily influenced by the addition or subtraction of a small number of taxa present as rarities. This is principally what has caused the recovery in MCI score at sites B and D2, and as such the SQMCI_s score is considered a better reflection of community health. These scores indicate that the communities at sites B and D2 were in very poor health and heavily dominated by very 'tolerant' taxa.

Although some observations made at the time of sampling indicated some changes in habitat at these sites and that recent high flows could have flushed out some invertebrates, the degree of deterioration suggests that water quality is more likely a driving factor behind this deterioration. There was no evidence of this deterioration being related to sustained nutrient enrichment, as there were no undesirable heterotrophic growths recorded at any site. Instead, it is suggestive of a short term but recent toxic discharge, which resulted in the loss of 'sensitive' taxa. Unfortunately observations made at the time of sampling did not provide any indication of such a discharge, and as such it cannot be conclusively stated that such a discharge has in fact occurred. Therefore, there was no direct indication of degradation in physicochemical water quality which could be directly attributed to the stormwater discharges from the De Havilland Drive West area, Tasman Oil, and Greymouth Petroleum in this reach of the stream. However, other monitoring undertaken at around this time may provide further insight.

Due to the similar but poor results recorded at site A3 and B, upstream and downstream of the wetland discharge, it is not possible to determine whether the wetland had caused a deterioration in water quality. The same applies to the results for sites B and D2, upstream and downstream of the industrial drain.

Previous surveys have observed evidence of urbanisation of the Mangati Stream, such as bed erosion and significantly high preceding flows. At the time of this survey, Site B was experiencing bank undercutting and collapse, and this is likely to be a reflection of this urbanisation. Urbanisation of the catchment must be given regard to, due to increased subdivision in the headwaters, as there is potential for an increase in the 'flashiness' of the floods experienced by the Mangati Stream. This may become apparent with the recent installation of a continuous flow and rainfall data recording station (October 2012). This impact is likely to worsen as the new industrial subdivision around the De Havilland Drive area is developed further.

Overall, the changes in community structures, numbers of taxa, and MCI values throughout the upper to mid reaches of the Mangati Stream, indicate that there have been no significant adverse effects on macroinvertebrate communities resulting from discharges from Tegel Poultry. However, downstream of De Havilland Drive, where stormwater from De Havilland Drive West, Tasman Oil and Greymouth Petroleum enter, deterioration in macroinvertebrate communities was apparent. However this could not be attributed to a specific discharge or site. The lower discharge from the wetland ponds may have had subtle impacts on the macroinvertebrate community of site D2, although this was not apparent due to the poor condition of the upstream communities.

References

- Dunning KJ, 2002a: Biomonitoring of the Mangati Stream and an unnamed tributary, in relation to the Bell Block industrial area, October 2001. TRC report KD86.
- Dunning KJ, 2002b: Biomonitoring of the Mangati Stream and an unnamed tributary, in relation to the Bell Block industrial area, February 2002. TRC report KD105.
- Dunning KJ, 2003: Biomonitoring of the Mangati Stream and an unnamed tributary, in relation to the Bell Block industrial area, October 2002. TRC report KD135.
- Fowles CR and Colgan BG, 2005: Biomonitoring of the Mangati Stream and an unnamed tributary, in relation to the Bell Block industrial area, November 2004. TRC report CF368.
- Fowles CR and Hope KJ, 2005: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, February 2005. TRC report CF375.
- Fowles CR and Jansma B, 2014: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, October 2012. TRC report CF613.
- Fowles CR and Jansma B, 2014a: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, February 2013. TRC report CF614.
- Fowles CR and Jansma B, 2014b: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, November 2013. TRC report CF630.
- Fowles CR and Jansma B, 2014c: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, February 2014. TRC report CF631.
- Fowles CR and Moore SC, 2004: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, March 2004. TRC report CF337.
- Hickey CW and Vickers ML, 1992: Comparison of the sensitivity to heavy metals and pentachlorophenol of the mayflies *Deleatidium* spp and the cladoceran *Daphnia magna*. *New Zealand Journal of Marine and Freshwater Research* 26: 87-93.
- Hope KJ, 2005: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, November 2005. TRC report KH062.
- Hope KJ, 2007: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, February 2006. TRC report KH089.
- Hope KJ, 2007: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, December 2006. TRC report KH092.
- Jansma B, 2007: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, February 2007. TRC report BJ031.
- Jansma B, 2008a: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, November 2007. TRC report BJ042.

- Jansma B, 2008b: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, February 2008. TRC report BJ043.
- Jansma B, 2009a: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, December 2008. TRC report BJ062.
- Jansma B, 2009b: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, March 2009. TRC report BJ063.
- Jansma, 2011a: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, December 2009. TRC report BJ140.
- Jansma, 2011b: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, March 2010. TRC report BJ141.
- Jansma, 2012a: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, October 2010. TRC report BJ172.
- Jansma, 2012b: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, March 2011. TRC report BJ173.
- Jansma, 2013a: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, November 2011. TRC report BJ189.
- Jansma, 2013b: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, March 2012. TRC report BJ190.
- Moore S, 2003: Biomonitoring of the Mangati Stream and an unnamed tributary, in relation to the Bell Block industrial area, February 2003. TRC report SM575.
- Moore SC & Colgan BG, 2003: Biomonitoring of the Mangati Stream and an unnamed tributary, in relation to the Bell Block industrial area, October 2003. TRC report SM585.
- Stark JD, 1985: A macroinvertebrate community index of water quality for stony streams. *Water and Soil* Miscellaneous Publication No. 87.
- Stark JD, 1998: SQMCI: a biotic index for freshwater macroinvertebrate coded abundance data. *New Zealand Journal of Marine and Freshwater Research* 32(1): 55-66.
- Stark JD, 1999: An evaluation of TRC's SQMCI biomonitoring index. Cawthron Institute, Nelson. Cawthron Report No. 472.
- Stark JD, Boothroyd IKG, Harding JS, Maxted JR, Scarsbrook MR, 2001: Protocols for sampling macroinvertebrates in wadeable streams. New Zealand Macroinvertebrate Working Group Report No. 1. Prepared for the Ministry for the Environment. Sustainable Management Fund Project No. 5103. 57p.
- Stark JD and Maxted JR, 2004: Macroinvertebrate community indices for Auckland's soft-bottomed streams and applications to SOE reporting. Prepared for Auckland Regional Council. Cawthron Report No. 970. Cawthron Institute, Nelson. ARC Technical Publication 303. 59p.

- Stark JD and Maxted JR, 2007: A biotic index for New Zealand's soft bottomed streams. New Zealand Journal of Marine and Freshwater Research 41(1).
- Stark JD and Maxted JR, 2007a: A user guide for the macroinvertebrate community index. Cawthron Institute, Nelson. Cawthron Report No. 1166.
- TRC, 1999: Some statistics from the Taranaki Regional Council database of freshwater macroinvertebrate surveys performed during the period from January 1980 to 31 December 1998. TRC Technical Report 99-17 (updated October, 2014).
- TRC, 2013: Freshwater macroinvertebrate fauna biological monitoring programme Annual SEM Report 2012-2013. Technical Report 2013-48.

To Job Manager, Scott Cowperthwaite **From** Freshwater Biologist, Bart Jansma

Report No BJ272 **Doc No** 1596557

Date 9 November 2015

Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, February 2015

Introduction

The Mangati Stream is a small, lowland stream, running through Bell Block in North Taranaki. The upper reaches of this stream drain the area of farmland between Paraite Road and Corbett Road, approximately five kilometres from the coast. The farmland to the south (inland) and east of this catchment area feeds the Mangaoraka Stream.

Between the New Plymouth – Marton railway and Devon Road (along the mid reaches of the Mangati Stream) is an industrial area, which has been the source of a number of spillages in past years resulting in fish kills. The stream is capable of supporting significant native fish communities including members of the native eel, galaxiid (whitebait group) and bully families. Stormwater and wastewater discharges from this area are the primary concern in this biological monitoring programme.

The following consents relate to discharges to the Mangati Stream.

ABB Transformers	2336
Shaycar Trust	3913
Conveyorquip	5964
Greymouth Petroleum	4664
MI NZ Ltd	5987
Natural Gas Corp	4780
MCK Metals Pacific Ltd	3139
New Plymouth District Council	4302
Olex Cables	4497
Halliburton New Zealand Ltd	2337
Schlumberger Seaco Ltd	6032
Tasman Oil Tools	4812
Tegel Foods - Stock food	2335
Tegel Foods - Poultry plant	3470

This February 2015 survey was undertaken as the second of two surveys scheduled for the 2014-2015 monitoring year. Macroinvertebrate surveys have been undertaken in the Mangati Stream since 1992, and those reports discussing surveys undertaken between 1992 and 2001 are referenced in TRC, 2009. Results of other surveys performed in the Mangati Stream since the 2001-2002 monitoring years are discussed in various reports listed in the references in this report.

Methods

Eight established sampling sites in the Mangati Stream catchment (Table 1, Figure 1) were sampled on 12 February 2015. 'Kick samples' were collected at sites A, D2, and E, with the samples at sites A2 and F collected using the sweep-sample technique and a combination of the two techniques at sites A1, A3 and B. These sampling techniques are very similar to Protocol C1 (hard-bottomed, semi-quantitative) (kick-sample) and Protocol C2 (softbottomed, semi-quantitative) (vegetation-sweep) of the New Zealand Macroinvertebrate Working Group (NZMWG) protocols for macroinvertebrate samples in wadeable streams (Stark et al, 2001).

Table 1 Biomonitoring sites in the Mangati Stream catchment

Site	Site code	Location	GPS
Α	MGT000488	Mangati Stream, 20 m upstream of swampy tributary	E1700095 N5678043
A2	MGT000490	Mangati Stream, 100 m downstream of swampy tributary	E1700062 N5678084
A1	MGT000491	Mangati Stream, 50 m upstream of De Havilland Drive	E1700018 N5678166
A3	MGT000497	Mangati Stream, 10 m above Connett Road	E1699775 N5678573
В	MGT000500	Mangati Stream above the industrial tributary, below wetland	E1699596 N5678691
D2	MGT000512	Mangati Stream, 20 m downstream SH3	E1699513 N5678787
Е	MGT000520	Mangati Stream, 400 m below Devon Road	E1699385 N5679103
F	MGT000550	Mangati Stream, 50 m above Bell Block beach	E1699215 N5680409

Samples were preserved with Kahle's Fluid for later sorting and identification under a stereomicroscope according to Taranaki Regional Council methodology using protocol P1 of NZMWG protocols for sampling macroinvertebrates in wadeable streams (Stark et al. 2001). Macroinvertebrate taxa found in each sample were recorded as:

R (rare) = less than 5 individuals:

C (common) = 5-19 individuals;

A (abundant) = estimated 20-99 individuals; VA (very abundant) = estimated 100-499 individuals; XA (extremely abundant) = estimated 500 individuals or more.

Stark (1985) developed a scoring system for macroinvertebrate taxa according to their sensitivity to organic pollution in stony New Zealand streams (HBMCI). Recently, a similar scoring system has been developed for macroinvertebrate taxa found in soft bottomed streams (Stark and Maxted, 2004, 2007) (SBMCI). The SBMCI has been used in a number of biomonitoring reports since its inception, and results to date suggest that it is not as effective at assessing the impacts of organic pollution as the HBMCI. For example, results from the February 2008 Mangati survey found a relatively unchanged SBMCI score at a site which had thick growths of sewage fungus (Jansma, 2008b). Therefore this index is considered less appropriate for the assessment of macroinvertebrate communities possibly affected by industrial discharges. Any subsequent reference to MCI refers to the HBMCI.

Highly 'sensitive' taxa were assigned the highest scores of 9 or 10, while the most 'tolerant' forms scored 1 and 0.1 in hard bottomed and soft bottomed streams respectively. The sensitivity scores for certain taxa found in hard bottomed streams have been modified in accordance with Taranaki experience. After extensive use of the MCI, categories were assigned to the sensitivity scores, to clarify their 'relative' sensitivity e.g. taxa that scored between 1 and 4 inclusive are considered tolerant (see Table 3).

By averaging the scores obtained from a list of taxa taken from one site and multiplying by a scaling factor of 20, a Macroinvertebrate Community Index value was obtained. The MCI is a measure of the overall sensitivity of macroinvertebrate communities to the effects of organic pollution. More 'sensitive' communities inhabit less polluted waterways.

A gradation of biological water quality conditions based upon MCI ranges has been adapted for Taranaki streams and rivers (TRC, 2013) from Stark's classification (Stark, 1985 and Boothroyd and Stark, 2000). This is as follows:

Grading	MCI	Code
Excellent	>140	
Very Good	120-140	
Good	100-119	
Fair	80-99	
Poor	60-79	
Very Poor	<60	

A semi-quantitative MCI value (SQMCI $_{\rm s}$) has also been calculated for the taxa present at each site by multiplying each taxon score by a loading factor (related to its abundance), totalling these products, and dividing by the sum of the loading factors (Stark 1998 and 1999). The loading factors were 1 for rare (R), 5 for common (C), 20 for abundant (A), 100 for very abundant (VA) and 500 for extremely abundant (XA). Unlike the MCI, the SQMCI $_{\rm s}$ is not multiplied by a scaling factor of 20, so that its corresponding range of values is 20x lower.

Where necessary, sub-samples of periphyton (algae and other micro flora) were also taken from the macroinvertebrate samples and scanned under 40-400x magnification to determine the presence or absence of any mats, plumes or dense growths of bacteria, fungi or protozoa ('undesirable biological growths') at microscopic level. The presence of masses of these organisms can be an indicator of organic enrichment within a stream.

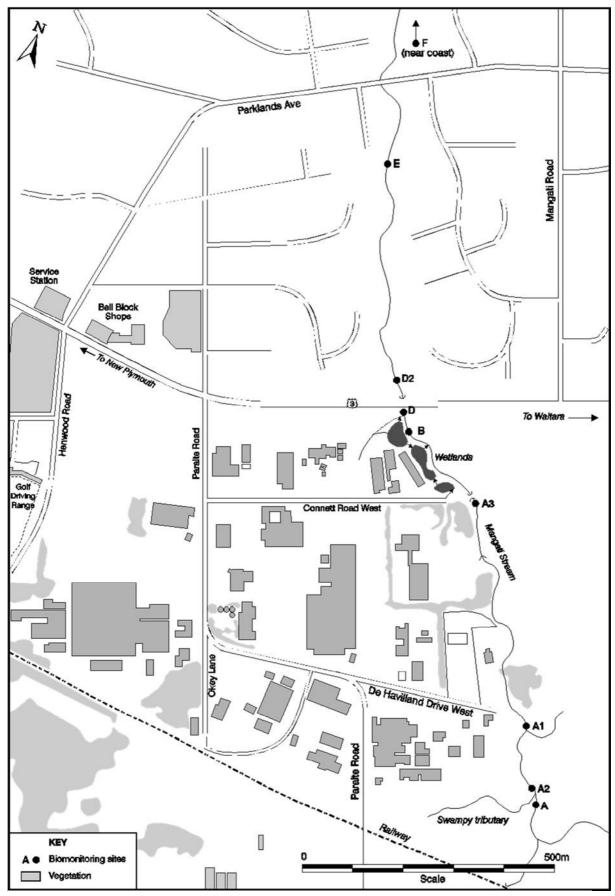


Figure 1 Sampling sites in the Mangati Stream catchment

Results

The 'industrial tributary' referred to in this report drains into the Mangati Stream immediately upstream of Devon Road (SH3), and receives stormwater and cooling water from the Bell Block industrial area. This tributary is now diverted into a series of wetland ponds to assist with treatment of the discharge (Figure 1). These ponds also receive stormwater from the Connett Road catchment, and are designed to discharge from a common point. As a result, site B monitors any potential impacts from the wetland discharge in comparison with site A3 (upstream of Connett Road). The wetland began operating in June 2004, with the flow from the 'industrial drain' directed into the two lower ponds for treatment prior to discharge to the Mangati Stream via pond 3. However, provision to progressively bypass this system during high tributary flows remains and therefore the site D2 has been used to monitor any effects of the discharges from pond 4 and this 'industrial tributary' discharge.

At the time of this morning survey, water temperatures in the Mangati Stream ranged from 15.2 to 18.4°C All sites had a moderate to low flow of clear, uncoloured water, with water speeds ranging from slow to swift. Typically most of the Mangati Stream sites are very weedy throughout the channel, being dominated by weed such as reed sweet grass (*Glyceria maxima*). Sites D2 and E have been the exception, due to the shade provided by the riparian vegetation, and this continued at the time of this survey, although site E is now only partially shaded, due to tree felling. Sites A and A3 were overgrown by reed sweet grass growth, whereas the site F was impounded somewhat, due to the formation of a gravel bar at the coast.

At site A1, the stream had previously been moved to enable the installation of a culvert, for the extension of De Havilland Drive. This new channel is now relatively stable, but due to being more incised than previously, it is unlikely that macrophytes will again be as abundant as prior to these works. However, macrophytes were present to a smaller degree, being primarily reed sweet grass. It is also important to note that a number of unnamed tributaries have been piped, as part of the development of an industrial subdivision. As a result, where these tributaries enter the Mangati Stream, smothering by iron oxide may eventuate. Some iron oxide and/or silt was observed in the current survey at sites A, A2, A1, A3 and B. Other potential impacts that may occur from this piping activity include sharp flow variations at times of rain, especially if large areas are made impermeable, which could cause significant habitat instability. This was observed in the previous (spring) survey at site B, where the bank was actively eroding at the time. This erosion was not as apparent in the current survey.

With regards to periphyton growth, no algae was observed at sites A and A2, with slippery films observed at sites A1, A3 and B, while mats were patchy at sitesD2 and E. Site F supported only patches of filamentous algae. In terms of substrate, site A, A2, and A3 were dominated by hard clay with some silt, while cobbles and gravels dominated sites A1, B, D2 and E, although site E also had a fair proportion of bedrock. At site F gabion baskets were the predominant substrate on the bed, but this was not sampled, with preference given to the macrophyte habitat at this time.

Macroinvertebrate communities

Past biological surveys of the Mangati Stream have recorded poor macroinvertebrate communities with limited numbers of taxa and low MCI values, particularly downstream of the industrial tributary. Small, slow flowing coastal streams draining farmland and

industrial areas are not expected to support a large number of macroinvertebrate taxa [e.g. median of 17 taxa: range from 1 to 28 taxa (TRC 1999, updated 2014)]. However, in past surveys the numbers found at some sites downstream of the industrial area have been unusually low. High MCI values are not expected in the lowland reaches of small, soft-bedded streams with farmland or urban catchments because not many high scoring, 'sensitive' taxa are suited to these conditions [e.g. median score of 78 units: range from 47 to 103 units (TRC 1999, updated 2014)]. However, the values recorded at some sites downstream of the tributary have also been unusually low even for these conditions. Previous results are presented in full in Table 2 with a summary of previous and current results presented in Table 3.

Table 2 Numbers of taxa and MCI values recorded in previous surveys in the Mangati Stream, together with results of the February 2015 survey

Number		Trainboio or taxa			MCI values			SQMCI _s values		
Site	of previous surveys	Median	Range	Feb 2015	Median	Range	Feb 2015	Median	Range	Feb 2015
Α	42	16	9-29	16	78	56-91	73	3.6	2.2-4.7	4.3
A2	40	16	10-29	16	75	57-92	73	3.6	1.8-4.5	4.7
A1	42	16	7-23	22	73	47-89	78	3.5	1.7-4.7	4.4
A3	40	17	8-23	15	69	52-81	71	2.6	1.6-4.6	2.6
В	48	14	3-29	13	69	50-86	68	2.5	1.1-4.5	1.8
D2	24	11	5-18	14	70	40-78	63	2.5	1.1-3.5	2.5
Е	46	10	3-22	17	64	44-78	72	2.5	1.1-3.9	3.5
F	40	11	2-22	18	67	30-79	70	2.1	1.2-4.1	3.6

Numbers of taxa and MCI scores recorded by the current survey in the Mangati Stream are illustrated in Figure 2.

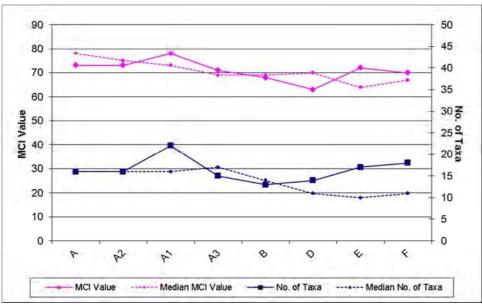


Figure 2 Numbers of taxa and MCI values recorded at sites in the Mangati Stream by the current survey

 Table 3
 Macroinvertebrate fauna of the Mangati Stream sampled on 12 February 2015.

	Site Number		Α	A2	A1	A3	В	D2	E	F
	Site Code	MCI	488	490	491	497	500	512	520	550
Taxa List	MGT000	score	400	430	431	431	300	312	J20	330
	Sample Number FWB15		095	096	097	098	099	100	101	102
PLATYHELMINTHES	Cura	3	-	R	-	С	R	R	-	-
NEMERTEA	Nemertea	3	R	R	С	Α	R	R	R	-
NEMATODA	Nematoda	3	R	-	-	-	-	-	-	-
ANNELIDA	Oligochaeta	1	VA	С	Α	XA	VA	XA	VA	R
	Lumbricidae	5	-	-	R	-	-	-	-	-
HIRUDINEA	Hirudinea	3	-	-	-	-	R	R	-	-
MOLLUSCA	Physa	3	-	А	R	VA	R	R	R	R
	Potamopyrgus	4	Α	VA	XA	XA	А	XA	XA	XA
	Sphaeriidae	3	-	-	R	R	-	-	R	-
CRUSTACEA	Ostracoda	1	С	R	С	R	С	R	С	VA
	Isopoda	5	С	-	-	-	С	-	-	-
	Paracalliope	5	XA	XA	XA	С	-	-	R	Α
	Talitridae	5	-	-	-	-	R	-	-	-
	Paratya	3	С	-	-	-	-	-	-	Α
EPHEMEROPTERA	Austroclima	7	-	-	R	R	R	-	R	-
	Zephlebia group	7	-	-	R	-	-	-	-	-
ODONATA	Xanthocnemis	4	R	-	-	-	-	-	-	С
HEMIPTERA	Anisops	5	-	-	-	-	-	-	-	R
	Microvelia	3	-	R	R	-	-	-	-	R
	Sigara	3	-	-	-	-	-	-	-	R
COLEOPTERA	Dytiscidae	5	-	R	-	-	-	-	-	-
	Hydrophilidae	5	-	-	R	-	-	-	-	-
	Staphylinidae	5	-	-	R	-	-	-	-	-
TRICHOPTERA	Hydrobiosis	5	-	-	-	-	-	R	R	-
	Plectrocnemia	8	R	-	-	-	-	-	-	-
	Polyplectropus	6	-	-	R	R	-	-	-	-
	Psilochorema	6	-	R	-	-	-	-	-	R
	Oxyethira	2	R	-	-	-	R	R	С	R
	Triplectides	5	-	R	С	-	R	С	А	А
DIPTERA	Aphrophila	5	-	-	-	-	-	-	R	-
	Eriopterini	5	R	-	-	-	-	-	-	-
	Zelandotipula	6	-	R	-	R	-	-	-	-
	Corynoneura	3	-	С	R	R	-	-	-	-
	Orthocladiinae	2	С	С	A	А	А	R	R	R
	Polypedilum	3	R	С	R	-	-	-	-	R
	Tanypodinae	5	-	-	-	-	-	-	-	R
	Paradixa	4	R	-	R	-	-	- D	- D	-
	Empididae	3	-	-	R	R	-	R	R	-
	Austrosimulium	3	-	-	С	R	-	-	R	С
AGARINA	Tanyderidae	4	-	-	-	-	-	R	R	-
ACARINA	Acarina	5	С	С	С	-	-	R	R	С
	N	o of taxa	16	16	22	15	13	14	17	18
		MCI	73	73	78	71	68	63	72	70
		SQMCIs	4.3	4.7	4.4	2.6	1.8	2.5	3.5	3.6
	E	PT (taxa)	1	2	4	2	2	2	3	2
%EPT (taxa)			6	13	18	13	15	14	18	11
'Tr	olerant' taxa	\······			sensitive' taxa			<u> </u>	nsitive' taxa	
		ommon			VΔ - Very 4			tromely Ahu		

 $R = Rare \qquad C = Common \qquad A = Abundant \qquad VA = Very \ Abundant \qquad XA = Extremely \ Abundant$

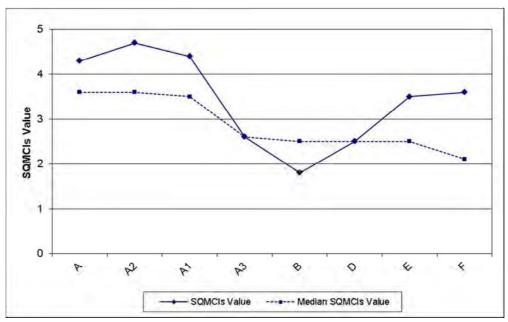


Figure 3 SQMCI_s values recorded at sites in the Mangati Stream by the current survey

Site A (MGT000488)

Sixteen taxa were found at this site near the head of the catchment above the industrial area, four taxa more than found by the previous (spring) survey, but equal to the historical median for this site (Table 3, Figure 2). This improved richness reflected the more stable flow conditions that preceded this survey, resulting in less disturbance to the substrate and scouring out of invertebrates. Although there were macrophytes present on the edges of the stream, due to the incised nature of the stream there were no macrophytes actually within the wetted area. The community was characterised by two 'tolerant' taxa [oligochaete worms and snail (*Potamopyrgus*)] and one 'moderately sensitive' taxon [extremely abundant amphipod (*Paracalliope*)]. These taxa were typical 'generalists' found in weedy, steady-flowing, softer-bottomed habitats, typical of low gradient, lowland streams.

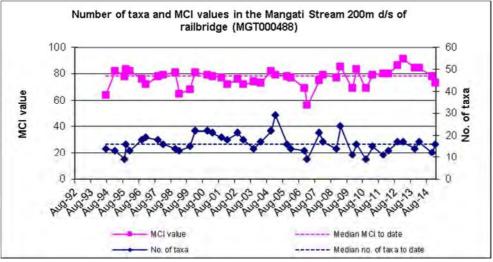


Figure 4 Numbers of taxa and MCI values recorded at site A to date

The MCI value of 73 ('poor' ecological health (TRC, 2013) reflected the significant proportion of 'tolerant' taxa in the community at this site (69%). This was three units less than the score recorded by the previous (spring) survey, but within the range of scores recorded over the

last few years. The result was an insignificant (Stark, 1998) five units lower than the median of 42 previous surveys, the first below median result since October 2010 reversing the trend recorded over the previous seven surveys (Table 3, Figure 4). The presence of only one abundant 'sensitive' taxon suggested reduced preceding physicochemical water quality conditions, although there was one 'highly sensitive' taxon recorded albeit as a rarity. There were few other taxa recorded in abundance, and this resulted in a moderate SQMCI $_{\rm s}$ score of 4.3 units which was a good result for this site. Observations made at the time of sampling indicated that habitat was somewhat limited, due to the vigorous growth of *Glyceria maxima* (reed sweet grass) on the banks completely shading the stream, with little light reaching the bed. As a result there was limited habitat with no periphyton growth. This restriction of habitat is likely to have been the primary driver behind the reduced numerical abundances of taxa.

Site A2 (MGT000490)

A moderately rich community (16 taxa) was recorded at this site, equal to the median for this site and that recorded by the previous (spring) survey (Table 3, Figure 5). However there was a small decrease in MCI score (73 units) from this previous spring survey, with the current score two units less than the median for this site (Table 3). This score was equal to that recorded at site A, despite a higher proportion of 'sensitive' taxa (37%) in the community than recorded upstream. The community was dominated by only one 'moderately sensitive' taxon [extremely abundant amphipod (*Paracalliope*)] and two 'tolerant' taxa [snail (*Physa* and *Potamopyrgus*)] (Table 2). The resultant SQMCI_s score of 4.7 units was slightly higher than that recorded upstream and was the highest score recorded at this site to date. There were five significant differences in individual taxon abundance between sites A and A2, and this is due primarily to the change in habitat sampled. At site A2 there was reed sweet grass growing within the stream, and this is the habitat that was sampled.

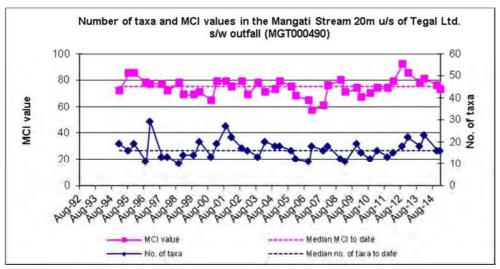


Figure 5 Numbers of taxa and MCI values recorded at site A2 to date

The MCI scores was similar to the median for this site, while the SQMCI_s score was significantly higher (Table 3), and as a result, not considered to indicate a deleterious influence from the Tegel wetland discharges through this reach of the stream.

Site A1 (MGT000491)

A similar richness (22 taxa) was recorded at this site downstream of industrial stormwater discharges and about 100 m below site A2. This result is similar to that recorded at this site in the previous two surveys, being some of the highest richnesses recorded at this site to date (Figure 6). The current richness was six taxa more than the median richness for this site, and also six more than that recorded upstream. This site has stabilised well since the stream was moved in 2008 to accommodate the installation of a culvert downstream.

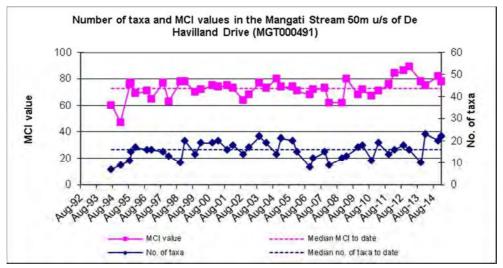


Figure 6 Numbers of taxa and MCI values recorded at site A1 to date

The MCI score recorded by the current survey was 78 units (indicative of 'poor' biological health (TRC, 2013)), which was four units less than that recorded by the previous (spring) survey but five units higher than the score at site A2, due to an increased proportion of 'moderately sensitive' taxa in the community (41%). The current score was five units higher than the median score for this site (Table 3, Figure 6), indicating a relatively healthy community health for this site.

Despite the more varied substrate, there were minimal significant differences in individual taxon abundances (two) from those recorded at site A2. The abundant taxa at this site included one 'moderately sensitive' taxon [extremely abundant amphipod (*Paracalliope*)] and three 'tolerant' taxa [oligochaete worms, extremely abundant snail (*Potamopyrgus*), and orthoclad midges] (Table 2). Overall, this resulted in a small decrease in the SQMCI_s score (4.4 units) which was 0.9 unit higher than the median. As there were no significant decreases from the SQMCI_s and MCI scores recorded upstream, despite habitat changes, there were no obvious indications of any significant deterioration in biological health from that found at site A2.

Site A3 (MGT000497)

Fifteen taxa were recorded at this site, 500 m downstream of site A1. This richness was seven taxa more than that recorded by the previous (spring) survey and similar to the long term median for this site. It represents some recovery from the previous survey, which recorded the lowest richness recorded at this site to date (Figure 7, Table 3). The community was characterised by five 'tolerant' taxa [nemertean worms, extremely abundant oligochaete worms, snails (*Physa* and extremely abundant *Potamopyrgus*) and orthoclad midges], an increase from that recorded by the previous spring survey, although there were still no 'sensitive' taxa found in abundance. There were five significant changes in individual taxon abundances from site A1 with the two main changes being the reduced abundance of *Paracalliope* amphipod, a 'moderately sensitive' taxon which was extremely abundant at site

A1, and the increased abundance of *Physa* snails, a taxon often associated with enrichment (Table 2). Although it was noted at the time of sampling that this site was completely overgrown and shaded by reed sweet grass, this change in taxon abundance may be indicative of some sort of external influence, especially considering the results of the previous survey. It should also be noted that there may also have been some influence from the farmland through which the Mangati Stream flows at this site as there is often unrestricted stock access to the stream.

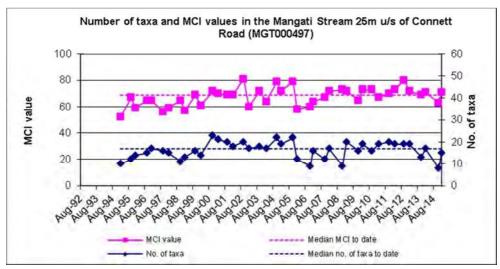


Figure 7 Numbers of taxa and MCI values recorded at site A3 to date

This community had a slightly reduced MCI score (71) compared with the score at site A1 (Stark, 1998), due to a reduction in the proportion of 'sensitive' taxa present (26%). This score was seven units less than that recorded at site A1 upstream, but eight units higher than that recorded in the previous survey, and two units higher than the long term median for this site. This indicates recovery from the previous survey (Figure 7), but also suggests that there remains some deterioration from that recorded at site A1 upstream (Figure 2). The SQMCI_s score (2.6 units) was equal to the median for this site (Table 3) and but significantly less than that recorded in the previous (summer) survey (4.1) and that recorded at site A1 in the current survey. This is primarily due to the reduced abundances of 'sensitive' taxa, as some of these taxa were abundant at this site in the previous summer survey, and at the upstream site in the current survey.

Changes in habitat and sampling technique have often resulted in a significant difference in MCI and SQMCI_s scores between adjacent sites, but the degree of change in the SQMCI_s score between site A1 and A3, may be more reflective of a recent deterioration in water quality at site A3 than indicative of habitat variability. Although there were no undesirable heterotrophic growths recorded at this site during the current survey, the change in abundance of *Physa* snails, and the reduced abundance of *Paracalliope* amphipods, suggests that there may be enrichment happening between these two sites. This is in contrast to that suggested by the results of the previous survey, which were more indicative of a short term but recent toxic discharge, which resulted in the loss of 'sensitive' taxa. It may be the result of a either a number of poorly controlled discharge points, or one discharge point that may discharge a range of contaminants.

Unfortunately observations made at the time of either sampling occasions did not provide any indication of such a discharge, and as such it cannot be conclusively stated that such a discharge has in fact occurred. Therefore, there was no direct indication of degradation in physicochemical water quality which could be directly attributed to the stormwater discharges from the De Havilland Drive West area, Tasman Oil, and Greymouth Petroleum in this reach of the stream. However, other monitoring undertaken at around this time may provide further insight.

Site B (MGT000500)

There was little change in the number of taxa in the stream reach between site A3 (15 taxa) and site B (13 taxa), in which the wetland that receives discharges from a large industrial area discharges to the Mangati Stream. The current richness recorded at site B was only one taxon taxa less than the median, a recovery from that recorded in the previous survey (Figure 8, Table 3).

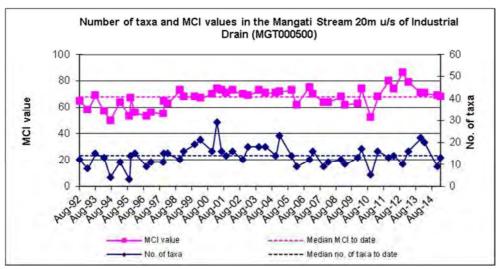


Figure 8 Numbers of taxa and MCI values recorded at site B to date

The community at site B comprised a high proportion (69%) of 'tolerant' taxa resulting in an MCI score of 68 units. This was similar to that recorded by the three previous surveys and the long term median (Figure 8, Table 3). This indicates that the community was of a similar health to that recorded previously, although this health is still classed as 'poor' (TRC, 2013).

However, only three taxa dominated this community and these were all 'tolerant' taxa, [oligochaete worms, snail (*Potamopyrgus*), and orthoclad midges]. *Paracalliope* amphipods were absent for the second consecutive survey, despite being abundant in the previous summer survey. This resulted in a low SQMCI_s score (1.8 units) which was 0.8 unit lower than that recorded at site A3, 0.7 unit lower than the long term median for this site (Tables 2 and 3). The primary cause of this decline in score was a reduced abundance of the slightly less 'tolerant' snail *Potamopyrgus*. This score was equal to that recorded in the previous(spring) survey, but a significant 1.8 units less than that recorded in the previous summer survey (Stark, 1998). This suggested that there may have been some deterioration in water quality at this site, similar to that recorded upstream at site A3.

Site D2 (MGT000512)

A moderate richness (14 taxa) was also recorded at site D2, below the industrial drain and wetlands high flow level outlet from pond 4. This richness was five taxa more than that

recorded by the previous (spring) survey but three more than the median for this site (Figure 9, Table 2). The community was dominated by the same 'tolerant' taxa as at sites B, with the exception of orthoclad midges, which dropped in abundance to rare (less than five individuals). As at sites A3 and B, no 'sensitive' taxa were present in abundance (Table 3). The community contained a reduced proportion (21%) of 'moderately sensitive' taxa which was reflected by the MCI score (63 units). This is two units less than the long term median score for this site, but a significant (Stark, 1998) reduction from that recorded in the previous survey, which recorded the highest MCI score recorded at this site to date (Figure 9). When compared with site B (Table 3), there was an insignificant five unit reduction in MCI score (Stark, 1998), possibly indicating further deterioration in community health between the two sites.

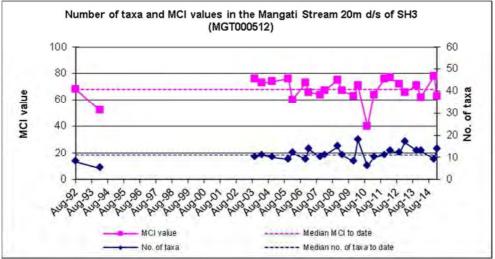


Figure 9 Numbers of taxa and MCI values recorded at site D2 to date

There were three significant changes in individual taxon abundances between adjacent sites B and D2 and this contributed to a 0.7 unit increase in SQMCI_s score at site D2 (Figure 3). This result (2.5 units) was a low score, but an improvement on that recorded in the previous survey. The results of the current survey indicate that the community was in average but 'poor' health.

Site E (MGT000520)

A downstream increase of three taxa in richness was found at site E (17 taxa), which was seven taxa more than the median richness for this site (Table 3, Figure 10). This community was characterised by two 'tolerant' taxa [oligochaete worms and extremely abundant snail (*Potamopyrgus*)], and one 'moderately sensitive' taxon [caddisfly (*Triplectides*)], representing a change in only one characteristic taxon compared with the community at the nearest upstream site D2. There were no significant differences in individual taxon abundance found between sites D2 and E, although it is worth noting that oligochaete worms decreased in abundance from extremely abundant at site D2 to very abundant at site E.

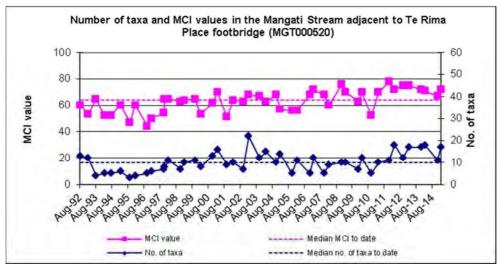


Figure 10 Numbers of taxa and MCI values recorded at site E to date

A decreased proportion of 'tolerant' taxa in the community (59%) resulted in an insignificant nine unit increase from the MCI score recorded at site D2. This MCI score (72 units) was an insignificant eight units higher than the long term median, and is the ninth consecutive above median score recorded at this site (Table 3, Figure 10). This represented a continued recovery from the biological health recorded by the spring 2010 survey when impacts from a poor quality wetland discharge appeared to have extended as far as this site. The SQMCI_s value (3.5 units) recorded a 1.0 unit increase from that recorded by the previous (spring) survey, a statistically significant result (Stark, 1998). This score was also significantly higher than that recorded at site D2 in the current survey, and the long term median for this site (Table 3). Overall this may suggest that the influence of the reduced water quality likely responsible for deterioration at sites A3 and B did not extend as far as site E, and that site E had experienced a recent improvement in water quality.

Site F (MGT000550)

Taxa richness (18 taxa) was slightly higher than that recorded by the previous (spring) survey and seven taxa higher than the historical median richness (Figure 11, Table 3). This was considered to indicate continued recovery from the significant habitat loss caused by erosion of the stream bed and banks by high flows and possibly high seas documented by the survey of spring 2011. However, it will also be a reflection of the change in sampling technique, which involved sweeping through macrophyte habitat in slow to still water.

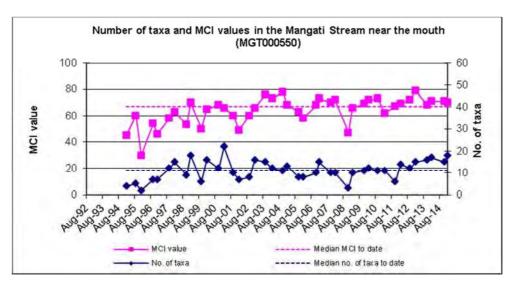


Figure 11 Numbers of taxa and MCI values recorded at site F to date

Five taxa were present in abundance, being three 'tolerant' taxa [extremely abundant *Potamopyrgus* snails, ostracod seed shrimp and *Paratya* shrimp] and two 'moderately sensitive' taxa [*Paracalliope* amphipods and *Triplectides* caddisfly]. The MCI score of 70 units at site F reflected the significant proportion (61%) of 'tolerant' taxa in the community. This MCI score was an insignificant three units higher than the historical median score but two units less than that recorded at site E. There were five significant changes in individual taxon abundances from site E (Table 2), the most significant being a decreased abundance of oligochaete worms, although this was balanced by an increased abundance of ostracod seed shrimps. This is a direct reflection of the change in habitat sampled, and resulted in little difference in SQMCI_s score (3.6) from the score at site E. This SQMCI_s value was 1.5 units higher than the historical median for this site, and 2.4 units higher than that recorded in the previous survey, both statistically significant (Stark, 1998) improvements (Table 3).

The MCI result for this site was slightly above the median for this site, but insignificantly different or better than that recorded at any upstream site. The SQMCI_s score on the other hand reflects a community in above average health, reflecting recovery not only from the previous survey, but also from that recorded at sites A3, B and D2 in the current survey, suggesting that there had been little impact on the macroinvertebrate community health (which remained in the 'poor' generic category (TRC, 2013), but typical of small lowland streams) at this site, approximately 1.8 km downstream from the industrial area and wetland discharge.

Summary and Conclusions

On 12 February 2015, the Council's standard 'kick-net' sampling technique was used at three established sites to collect streambed macroinvertebrates from the Mangati Stream to determine whether stormwater and wastewater discharges from the Mangati industrial area have had any adverse effects on the macroinvertebrate communities of this stream. Two other sites were sampled using the sweep sampling technique and three other sites using a combination of both techniques. Samples were sorted and identified to provide the number of taxa (richness), MCI score and SQMCI_s score for each site.

The MCI is a measure of the overall sensitivity of the macroinvertebrate community to the effects of organic pollution in stony streams. It is based on the presence/absence of taxa with varying degrees of sensitivity to environmental conditions. The SQMCI_s takes into account taxa abundance as well as sensitivity to pollution, and may reveal more subtle changes in communities, particularly if non-organic impacts are occurring. Significant differences in either the MCI or the SQMCI_s between sites indicate the degree of adverse effects (if any) of the discharges being monitored.

The Mangati Stream is a small slower flowing, lowland stream running through farmland, an industrial area and a residential area. As such, this stream typically supports communities commonly found in lowland, soft-bedded streams that are relatively 'tolerant' to organic pollution. The communities are usually dominated by 'tolerant' taxa and those 'moderately sensitive' taxa commonly associated with macrophytes e.g. oligochaete worms, snail (*Potamopyrgus*), and amphipod (*Paracalliope*).

Upstream of De Havilland Drive, taxa richnesses, MCI scores and SQMCI_s scores were similar to or higher than their respective medians, reflecting that populations were in average to above average condition. Although at site A3, just upstream of Connett Road, there was a reduction in taxa richness, MCI score and SQMCI_s score, they were still about average for this site. Similar results were recorded at the next two sites (B and D2), while taxa richness and SQMCI_s scores at sites E and F indicated some recovery.

Site A3, upstream of Connett Road recorded a taxa richness of 15, almost twice that recorded in the previous survey. The MCI score of 71 was slightly higher than the median, but seven units less than that recorded upstream. Similarly, the SQMCI_s score (2.6) was equal to the median, but 1.8 units less than that recorded upstream. The MCI scores at sites B and D2 deteriorated further from that recorded at site A3, being 68 and 63 respectively. Site B also recorded a very low SQMCI_s score of 1.8 units indicating that this community was in very poor health and heavily dominated by very 'tolerant' taxa.

The previous (spring) survey recorded communities at sites A3, B and D2 that were suggestive of a short term but recent toxic discharge, which resulted in the loss of 'sensitive' taxa. The current survey indicates that A3 had recovered somewhat, but only to 'average' conditions, compared with the above average conditions recorded upstream. Although this suggests some on going deterioration between sites A1 and A3, it is only subtle, and subsequently difficult to determine the cause, be it due to industrial discharges, or variation in habitat. Therefore, there was no direct indication of degradation in physicochemical water quality which could be directly attributed to the stormwater discharges from the De Havilland Drive West area, Tasman Oil, and Greymouth Petroleum in this reach of the stream. However, other monitoring undertaken at around this time may provide further insight.

Site B recorded a very low SQMCI_s score, and although the MCI score is similar to the average, this low SQMCI_s score suggests that the wetland had caused deterioration in water quality. However, this was not accompanied by the presence of undesirable heterotrophic growths. Although site D2 recorded a slightly reduced MCI score from that recorded at site B, the SQMCI_s score indicated some recovery. Therefore it is unlikely that the industrial drain, which enters between these two sites, has caused a reduction in community health.

Previous surveys have observed evidence of urbanisation of the Mangati Stream, such as bed erosion and significantly high preceding flows. Although no such erosion was noted during the current survey, the previous survey did not that site B was experiencing bank undercutting and collapse, and that this was likely to be a reflection of this urbanisation. Urbanisation of the catchment must be given regard to, due to increased subdivision in the headwaters, as there is potential for an increase in the 'flashiness' of the floods experienced by the Mangati Stream. This may become apparent with the recent installation of a continuous flow and rainfall data recording station (October 2012). This impact is likely to worsen as the new industrial subdivision around the De Havilland Drive area is developed further.

Overall, the changes in community structures, numbers of taxa, and MCI values throughout the upper to mid reaches of the Mangati Stream, indicate that there have been no significant adverse effects on macroinvertebrate communities resulting from discharges from Tegel Poultry. However, downstream of De Havilland Drive, where stormwater from De Havilland Drive West, Tasman Oil and Greymouth Petroleum enter, there was some deterioration in macroinvertebrate communities from that recorded upstream. This deterioration was relatively subtle, especially when compared to the previous survey, and as such could not be attributed to a specific discharge or site. The lower discharge from the wetland ponds may

have had subtle impacts on the macroinvertebrate community of site D2, as indicated by the dominance of 'tolerant' taxa in the community. The lowest two sites indicated some recovery in water quality, with above average community richness, MCI and SQMCI_s scores.

References

- Dunning KJ, 2002a: Biomonitoring of the Mangati Stream and an unnamed tributary, in relation to the Bell Block industrial area, October 2001. TRC report KD86.
- Dunning KJ, 2002b: Biomonitoring of the Mangati Stream and an unnamed tributary, in relation to the Bell Block industrial area, February 2002. TRC report KD105.
- Dunning KJ, 2003: Biomonitoring of the Mangati Stream and an unnamed tributary, in relation to the Bell Block industrial area, October 2002. TRC report KD135.
- Fowles CR and Colgan BG, 2005: Biomonitoring of the Mangati Stream and an unnamed tributary, in relation to the Bell Block industrial area, November 2004. TRC report CF368.
- Fowles CR and Hope KJ, 2005: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, February 2005. TRC report CF375.
- Fowles CR and Jansma B, 2014: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, October 2012. TRC report CF613.
- Fowles CR and Jansma B, 2014a: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, February 2013. TRC report CF614.
- Fowles CR and Jansma B, 2014b: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, November 2013. TRC report CF630.
- Fowles CR and Jansma B, 2014c: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, February 2014. TRC report CF631.
- Fowles CR and Moore SC, 2004: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, March 2004. TRC report CF337.
- Hickey CW and Vickers ML, 1992: Comparison of the sensitivity to heavy metals and pentachlorophenol of the mayflies *Deleatidium* spp and the cladoceran *Daphnia magna*. *New Zealand Journal of Marine and Freshwater Research* 26: 87-93.
- Hope KJ, 2005: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, November 2005. TRC report KH062.
- Hope KJ, 2007: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, February 2006. TRC report KH089.
- Hope KJ, 2007: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, December 2006. TRC report KH092.

- Jansma B, 2007: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, February 2007. TRC report BJ031.
- Jansma B, 2008a: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, November 2007. TRC report BJ042.
- Jansma B, 2008b: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, February 2008. TRC report BJ043.
- Jansma B, 2009a: Biomonitoring of the Mangati Stream, in relation to the Bell Block industrial area, December 2008. TRC report BJ062.
- Jansma B, 2009b: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, March 2009. TRC report BJ063.
- Jansma, 2011a: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, December 2009. TRC report BJ140.
- Jansma, 2011b: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, March 2010. TRC report BJ141.
- Jansma, 2012a: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, October 2010. TRC report BJ172.
- Jansma, 2012b: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, March 2011. TRC report BJ173.
- Jansma, 2013a: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, November 2011. TRC report BJ189.
- Jansma, 2013b: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, March 2012. TRC report BJ190.
- Jansma, 2015: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, December 2014. TRC report BJ271
- Moore S, 2003: Biomonitoring of the Mangati Stream and an unnamed tributary, in relation to the Bell Block industrial area, February 2003. TRC report SM575.
- Moore SC & Colgan BG, 2003: Biomonitoring of the Mangati Stream and an unnamed tributary, in relation to the Bell Block industrial area, October 2003. TRC report SM585.
- Stark JD, 1985: A macroinvertebrate community index of water quality for stony streams. *Water and Soil* Miscellaneous Publication No. 87.
- Stark JD, 1998: SQMCI: a biotic index for freshwater macroinvertebrate coded abundance data. *New Zealand Journal of Marine and Freshwater Research* 32(1): 55-66.
- Stark JD, 1999: An evaluation of TRC's SQMCI biomonitoring index. Cawthron Institute, Nelson. Cawthron Report No. 472.

- Stark JD, Boothroyd IKG, Harding JS, Maxted JR, Scarsbrook MR, 2001: Protocols for sampling macroinvertebrates in wadeable streams. New Zealand Macroinvertebrate Working Group Report No. 1. Prepared for the Ministry for the Environment. Sustainable Management Fund Project No. 5103. 57p.
- Stark JD and Maxted JR, 2004: Macroinvertebrate community indices for Auckland's soft-bottomed streams and applications to SOE reporting. Prepared for Auckland Regional Council. Cawthron Report No. 970. Cawthron Institute, Nelson. ARC Technical Publication 303. 59p.
- Stark JD and Maxted JR, 2007: A biotic index for New Zealand's soft bottomed streams. New Zealand Journal of Marine and Freshwater Research 41(1).
- Stark JD and Maxted JR, 2007a: A user guide for the macroinvertebrate community index. Cawthron Institute, Nelson. Cawthron Report No. 1166.
- TRC, 1999: Some statistics from the Taranaki Regional Council database of freshwater macroinvertebrate surveys performed during the period from January 1980 to 31 December 1998. TRC Technical Report 99-17 (updated October, 2014).
- TRC, 2013: Freshwater macroinvertebrate fauna biological monitoring programme Annual SEM Report 2012-2013. Technical Report 2013-48.

Appendix IV

Rule 23 of the Regional Freshwater Plan (permitted stormwater rule)

Explanation

Rule 23 provides for the large number of stormwater discharges that have no or only minor adverse effects on the environment. A resource consent is not required for stormwater discharges to either land or water so long as the discharge can comply with the conditions of this rule. The first condition restricts discharges from industrial or trade that are over 0.5 hectares in area, unless the site has a means of ensuring that stormwater will not be contaminated [a roofed site is a good example of this]. The reference to the 'active area' of the site refers to that part of the site where industrial and trade activity is taking place, including areas on site where goods, products, hazardous substances or other materials are stored, used or potentially split, but does not include areas that are grassed; landscaped; or roofed; or carparks which are used exclusively for non-goods vehicles.

Any sites storing and/or using hazardous substances must either ensure that the stormwater cannot be contaminated [for example is the site is roofed] or that an interceptor system is designed and managed so that contaminated stormwater is diverted to trade waste or captured and contained and/or treated so that the contamination is removed and reduced. In this regard the bunding of hazardous substances and the capture and treatment of stormwater would enable the discharge of stormwater from sites under 0.5 hectares to be a permitted activity. The condition also requires that a contingency plan be maintained and regularly updated for the site.

The third condition restricts the discharge of stormwater from any industrial and trade premises where the movement of rock and other earth material is taking place, other than the types of minor works outlined in the condition. This is consistent with other rules in the Plan relating to stormwater discharges from soil disturbance activities.

Rule 23 also contains conditions relating to the receiving environment to ensure that adverse effects are avoided, remedied or mitigated. Conditions relate to both water quality [by specifying discharge limits and receiving water effects] and the quantity of water that is being discharged [to avoid erosion, scour or deposition].

