Mangati Catchment
Joint Monitoring Programme
Annual Report
2015-2016

Technical Report 2016-99

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Executive summary

This report is the Annual Report for the period July 2015 to June 2016 by the Taranaki Regional Council (the Council) describing the monitoring programme associated with 17 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 2015-2016 monitoring period a total of one water abstraction consent, 17 non agricultural water discharge consents, five air discharge consents and two discharge to land consents were held by industries in this catchment. This report covers the results and findings during this monitoring period for these 25 consents, which contain a total of 257 special conditions that the consent holders must satisfy. It represents the 19th 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 56 site inspections, discussions with site operators over site management, 86 discharge samples, 36 receiving water samples, 16 macroinvertebrate samples, point source and ambient particulate monitoring and odour surveys.

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 higher than expected biochemical oxygen demand (BOD) concentrations were found in two of the wet weather runs, however the final survey of the period found that BOD levels had returned to values similar to the historic medians. Also noted were increases in BOD inputs from the upper non industrial reaches of the catchment which are currently being investigated.

In the period under review the instream dissolved zinc and copper concentrations met the appropriate USEPA acute or chronic exposure guidelines in 21 of 24 results. Suspended solids were found to be above median at all sites (including at the upstream control site) however in all sampling surveys there was found be only slight increases in the concentration of suspended solids 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 during period under review exceeded the 0.025 g/m^3 MfE unionise ammonia guideline limit for the protection of aquatic ecosystems.

Noted during the period under review were the lower than expected macroinvertebrate community index (MCI) values found in the middle and upper reaches of the stream during the summer macroinvertebrate survey. This may have been attributed to the elevated BOD levels discussed earlier and/or seasonal habitat constraints experienced in the stream due to lower flows and elevated temperatures in the summer period. However during this summer survey the MCI score found at the Te Rima Place monitoring site downstream of the industrial area (site MGT000520) was the highest on recorded. Statistical analysis of data from this site indicates that this result is part of a continuing trend of improving MCI scores below the industrial area.

There were 14 substantiated unauthorised incidents recorded in the Mangati catchment during the period under review, all of which were related to the consented companies monitored under this catchment programme. Most of these incidents were related to non-compliant constituent concentrations found during discharge sampling. Four incidents were related to odour complaints received in regard to activities undertaken J Swap's feed yard. All incidents (substantiated or otherwise) were investigated and appropriate enforcement action was taken as required.

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

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

An improvement in Greymouth Petroleum Acquisition Company Ltd.'s (Greymouth Petroleum) environmental performance is required. During the period under review the stormwater sample collected for analysis exceeded resource consent limits for suspended solids. Currently an abatement notice is in place requiring Greymouth Petroleum to comply with consent conditions. Greymouth Petroleum demonstrated a good level of administrative performance. However it is noted that the stormwater management plan for the site is overdue for review and update by the consent holder.

Halliburton New Zealand Ltd (Halliburton) demonstrated a good level of administrative performance, however an improvement in environmental performance and compliance with their resource consents is required. 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 been issued with an infringement notice in regards to exceedances in suspended solids in their discharge.

During the year, J Swap Contractors Ltd demonstrated a poor level of environmental performance and an improvement is required in the administrative performance and compliance with the resource consents. There were substantiated odour complaints received

resulting in enforcement action and it was also found that best practice was not being adopted at the site in regard to product tracking. It also noted that the stormwater designs supplied with the application did not accurately reflect the manner in which stormwater from the truck wash was to be discharged and as a result it is recommended this consent be reviewed under Section 128 (1) (c) of the RMA.

During the year, NPDC 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 their resource consents.

During the year, OMV New Zealand Ltd (OMV) demonstrated a good level of environmental performance and a high level of administrative performance and compliance with the resource consents. OMV had one non-compliance in regard to the biochemical oxygen demand (BOD) concentration in its discharge, however the matter was addressed and all subsequent samples have been found to be compliant.

During the year, Schlumberger New Zealand Ltd demonstrated a poor level of environmental performance and a poor level of administrative performance and compliance with their resource consents. There were significant issues in regard to the handling of drilling fluids which resulted in a spill. Schlumberger was issued with an infringement fine and had to undertake significant remediation to remove spilled materials from the reticulation network and Bell Block treatment ponds.

Tasman Oil Tools Ltd demonstrated a good level of environmental performance and compliance with their resource consents and a good level of administrative performance. There was one minor non-compliance in regard to suspended solids however the consent holder is undertaking works to improve sediment control at the site.

During the year, the Tegel Foods Ltd (feed mill) demonstrated a good level of administrative performance and a good of environmental performance and compliance with their resource consents.

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. One minor non-compliant fugitive discharge was observed during a dry weather survey and non-compliant stormwater discharges were found during one wet weather survey. No effects were noted in the stream as a result of these and subsequent samples have returned compliant results.

During the year, an improvement is required in TIL Freighting Ltd's level of administrative performance and environmental performance and compliance with their resource consents. There has been an on-going issue in regards to BOD concentrations in the discharges from the site. The consent holder has recently undertaken a major cleaning programme to reduce contamination of stormwater at their premises. The site currently operates under an abatement notice and further enforcement action is being considered if the issues persist.

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

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.

In terms of overall environmental and compliance performance by the consent holders over the last several years, this report shows that the consent holder's performance remains at a good level in the year under review. It is noted however that there are several consent holders that either, continue to have issues that require improvement (following on from the previous period) or require interventions and enforcement action as a result of significant events.

For reference, in the 2015-2016 year, 71% 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 24% demonstrated a good level of environmental performance and compliance with their consents.

This report includes recommendations for the 2016-2017 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 2015 to June 2016 by the Taranaki Regional Council (the Council) on the monitoring programme associated with 25 resource consents held by companies within the Mangati catchment. It is the 19th combined 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.

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 km^2. 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.

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

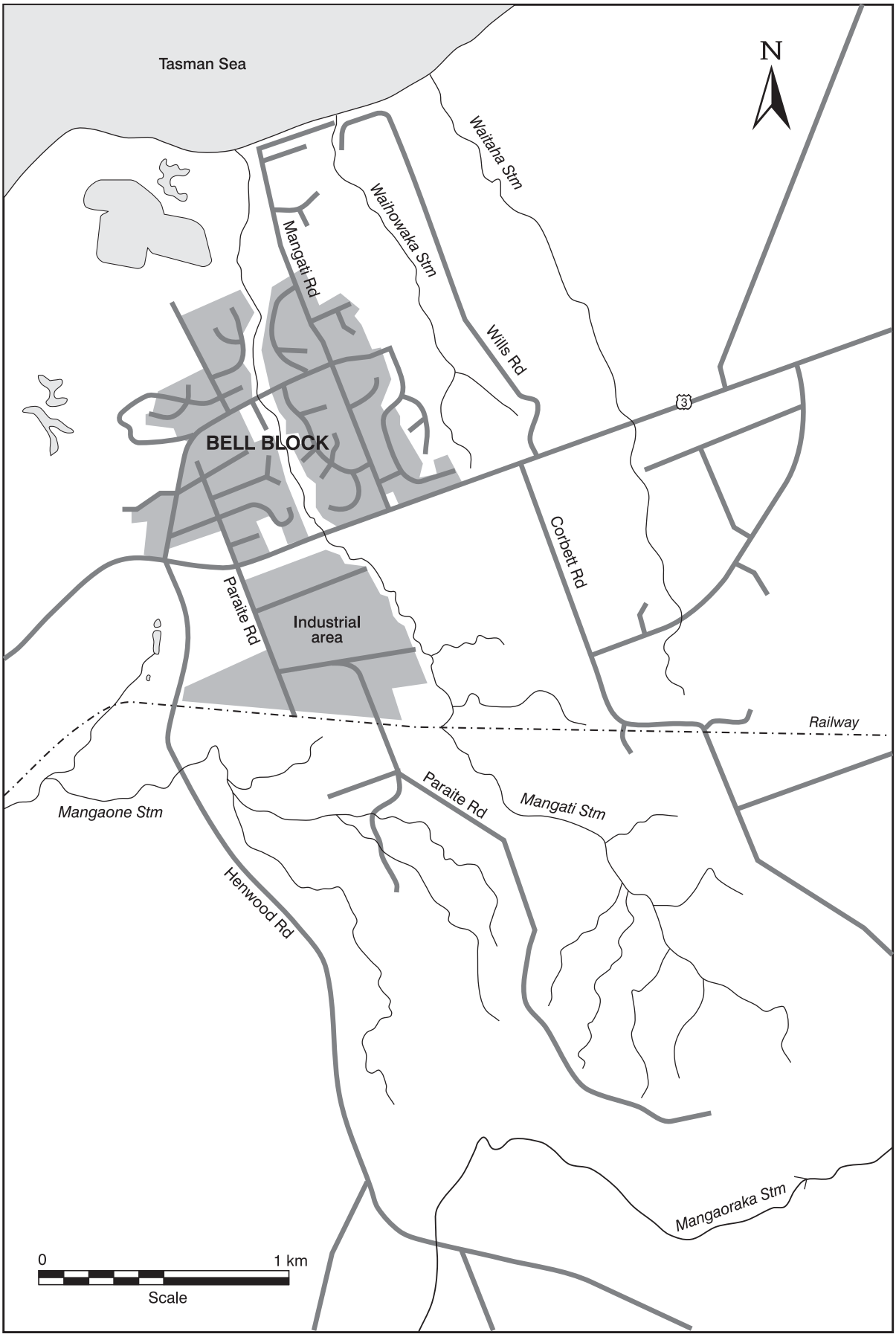

Figure 1 Mangati catchment

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 17).

Section 1 of this report is a background section. It sets out general information about:

- consent compliance monitoring under the RMA and the Council's obligations;
- the Council's approach to monitoring sites though annual programmes;
- the resource consents held by companies in the Mangati catchment;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted in the catchment.

Each company's activity is then discussed in detail in a separate section (Sections 2 to 17).

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 2016-2017 monitoring year.

Section 18 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 19 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 20 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 21 discusses the results of the monitoring of the Mangati Stream, their interpretation and their significance.

Section 22 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 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); and
(e) risks to the neighbourhood or environment.

In drafting and reviewing conditions on discharge permits, and in implementing monitoring programmes, the Council is recognising the comprehensive meaning of 'effects' inasmuch as is appropriate for each 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, this report also assigns a rating as to each Company's environmental and administrative performance during the period under review.

Environmental performance is concerned with actual or likely effects on the receiving environment from the activities during the monitoring year.
Administrative performance is concerned with the Company's approach to demonstrating consent compliance in site operations and management including the timely provision of information to Council (such as contingency plans and water take data) in accordance with consent conditions.

Events that were beyond the control of the consent holder and unforeseeable (that is a defence under the provisions of the RMA can be established) may be excluded with regard to the performance rating applied. For example loss of data due to a flood destroying deployed field equipment.

The categories used by the Council for this monitoring period, and their 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 non-compliant effects; however abatement notices may have been issued to mitigate an identified potential for an environmental effect to occur.

  For example:

  - High suspended solid values recorded in discharge samples, however the discharge was to land or to receiving waters that were in high flow at the time;
  - Strong odour beyond boundary but no residential properties or other recipient nearby.

- **Improvement required**: Likely or actual adverse effects of activities on the receiving environment were more than minor, but not substantial. There were some issues noted during monitoring, from self reports, or in response to unauthorised incident reports. Cumulative adverse effects of a persistent minor non-compliant activity could elevate a minor issue to this level. Abatement notices and infringement notices may have been issued in respect of effects.

- **Poor:** Likely or actual adverse effects of activities on the receiving environment were significant. There were some items noted during monitoring, from self reports, or in response to unauthorised incident reports. Cumulative adverse effects of a persistent moderate non-compliant activity could elevate an 'improvement required' issue to this level. Typically there were grounds for either a prosecution or an infringement notice in respect of effects.

Administrative performance

- **High:** The administrative requirements of the resource consents were met, or any failure to do this had trivial consequences and were addressed promptly and co-operatively.

- **Good:** Perhaps some administrative requirements of the resource consents were not met at a particular time, however this was addressed without repeated interventions from the Council staff. Alternatively adequate reason was provided for matters such as the no or late provision of information, interpretation of 'best practical option' for avoiding potential effects, etc.

- **Improvement required:** Repeated interventions to meet the administrative requirements of the resource consents were made by Council staff. These matters took some time to resolve, or remained unresolved at the end of the period under review. The Council may have issued an abatement notice to attain compliance.

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

For reference, in the 2015-2016 year, 71% 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 24% 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 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 Catchment Joint Monitoring Programme are outlined in Table 1 and their locations are shown in Figure 2 During the period under review, one water abstraction consent, seventeen non agricultural water discharge consents, five air discharge consents and two discharge to land consents were held by industries in this catchment. 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.

Stormwater discharge consents have standardised special conditions that:

- Requires the consent holder to adopt best practice.
- Limits the area from which stormwater can be discharged.
- Requires the use of a stormwater treatment system.
- Places limits constituents of the discharge, with specific regard to pH, suspended solids and oil and grease.
- Requires that the discharge does not cause certain effects in the receiving waters.
- Requires that the consent holder maintain a spill 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.
- Requires that the consent holder maintain and adhere to a 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 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.
- Requires the consent holder to notify Council prior to making any changes to the site or site processes.
- Provide for lapse and review of the consent.

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

Consent holder	Resource consent	Purpose	Next review date	Expiry date
ABB Ltd	2336-3	To discharge stormwater from a transformer manufacturing site into the Mangati Stream	June 2020	1 June 2026
	5435-2	To discharge emissions into the air from dry steel grit blasting processes and associated activities.	June 2020	1 June 2032
First Gas Ltd/Vector Gas Ltd	4780-2	To discharge stormwater and vehicle wash water to the Mangati Stream	June 2020	1 June 2032
GrainCorp Feeds Ltd	7707-1	To discharge stormwater into the Mangati Stream	June 2020	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	June 2020	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	June 2020	1 June 2026
J Swap Contractors Ltd	10085-1	To discharge stormwater from a transport depot into an unnamed tributary of the Mangati Stream	June 2020	1 June 2032
McKechnie Aluminium Solutions Ltd	3139-3	To discharge stormwater (including cooling water) from an industrial site into an unnamed tributary of the Mangati Stream	June 2020	1 June 2026
New Plymouth District Council	4302-2	To discharge up to 5,200 L/s 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
	5417-2	To discharge emissions into the air from an electric wire and cable manufacturing plant and associated activities	June 2020	1 June 2032
OMV New Zealand Ltd	3913-2	To discharge up to 125 L/s of treated stormwater from a transport depot into an unnamed tributary of the Mangati Stream	-	1 June 2014
	3913-3	To discharge stormwater from an industrial site into an unnamed tributary of the Mangati Stream	June 2020	1 June 2032
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
Schlumberger New Zealand Ltd	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

Consent holder	Resource consent	Purpose	Next review date	Expiry date
Tasman Oil Tools Ltd	4812-2	To 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	-	1 June 2020
Tegel Foods Ltd (Feedmill)	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
Tegel Foods Ltd (Poultry Plant)	3470-4	To discharge stormwater from a poultry processing plant site to the New Plymouth District Council drainage network	June 2017	1 June 2026
	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
TIL Freighting Ltd	6952-1	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
Vector Gas Ltd	4780-1	To discharge up to 608 L/s of stormwater from an administration site into the Mangati Stream	-	1 June 2014
W Abraham Ltd	7147-2	To discharge emissions into the air from the operation of a crematorium including a natural gas-fired cremator	June 2020	1 June 2032

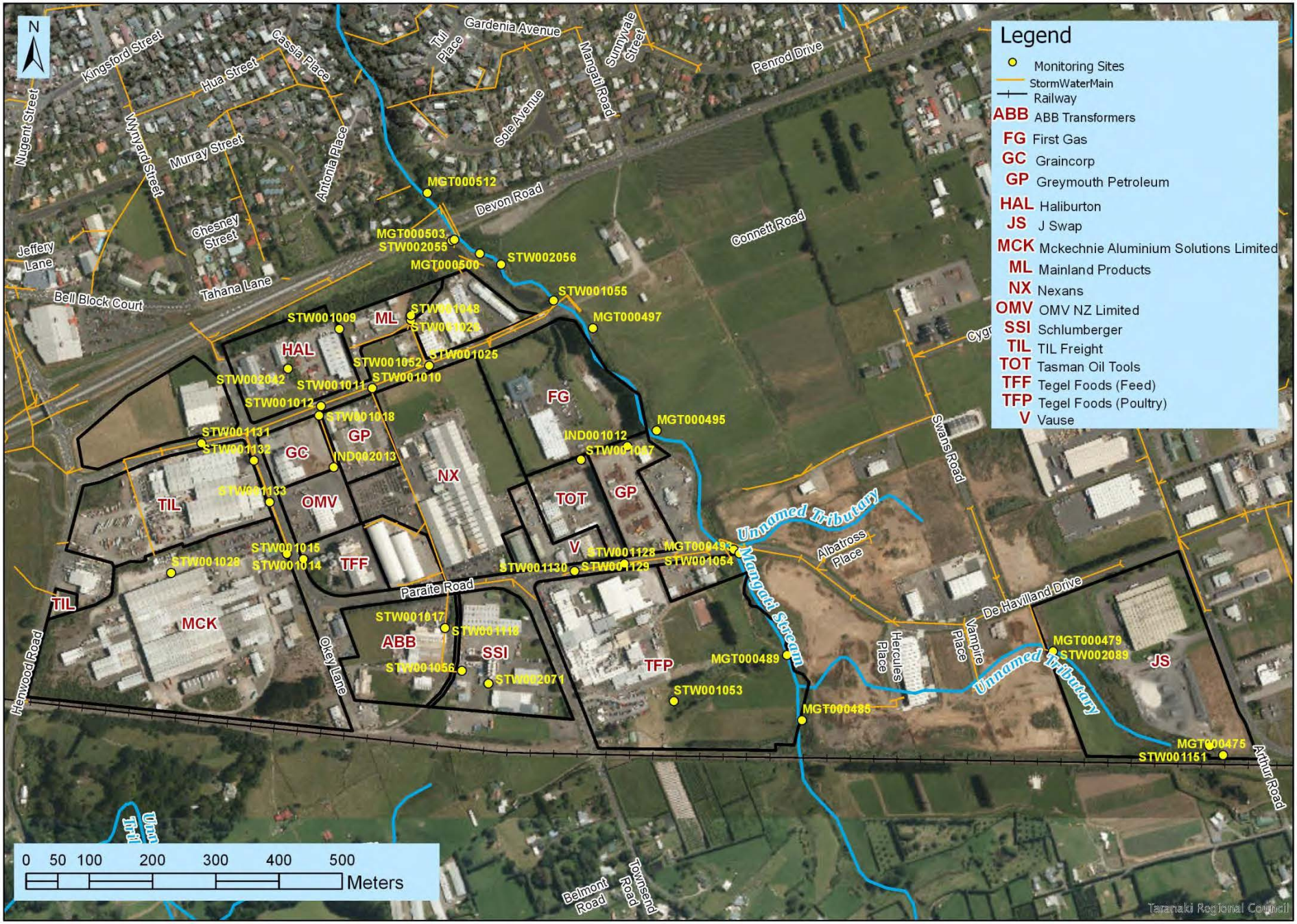

Figure 2 Location of consent holders, discharge sites, and surface water monitoring sites

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 within the Taranaki region. The Council is also required to assess the effects arising from the exercising of these consents and report upon them.

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

The monitoring programme for the 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 period under review an officer of the Council carried out inspections approximately quarterly, with a total of 56 inspections being undertaken.

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 46 points (refer Figure 2), 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. Not all results for all sites are reported in this document; full results can be obtained by contacting the Council.

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 surveys 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. Full wet weather runs were carried out on 18 January 2016 and 17 March 2016, while a reduced wet weather survey was carried out on 25 May 2016. A dry weather survey was undertaken on 26 February 2016.

In relation to the monitoring of air emissions, the Council undertook odour surveys in the neighbourhood of the site inspected and ambient 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 2015-2016 year and will next be included in the 2018-2019 monitoring programme at selected locations in the vicinity of ABB Ltd's site and Tegel Poultry Ltd's feed mill site. 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 19 November 2015 and 10 February 2016.

The locations of the biomonitoring sites are described in Table 2 and depicted in Figure 3.

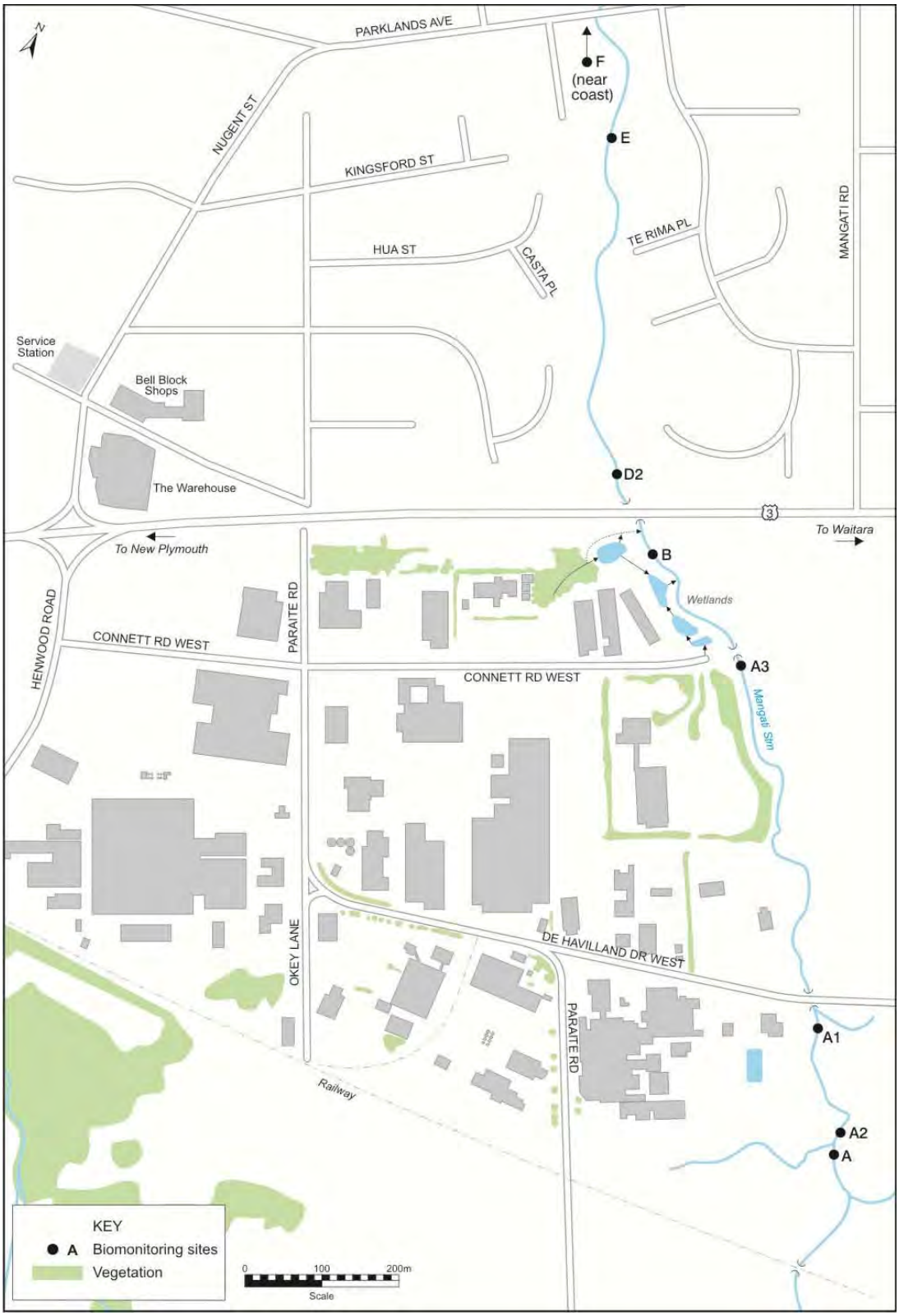

Figure 3 Location of biological monitoring sites

Table 2 Biomonitoring sites in the Mangati Stream

Site	TRC Site code	Map Reference NZTM		Location	Distance from sea, km
		Easting	Northing		
A	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
A3	MGT000497	1699775	5678573	Above Connett Road	2.1
B	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
E	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 3, site A1), MGT000505 (Figure 3, site D) and MGT000550 (Figure 3, 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.

Approximately 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 ABB 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 issued to ABB on 19 June 2008. It is due to expire on 1 June 2026.

Consent 2336-3 contains the standard special conditions as given in Section 1.2 and one additional special condition;

Condition 4 specifies areas where hazardous substances are permitted to be stored and prohibits their discharge directly to the stormwater catchment.

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 held air discharge permit **5435-1** to cover the discharge of emissions into the air from dry steel grit blasting processes and associated activities. This permit was issued by the Council on 29 January 1999 under Section 87(e) of the RMA. This consent expired on 1 June 2014 and the expired consent was exercised under Section 124 of the RMA until a renewed consent was granted.

ABB holds air discharge permit **5435-2** to cover the discharge of emissions into the air from dry steel grit blasting processes and associated activities. This permit was issued by the Council on 12 February 2015 under Section 87(e) of the RMA 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 at ABB's site on 17 November 2015 and 7 April 2016.

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 7 April 2016, 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. A new containment bund had also been installed prior to this inspection.

2.2.1.2 Results of discharge monitoring

The primary monitoring site of ABB's discharges is immediately outside the plant, at the side of the administration building (site STW001017). The results from chemical monitoring at this site are given in Table 3.

Stormwater from the Schlumberger sites may influence the results observed at this site (see Section 11).

The discharge points were visited for sampling on three occasions. During one dry weather survey, 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 equal to or 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 Results for ABB's stormwater discharge- site STW001017

Date	Conductivity	Acid soluble copper	Dissolved copper	Oil and Grease	Acid soluble lead	Ph	Suspended solids	Temp.	Acid soluble zinc	Dissolved zinc
Unit	**mS/m@20C**	**g/m³**	**g/m³**	**g/m³**	**g/m³**	**pH**	**g/m³**	**Deg.C**	**g/m³**	**g/m³**
Minimum	0.88	0.01	0.01	0.5	0.05	6.6	4	9	0.043	0.018
Maximum	131	0.4	0.06	150	0.28	10.8	290	22.2	2.57	1.4
Median	5.9	0.03	0.01	1.6	0.02	7.2	20	14.8	0.499	0.327
Number	52	47	32	34	37	52	49	49	47	32
18/01/16 (w)	8.3	0.01	0.01	10	<0.05	7.2	9	22.0	0.268	0.246
26/02/16 (d)	b	b	b	b	b	b	b	b	b	b
17/03/16 (w)	0.88	<0.01	<0.01	<0.5	<0.05	6.9	4	17.7	0.162	0.140
Consent limit	-	-	-	*15*	-	*6-9*	*100*	-	-	-

Key: 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

An air inspection was undertaken on 7 April 2016. This included a dust reading taken near the point of emission, which recorded a mass concentration total of 0.05 mg/m³. This was within acceptable levels and within consent conditions.

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; and was carried out during the 2015-2016 monitoring period.

Table 4 Air deposition results for ABB

Site	Date collected	Air Deposition Weight	Number of days	Particulate deposited	Volume air deposition samples
		g	Days	g/m²/d	Litres
AIR009201	12 Aug 2015	0.015	20	0.02	5.2
AIR009202	12 Aug 2015	0.0141	20	0.02	4.8
Consent limit	-	-	-	*0.13*	-

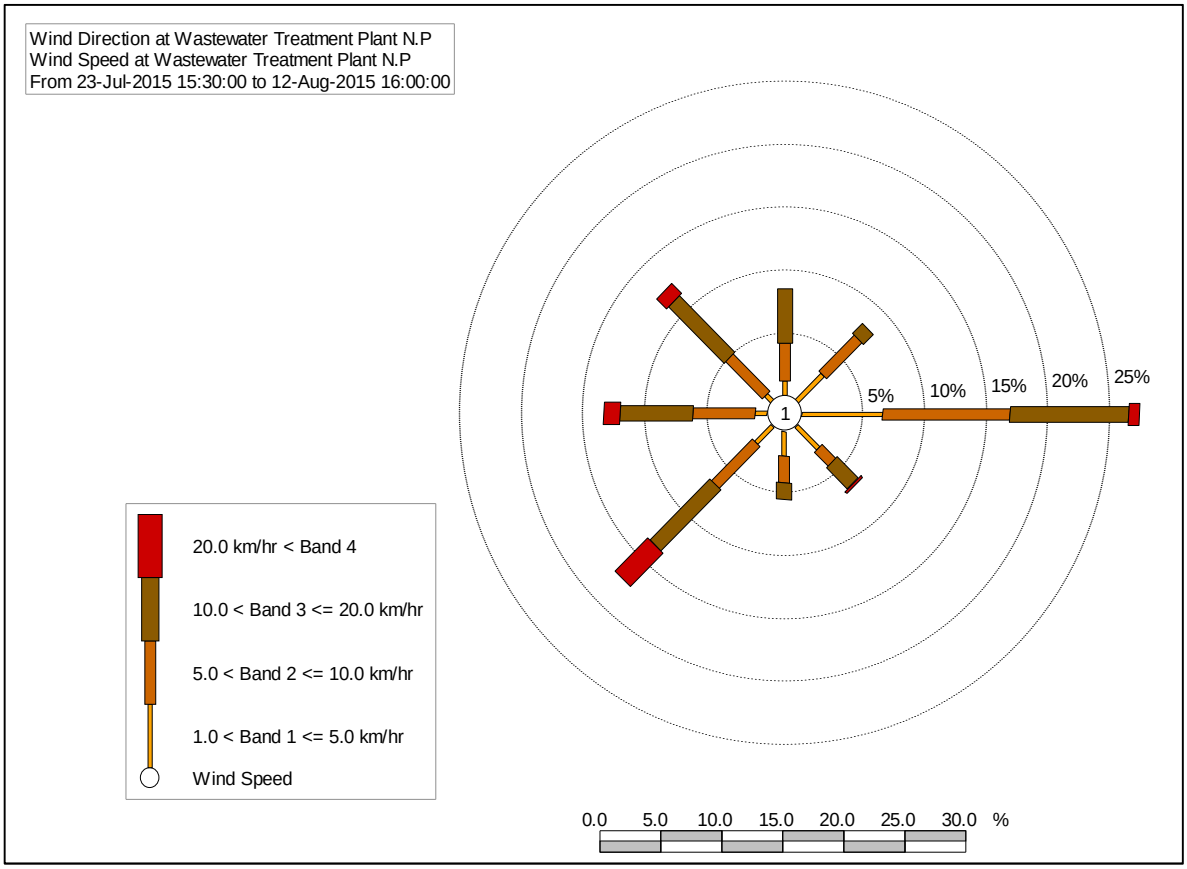

Figure 4 Wind rose during ABB deposition gauge deployment

The results from the sir deposition gauging in and around ABB showed that the consent limit of 0.4 g/m²/day (0.13 g/m²/day) was being complied with.

2.2.3 Investigations, interventions, and incidents

During the period under review, 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.

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 significant 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 one occasion, with low concentrations of dust detected indicating that consent conditions were being complied with. Dust deposition result also showed that ABB was meeting consent conditions and national guidelines in regards to effects from dust emissions.

2.3.3 Evaluation of performance

A tabular summary of ABB's compliance record for the year under review is set out in Table 5 and Table 6.

Table 5 Summary of performance for ABB's Consent 2336-3

Purpose: ***To discharge stormwater from a transformer manufacturing site into the Mangati Stream***		
Condition 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
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	Review of documents provided. Plan on file dated August 2016	Yes
8. Maintenance of stormwater management plan	Company's work instructions relating to chemical and oil storage and bund management (dated February 2010) on file	Yes – update required
9. 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
10. Provision for consent to lapse if not exercised	Consent has been exercised	N/A
11. 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		**High**
Overall assessment of administrative performance in respect of this consent		**Good**

N/A = not applicable or not assessed

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

Purpose: ***To discharge emissions into the air from dry steel grit blasting processes (from 12 February 2015)***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Blasting to be carried out in a booth or shed	Inspections	Yes
2. Adoption of best practicable option to minimise effects	Inspections	Yes
3. No offensive, objectionable or toxic levels of dust at or beyond boundary	Inspections, odour surveys and air quality sampling	Yes
4. Limit on levels of dust and silica in blasting material	Inspections	Yes
5. Emissions to be contained and treated prior to discharge	Inspections	Yes
6. Concentration of total particulate matter in discharge to be less than 125 mg/m^3	Inspection with handheld dust monitor	Yes
7. Dust deposition beyond boundary to be less than 0.13 g/m^3/day	Air deposition gauges	Yes
8. Limits on constituents of final discharge	Not monitored during period under review – undertaken as required	N/A
9. Operation, Management and Maintenance plan to be provided	Plan received	Yes
10. Records kept in accordance to Operation, Management and Maintenance plan to be provided on request	Not requested during period under review	N/A
11. Lapse of consent	N/A	N/A
12. 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		**High**
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 good level of administrative performance as defined in Section 1.1.4.

2.3.4 Recommendations from the 2014-2015 Annual Report

In the 2014-2015 Annual Report, it was recommended:

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

This recommendation was implemented in the 2015-2016 monitoring period.

2.3.5 Alterations to monitoring programmes for 2016-2017

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 2016-2017 the monitoring programme remains similar to that undertaken in the 2015-2016 year with exception of the triennial air deposition survey which is next scheduled for the 2018-2019 period. 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 2016-2017 year remains similar to that undertaken in the 2015-2016 year with exception of the triennial air deposition survey which is next scheduled for the 2018-2019 period.

3. GrainCorp Feeds Ltd

3.1 Introduction

3.1.1 Process description

GrainCorp Feeds Ltd (GrainCorp) 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.

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

- the water soluble molasses and condensed distiller syrup (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.

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

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, GrainCorp 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.

This consent contains the standard special conditions as given in Section 1.2 and two additional special conditions;

Condition 4 requires that all hazardous substances stored in the stormwater catchment area are bunded.

Condition 7 limits the filtered carbonaceous biochemical oxygen demand in the Mangati Stream to 2 g/m^3 beyond a mixing zone of 20 metres.

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 6 August 2015, 17 November 2015, 27 January 2016 and 13 June 2016.

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

In general the site was found to be clean and tidy. However, the 17 November 2015 inspection found that the drain wardens needed to be cleaned out and GrainCorp agreed to carry this out in the next few days. The 13 June 2016 inspection found that there was leaching of a product from the rubbish bins. GrainCorp was directed to clean this up to ensure consent conditions were complied with.

3.2.1.2 Results of discharge monitoring

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 STW001138).

The discharge points were visited for sampling on four occasions during the year. During two of the visits (one dry weather and one wet weather), no discharges were occurring or there was insufficient flow to be sampled. Two samples of stormwater were taken from the flow exiting GrainCorp's site during two wet weather surveys of the monitoring period.

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

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Table 7 Chemical monitoring results for GrainCorp's stormwater discharge-site STW001138

Parameter	BOD	Conductivity	Oil and Grease	pH	Suspended solids	Temperature	Turbidity
Unit	**g/m³**	**mS/m@20C**	**g/m³**	**pH**	**g/m³**	**Deg.C**	**NTU**
Minimum	3.7	3.5	0.5	6.2	4	8.9	2.8
Maximum	220	34.8	3	7.7	240	20.8	130
Median	8	7.4	1.7	7.3	30	15.4	18
Number	8	9	3	9	9	9	9
18 Jan 2016 (w)	b	b	b	b	b	b	b
26 Feb 2016 (d)	b	b	b	b	b	b	b
17 Mar 2016 (w)	5.6	3.5	<0.5	7.3	18	19.0	10
25 May 2016 (w)	8.1	11.3	a	7.4	67	8.9	51
Consent Limit	*25*	-	*15*	*6-9*	*100*	-	-

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

All results were found to comply with the BOD, pH, suspended solids and oil/grease limits set out in the consent conditions.

3.2.2 Investigations, interventions, and incidents

During the period under review, the Council was not required to undertake additional investigations and interventions, or record incidents, in association with GrainCorp's conditions in resource consents or provisions in Regional Plans.

3.3 Discussion

3.3.1 Discussion of site performance

Significant improvements in the structural and procedural controls at the site that were noted in previous years have continued into the current year. Issues noted were minor and the improvement in performance from the latter part of the previous monitoring year was continued during the 2015-2016 monitoring year.

GrainCorp updated the contingency and stormwater management plans for the site in August 2016.

3.3.2 Environmental effects of exercise of consents

The stormwater discharge samples taken during the period under review were found to be compliant. 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. However it is noted that this site may have contributed to the elevated BOD levels noted in the stream during wet weather surveys.

3.3.3 Evaluation of performance

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

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

Purpose: ***To discharge stormwater into the Mangati Steam***		
Condition 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 Bin leaking contaminants found on site
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

Purpose: *To discharge stormwater into the Mangati Steam*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
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
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	Yes
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	Yes
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
Overall assessment of consent compliance and environmental performance in respect of this consent		**Good**
Overall assessment of administrative performance in respect of this consent		**High**

N/A = not applicable or not assessed

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

3.3.4 Recommendations from the 2014-2015 Annual Report

In the 2014-2015 Annual Report, it was recommended:

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

This recommendation was implemented during the 2015-2016 monitoring period.

3.3.5 Alterations to monitoring programmes for 2016-2017

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 2016-2017 that the monitoring programme remains similar to that undertaken in the 2015-2016 year. A recommendation to this effect is attached to this report.

3.4 Recommendation

THAT monitoring programmed for the consented activities of GrainCorp Feeds Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

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.

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.

Consent **4664-3** contains the standard special conditions as given in Section 1.2.

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 7 August 2015, 17 November 2015, 21 March 2016 and 13 June 2016.

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

The inspections found the site to be generally clean and tidy, however there were recurring issues with the silt control throughout the period.

The 7 August 2015 inspection (a wet weather inspection) found that a light hydrocarbon sheen was visible in the ring drains, and the sock on the discharge from the settling pond was blocked, and hydrocarbons were visible in the discharge from the sock. Staff advised that the sock would be cleaned. The 21 March 2016 inspection also noted that it appeared that this sock had not been cleaned for some time.

During the 13 June 2016 inspection, possible improvements to silt controls were discussed. It was also noted that rocks had been placed around the stormwater sump in the yard to help avoid sediment entering the sump.

4.2.1.2 Results of discharge monitoring

The primary monitoring site for Greymouth Petroleum's discharge is at site (IND001012) where it discharges into a drain which discharges to the Mangati Stream.

The site was visited four times during the period under review. On three occasions, (two of the wet weather surveys and one dry weather survey) no discharge was occurring and consequently no sample could be collected.

The samples collected from site IND001012 are given in Table 9 along with a summary of all results from the site. The results were found to be in compliance with the limits imposed by consent 4664-3 for oil and grease and the pH range; however the suspended solids concentration was exceeded.

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 results[1].

Table 9 Chemical monitoring results Greymouth Petroleum stormwater-site IND001012

Parameter	Conductivity	Acid Soluble Copper	Dissolved Copper	Oil and Grease	Acid Soluble Lead	pH	Suspended solids	Temp	Acid Soluble Zinc	Dissolved Zinc
Unit	**mS/m@20C**	**g/m³**	**g/m³**	**g/m³**	**g/m³**	**pH**	**g/m³**	**Deg.C**	**g/m³**	**g/m³**
Minimum	1.8	0.01	0.01	0.5	0.05	6.3	3	10	0.01	0.009
Maximum	564	0.23	0.06	84	0.78	8.3	880	22.8	1.37	0.853
Median	6.65	0.05	0.02	2	0.07	7.1	71	15	0.28	0.027
Number	40	39	23	33	38	41	41	41	39	23
18 Jan 16 (w)	b	b	b	b	b	b	b	b	b	b
26 Feb 16 (d)	b	b	b	b	b	b	b	b	b	b
17 Mar 2016 (w)	4.2	0.04	<0.01	<0.5	0.05	7.1	**190**	16.0	0.135	0.011
25 May 2016 (w)	b	b	b	b	b	b	b	b	b	b
Consent limit	-	-	-	*15*	-	*6-9*	*100*	-	-	-

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded
(d) dry weather survey (w) wet weather survey (b) not discharging at the time of sample survey

[1] Those samples having no visible sheen and no odour are assumed to contain < 2 g/m^3 of oil and grease.

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 3 of the 21 samples analysed have complied with the consent limit. During this period there was also a non compliance in regard the level of suspended solids. Due to the persistent issues in regard to suspended solids in Greymouth's Petroleum's discharge, an abatement notice was issued to with a view that of pursuing more enforcement action should any further non-compliant samples be found.

At the time of this non-compliance the discharge from site MGT000495 (combined discharges from Greymouth Petroleum, Tasman Oil Tools and First Gas) contained 100 g/m^3 suspended solids, which complies with RFWP guidelines and no effect was noted in the receiving water.

Copper, lead and zinc are monitored at this site as it is known that, historically, greases containing cooper, lead and zinc were washed from pipes and the wash water was discharged to land. Although the grease currently used does not contain these elements, and the washdown wastes are now directed to sewer, this historical practice has resulted in an elevated concentration of copper, lead and zinc in the soil on site. 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 may become entrained in stormwater.

The results for acid soluble copper, lead and zinc and dissolved copper and zinc were all below the median values of previous results. The metals concentrations were all below the limits imposed on Tasman Oil Tools pipe yard, which also 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 period under review, the Council was required to undertake additional investigations and record an incident in association with Greymouth Petroleum's conditions in resource consents or provisions in Regional Plans. This resulted in an abatement notice being issued.

30 March 2016
Analysis of samples collected during a wet weather survey on 1 March 2016 recorded a suspended solids concentration of 190 g/m^3, exceeding the consented limit of 100 g/m^3. An abatement notice was issued on 22 April 2016 in respect to this non-

compliance. The consent holder is undertaking work to rectify the consistent suspended solid exceedances found at this site.

4.3 Discussion

4.3.1 Discussion of site performance

The ongoing non-compliances in regard to the level of suspended solids in the discharge continue to be an issue at the site. As a result of this, an abatement notice was issued.

Inspections noted that some work had been undertaken to reduce sediment loads in the discharges. This included the laying down of coconut matting, the use of a sediment sock and metalling the site perimeter with a larger grade of metal.

Updates to stormwater and contingency plans were noted to have been overdue for some time, however at the time of the preparation of this report Greymouth Petroleum submitted updated plans and has indicated that further updates will be submitted upon the completion of planned works to further improve silt control. These proposed works include and upgrade to the skimmer pit which is programmed to occur in the dry season.

It is noted that the most recent sample taken by Council staff (in the subsequent monitoring period) was found to be compliant with consent conditions.

4.3.2 Environmental effects of exercise of consent

During the year under review, a small increase in dissolved cooper 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 contribution from the Tasman Oil Tools discharge to the increase of dissolved copper. The level of dissolved copper and zinc found downstream of the site was within the USEPA chronic exposure guideline of 0.005 g/m^3 for Cu and 0.058 g/m^3 for Zn respectively.

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

Purpose: ***To discharge treated stormwater from a pipe yard***		
Condition 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 control 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	No
7. Plan to be reviewed on request from Council or prior to changes at the site	Reviewed document supplied November 2016	Yes
8. 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		**Improvement required**
Overall assessment of administrative performance in respect of this consent		**Good**

N/A = not applicable or not assessed

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

4.3.4 Recommendation from the 2014-2015 Annual Report

In the 2014-2015 Annual Report, it was recommended:

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.

This recommendation was implemented during the 2015-2016 monitoring period.

4.3.5 Alterations to monitoring programmes for 2016-2017

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 2016-2017 the monitoring programme remains at a similar level to that carried out in 2015-2016. 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 2016-2017 year continues at a similar level to that programmed for 2015-2016.

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.

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.

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 of stormwater from an industrial site, used for an oil field service operation, into the Mangati Stream. 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.

Consent 2337-3 contains the standard conditions as given in Section 1.2, one additional condition and one modified condition;

Condition 4 (additional) requires that all above ground hazardous storage areas be bunded.

Condition 5 (modified) places the standard and additional limits on the constituents of the discharge with special regard to chloride, biochemical oxygen demand (BOD) and unionised ammonia.

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 5 August, and 13 November 2015, and 27 January and 13 June 2016.

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

The inspections of 5 August 2015, 13 November 2015, and 27 January 2016, noted sediment being tracked towards a stormwater drain on the lower yard, which had been an ongoing issue in the previous monitoring year.

Options to avoid tracking were discussed on the 13 June 2016 inspection. This inspection also noted that new drain socks had been installed in May 2016.

The 13 November 2015 inspection also noted that the drain filters were in need of cleaning. This had been addressed by the time of the subsequent inspection.

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 period under review are given in Table 11. Historically, relatively few samples have been collected because of the rapid runoff of stormwater from this small sub-catchment. During the period under review this site was visited twice during wet weather surveys and once during a dry weather survey. Samples were collected during the wet weather surveys, while the stormwater was not discharging during the dry weather survey.

Table 11 Chemical monitoring results for Halliburton's' stormwater-site STW002042

Parameter	Conductivity	Oil and Grease	pH	Suspended solids	Temperature
Unit	mS/m@20C	g/m³	pH	g/m³	Deg.C
Minimum	2.2	0.8	4.3	3	9.1
Maximum	60.6	64.8	9.5	85	23.2
Median	4.7	3.5	7.6	23	15
Number	28	25	28	27	28
18 Jan 2016 (w)	b	b	b	b	b
26 Feb 2016 (d)	b	b	b	b	b
17 Mar 2016 (w)	44.6	7.9	**4.3**	13	16.5
Consent limits	-	*15*	*6-9*	*100*	-

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded
b not discharging or insufficient flow at time of sampling survey
(d) dry weather survey (w) wet weather survey

The consent limits on oil and grease and suspended solids were complied with in the sample collected from the top yard interceptor discharge during the year under review. The pH of the sample was found to not comply with consent limits, however it was noted at the time that only a trickle discharge was occurring and no effects were noted in the quality of stormwater entering or exiting the ponds.

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 18.1.1). The primary monitoring site for the lower yard is at a manhole over a stormwater drain near the north eastern corner of the building (site STW001009). During the period under review this site was visited three times during wet weather surveys

and once during a dry weather survey. A sample was collected on one occasion, while on the other three sampling occasions no discharge was occurring. The results from chemical monitoring at this site are given in Table 12.

Table 12 Chemical monitoring results for Halliburton's' lower yard stormwater discharge-site STW001009

Parameter	BOD	Conductivity	Copper Dissolved	Oil and Grease	pH	Suspended solids	Temp	Un-ionised ammonia	Zinc Acid Soluble
Unit	g/m³	mS/m@20C	g/m³	g/m³	pH	g/m³	Deg.C	g/m³	g/m³
Minimum	1	2.6	0.01	0.5	6.4	4	9.2	0.00006	0.091
Maximum	10	76.8	0.12	89	9.5	1530	22.7	0.02029	1.05
Median	3.2	6.2	0	1.6	7.3	130	15.1	0.00508	0.426
Number	14	39	19	33	39	39	35	13	24
18 Jan 2016 (w)	b	b	b	b	b	b	b	b	b
26 Feb 2016 (d)	b	b	b	b	b	b	b	b	b
17 Mar 2016 (w)	1.5	4.5	<0.01	<0.5	8.9	**130**	16.8	0.00770	0.108
23 Jun 2016	b	b	b	b	b	b	b	b	b
Consent limit	*5*	-	*0.025*	*15*	*6-9*	*100*	-	*0.025*	-

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 17 March 2016. However there was an exceedance in suspended solids. No significant effects in the receiving environment were noted at the time. As the preceding sample had also exceeded suspended solids limit, an explanation was requested and an infringement notice was issued.

5.2.2 Investigations, interventions, and incidents

In the period under review, the Council was required to undertake additional investigations and interventions, or record incidents, in association with Halliburton's conditions in resource consents or provisions in Regional Plans.

30 March 2016
Analysis of samples collected during a wet weather survey on 23 March 2016 recorded a suspended solids concentration of 130 g/m³, exceeding the consented limit of 100 g/m³. A letter requesting an explanation was sent to the consent holder and an explanation was received. As this exceedance contravened an existing abatement notice, an infringement fine was issued on 23 May 2016 in respect to this non-compliance. The consent holder is undertaking work to rectify the persistent suspended solid exceedances found at this site.

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 year under review.

During the monitoring period, the suspended solids limits set by Halliburton's stormwater consent were exceeded on the one survey when discharges were occurring.

In the 2015-2016 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 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 was a breach 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 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

Purpose: ***To discharge stormwater from an industrial site into the Mangati Stream***		
Condition 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	No
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

Purpose: *To discharge stormwater from an industrial site into the Mangati Stream*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
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
10. 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
12. 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		**Improvement required**
Overall assessment of administrative performance in respect of this consent		**Good**

N/A = not applicable or not assessed

Halliburton New Zealand Ltd demonstrated a good level of administrative performance, however an improvement in environmental performance and compliance with their resource consents and as defined in Section 1.1.4 is required.

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 been issued with an infringement notice in regards to exceedances in suspended solids in their discharge.

5.3.4 Recommendation from the 2014-2015 Annual Report

In the 2014-2015 Annual Report, it was recommended:

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

This recommendation was implemented in the 2015-2016 period.

5.3.5 Alterations to monitoring programmes for 2016-2017

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 2016-2017 the monitoring programme remains similar to that undertaken in the 2015-2016 year. 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 2016-2017 year continues at a similar level to that programmed for 2015-2016.

6. J Swap Contractors Ltd

6.1 Introduction

6.1.1 Process description

J Swap Contractors Limit (J Swap) operate a feed store on the corner of Corbett Road and de Havilland Drive.

The site is predominantly used for the storage and dispatch palm kernel expeller cattle feed (PKE). There are two feed stores on the site in which PKE is stored, screened and then loaded on to trucks for delivery. A small section of one of the buildings is occupied by Balance Agri-Nutrients where fertilisers are stored and transferred.

J Swap operate a truck wash onsite which sends wash water to tradewaste. After 60 minutes of rain (with no washing activity) it then diverts stormwater from the wash pad to mix with roof water for discharges to an unnamed tributary of the Mangati Stream. This is done to minimise the entrainment of contaminants in the stormwater prior to discharge to the Mangati Stream. The site also contains a truck refuelling facility.

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.

J Swap holds water discharge permit **10085-1** to discharge stormwater from a transport depot into an unnamed tributary of the Mangati Stream. This consent was issued by the Council on 7 October 2015 under Section 87(e) of the RMA. It expires on 1 June 2032.

Consent 10085-1 contains special consent conditions as given in Section 1.2. As well as five extra conditions that deal with site development and the provision of stormwater system designs and as built plans.

6.2 Results

6.2.1 Water

6.2.1.1 Inspections

The site was visited on 17 November 2015, 22 January 2016 and 21 March 2016.

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

The inspection of 17 November 2015 found some minor issues in regard to product spills and tracking and also noted there was bulldozer leaking fluid in the yard. The consent holder was advised to address these issues.

The inspection of 21 March 2016 was done in conjunction with NPDC in response to an issue encountered with stormwater tradewaste diverter valve on the truck wash. It was noted that the system was not receiving the regular maintenance it required.

The inspection of 21 March 2016 identified several areas of concern including the presence of a mobile conveyor in the yard that was covered in PKE as it had not been cleaned after use. Product tracking was noted in the yard and it was also noted that yard was not receiving regular sweeping. This was considered to be breach of consent conditions and an incident was logged as a result of this (see Section 6.2.2).

6.2.1.2 Results of discharge monitoring

Treated stormwater is discharged to the Mangati Stream system in two places. Roof water combined with stormwater from the truck wash area discharges directly to the piped unnamed tributary of Mangati Stream (site STW001141) whilst water from the other areas of the site are directed to the old stream gully where is finally discharged via decanters to a riser in the piped tributary (site STW002089).

The results from chemical monitoring at site STW002089 are given in Table 14.

Table 14 Results from monitoring of stormwater from J Swap-site STW002089

Parameter	BOD	Conductivity	Oil and Grease	pH	Suspended solids	Temp.
Units	**g/m³**	**mS/m@ 20'C**	**g/m³**	**pH**	**g/m³**	**Deg.C**
25 May 2016 (w)	1.1	9.8	a	7.0	49	11.2
Consent Limits	*5**	-	*15*	*6-9*	*100*	-

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
* limit is for carbonaceous BOD

Table 15 Results from monitoring of stormwater from J Swap-site STW001151

Parameter	BODC	BODCF	Conductivity @ 20'C	Oil and Grease	pH	Suspended solids	Temp.
Unit	**g/m³**	**g/m³**	**mS/m**	**g/m³**	**pH**	**g/m³**	**Deg.C**
17 Mar 2016 (w)	3.7		0.58	<0.5	6.6	9	15.9
25 May 2016 (w)	-	1.2	16.1	b	7.5	8	13.0
Consent limits	*5*	-	-	*15*	*6-9*	*100*	-

Key: BODC = carbonaceous biochemical oxygen demand
BODCF= filtered carbonaceous biochemical oxygen demand
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 the time of sampling, the discharges complied with consent conditions for pH range, oil/grease, BOD and suspended solids during the period under review.

6.2.2 Investigations, interventions, and incidents

In the period under review, the Council was required to undertake significant additional investigations and interventions, or record incidents, in association with J Swap's conditions in resource consents or provisions in Regional Plans.

11 January 2016
A complaint was received concerning odour discharging from a stock feed storage shed on Corbett Road, Bell Block. A visit to the complainant's property found distinct noticeable palm kernel odours. The odour was not considered objectionable at the time but may have been if it continued. J Swap were advised that further discharges may be considered non-compliant.

25 January 2016
A compliant was received regarding odour being emitted from the J Swap storage facility on Corbett Road, Bell Block. Investigation found that no odour was being discharged at the time of the inspection, however the lack of treatment facilities at the storage facility means that compliance with rule 16 of the Regional Air Quality Plan for Taranaki will be difficult to attain. A meeting was held with J Swap to address such matters.

30 January 2016
A complaint was received regarding an odour emanating from a newly constructed palm kernel storage building on Corbett Road, New Plymouth.

An odour survey was undertaken and over a period of time objectionable odour was found to be discharging beyond the boundary of the site. Inspection of the site found that best practicable option was not being undertaken. There was evidence that palm kernel may have discharged into the stormwater system. Abatement notices were issued requiring no objectionable odour to occur beyond the site boundary and for no contaminants to discharge to any waterbody. Re-inspection found that the abatement notices were being complied with at the time of inspection. An infringement notice was also issued.

3 February 2016
A complaint was received regarding an odour emanating from a palm kernel store on Corbett Road, Bell Block.

An odour survey found intermittent objectionable palm kernel odour beyond the boundary of the property. A letter of explanation was received. A meeting was held with J Swap staff about objectionable odours discharging from the site and the likely discharge of contaminants to stormwater. J Swap undertook to implement a number of improvements on site to prevent unauthorised discharges to air and water. An explanation was received and accepted.

21 March 2016
During routine monitoring it was found that the resource consent conditions were not being complied with at a palm kernel store on Corbett Road, Bell Block.

It was found that best practicable option had not been taken to avoid adverse effects on the environment. A conveyor sifter had been placed outside near a drain without

first being cleaned of palm kernel. Palm kernel on the yard had also not been removed. At the time of inspection J Swap put the conveyor sifter back inside the building and undertook works to remove palm kernel off the yard. A letter requesting explanation was sent. A meeting was held with J Swap to discuss compliance options. An explanation was received and accepted.

6.3 Discussion

6.3.1 Discussion of site performance

There we several issues identified at the site during the period under review which included poor control of odour emissions and product being found in the yard where it was likely to be entrained in stormwater. As a result two abatement notices and an infringement notice were issued. J Swap undertook works to address the issues.

It is also noted that the designs submitted during the consent application did not indicate that the truck wash stormwater diversion would be piped directly into the unnamed tributary of the Mangati Stream. The consent was processed with the understanding that all discharges would be directed through the retention pond and be released via the scruffy dome. As such the consent conditions only placed discharge limits at this discharge point.

As the misleading designs materially influenced the decision made on the application, this report will recommend that the consent be reviewed under Section 128 (1) (c) of the RMA to redress this.

6.3.2 Environmental effects of exercise of consent

During the year under review, no adverse effects were detected in regard to J Swap's stormwater discharges, however offensive and objectionable odours were detected beyond the site boundary after receiving complaints from neighbours.

6.3.3 Evaluation of performance

A tabular summary of J Swap's compliance record for the year under review is set out in Table 16.

Table 16 Summary of performance for J Swap's consent 10085-1

Purpose: ***To discharge stormwater from a transport depot into an unnamed tributary of the Mangati Stream***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Adopt best practice	Inspection	No
2. Limit on catchment area	Inspection	Yes
3. Stormwater water to be treated	Inspection/sampling	Yes
4. Limit on discharge constituents	Sampling	Yes
5. Maintain safe access to the sampling point	Inspection/sampling	No
6. Limit on effects	Sampling	Yes

Purpose: *To discharge stormwater from a transport depot into an unnamed tributary of the Mangati Stream*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
7. Submit final stage one stormwater plans	Documents received	Yes
8. Construction as per plans	Construction completed	Yes
9. Provide as built plans for stage one	Documents received	No Only original design plan submitted
10. Provide plans for stage future stages prior to construction	No further development as yet	Yes
11. Provide as built plans for subsequent development	No further development as yet	Yes
12. Operate site as per management plan	Inspection	No
13. Provide contingency plan	Documents received	Yes
Overall assessment of consent compliance and environmental performance in respect of this consent		**Improvement required**
Overall assessment of administrative performance in respect of this consent		**Improvement required**

N/A = not applicable or not assessed

During the year, J Swap demonstrated a poor level of environmental performance and an improvement is required in the administrative performance and compliance with the resource consents as defined in Section 1.1.4. There were substantiated odour complaints received resulting in enforcement action and it was found that best practice was not being adopted at the site. It also noted that the stormwater designs supplied with the application did not accurately reflect the manner in which stormwater from the truck wash was to be discharged and as a result it is recommended this consent be reviewed under Section 128(1) (c) of the RMA.

6.3.4 Recommendation from the 2014-2015 Annual Report

This is the first annual report for the J Swap site, therefore there is no recommendation from the previous report.

6.3.5 Alterations to monitoring programmes for 2016-2017

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 2016-2017 the monitoring programme remains similar to that undertaken in the 2015-2016 year. A recommendation to this effect is attached to this report.

6.4 Recommendations

1. THAT monitoring programmed for consented activities of J Swap Contractors Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

2. That consent 10085-1 be reviewed under section 128(1) (c) of the RMA to redress the lack of discharge standards at the point where the combined roof water and truck wash stormwater enter the piped unnamed tributary of the Mangati Stream.

7. McKechnie Aluminium Solutions Ltd

7.1 Introduction

7.1.1 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.

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.

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.

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

Consent **3139-3** contains the standard special conditions as given in Section 1.2 and one additional special condition;

Condition 2 requires the consent to be exercised in a manner consistent with the documentation provided in the consent application.

In addition to 3139, water discharge permit 1857 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.

7.2 Results

7.2.1 Water

7.2.1.1 Inspections

The site was visited on 21 August and 17 November 2015, and 21 January 2016, and 13 June 2016.

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. The inspection of 27 January 2016 found that some hazardous goods were stored outside of a bunded area. This was discussed and contingency measures were identified in the event of a spill. The inspection of 13 June 2016 noted that a new demineralisation unit had been installed, allowing process water to be re-used onsite.

7.2.1.2 Results of discharge monitoring

MCK's eastern stormwater is monitored primarily where it joins the Paraite Road stormwater drain, next to the plant entrance (site STW001014). The northern stormwater drain is monitored at a manhole within the plant (site STW001028).

The results from chemical monitoring at these primary sites are given in Table 17 and Table 18.

Site STW001014 was visited three times during the period under review, twice during wet weather surveys and on during a dry weather survey. On two occasions no discharge was occurring while on one wet weather survey a sample was collected. The sample complied with limits on the pH range, suspended solids and oil and grease.

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. The concentrations of these contaminants were all below median* values.

Table 17 Chemical monitoring results for McKechnie's eastern stormwater discharge-site STW001014

Parameter	Unit	Min	Max	Median*	N	18 Jan 2016 (w)	26 Feb 2016 (d)	17 Mar 2016 (w)	*Consent Limit*
Acid soluble aluminium	g/m³	0.1	13.8	0.4	37	b	b	0.26	-
Conductivity @20C	mS/m	1.3	153	8.2	56	b	b	1.4	-
Acid soluble copper	g/m³	0.01	13	0.17	50	b	b	0.04	-
Dissolved copper	g/m³	0.01	0.26	0.05	32	b	b	0.02	-
Acid soluble lead	g/m³	<0.05	0.96	0.025*	40	b	b	<0.05	-
Oil and Grease	g/m³	0.5	320	5.2	34	b	b	<0.5	*15*
pH	pH	6.9	11.4	7.5	56	b	b	6.9	*6 - 9*
Suspended solids	g/m³	2	470	19	55	b	b	6	*100*
Temperature	Deg.C	9.8	45	16.6	54	b	b	17.7	-
Turbidity	NTU	1.7	36	11	20	b	b	4.3	-
Acid soluble zinc	g/m³	0.043	10.6	0.662	50	b	b	0.321	-
Dissolved zinc	g/m³	0.034	2.52	0.428	33	b	b	0.271	-

Key: b not discharging at time of sampling survey
(d) dry weather survey (w) wet weather survey
* Medians are calculated by using one half of "less than" values in the data set. The minimum therefore can in some cases be less than the median as the minimum is calculated from raw values in the data set (including "less than's*)

Site STW001028 was visited three times during the year under review, twice during wet weather surveys and once during a dry weather survey. Samples were collected on both wet weather sampling occasions, while no discharge was occurring on the dry weather sampling occasion. Compliance was achieved with consent limits for pH, suspended solids, and oil and grease.

The metal concentrations on the survey of 17 February 2016 were found to be slightly higher that the median values, whilst the result from the survey of 17 March 2016 were all below median values.

Table 18 Chemical monitoring results for McKechnie's northern stormwater and cooling water-site STW001028

Parameter	Unit	Min	Max	Median	N	17 Feb 2016 (w)	26 Feb 2016 (d)	17 Mar 2016 (w)	*Consent Limit*
Acid Soluble Aluminium	g/m³	0.06	0.76	0.1	48	0.54	b	<0.1	-
Conductivity @ 20'C	mS/m	0.86	21	10.2	69	7.2	b	0.86	-
Acid Soluble Copper	g/m³	0.01	4.1	0.03	63	0.05	b	0.02	-
Dissolved Copper	g/m³	0.01	0.35	0.01	46	0.03	b	<0.01	-
Oil and Grease	g/m³	0.5	6.4	0.5	28	a	b	<0.5	*15*
pH	pH	6.7	10.2	7.6	69	7.2	b	6.7	*6-9*
Suspended solids	g/m³	2	42	3	62	10	b	<2	*100*
Temperature	Deg.C	9.8	23.3	15.6	67	22.4	b	17.7	-
Turbidity	NTU	0.17	4.8	1.75	30	3.2	b	1.9	-
Acid Soluble Zinc	g/m³	0.019	1.94	0.328	63	0.824	b	0.352	-
Dissolved Zinc	g/m³	0.006	1.12	0.322	46	0.754	b	0.315	-

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

7.2.2 Investigations, interventions, and incidents

In the period under review, 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.

7.3 Discussion

7.3.1 Discussion of site performance

Inspection found that the site was generally well managed during the period under review. On one occasion hazardous substances were found to be stored outside of a bunded area, however appropriate contingency measures were identified at the time of inspection and the issue was resolved prior to the subsequent inspection. No exceedances of consented discharge limits were found during sampling.

7.3.2 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 from 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.

Whilst there were measureable increases in dissolved copper and zinc in the receiving water below the pond's outlets, no significant adverse effects were noted.

7.3.3 Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Table 19.

Table 19 Summary of performance for McKechnie's Consent 3139-3

Purpose: ***To discharge stormwater (including cooling water) from an industrial site***		
Condition 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 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 July 2016	Yes
7. Maintenance of stormwater management plan	Updated plan received Sept 2016	Yes
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		**High**
Overall assessment of administrative performance in respect of this consent		**High**

N/A = not applicable or not assessed

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

7.3.4 Recommendation from the 2014-2015 Annual Report

In the 2014-2015 Annual Report, it was recommended:

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

This recommendation was implemented during the 2015-2016 monitoring period.

7.3.5 Alterations to monitoring programmes for 2016-2017

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 2016-2017 the monitoring programme remains similar to that undertaken in the 2015-2016 year. A recommendation to this effect is attached to this report.

7.4 Recommendation

THAT monitoring programmed for consented activities of McKechnie Aluminium Solutions Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

8. New Plymouth District Council

8.1 Introduction

8.1.1 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'.

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 300 mm 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.

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.

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.

8.2 Results

8.2.1 Water

8.2.1.1 Inspections

During the period under review inspections were undertaken in the area of the constructed ponds, and of the discharges to the Mangati Stream on 21 August 2015, 13 November 2015, 27 January 2016 and 13 June 2016.

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

During the inspections no significant issues were noted. Some 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.

8.2.1.2 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 20.2.

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 2 STW001054 and STW001055). 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 20.2 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 20.

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 26 February 2016.

The sample taken on 18 January 2016 was found to have a high level of biochemical oxygen demand. During this wet weather survey the rain stopped unexpectedly and therefore the full run was not completed and tracking the source of the discharge

was therefore problematic. A follow up dry weather run did not find any non-stormwater discharges of this nature occurring at this site or at any of the sites contributing to the de Havilland drive stormwater main. Two subsequent wet weather samples returned far lower results although it is noted that the sample of 25 May 2016 was slightly higher that the RFWP guideline limit for BOD.

Table 20 Chemical monitoring results for stormwater discharged to the Mangati Stream from De Havilland Drive West-site STW001054

Parameter	BOD	Conductivity	Dissolved reactive phosphorus	Oil and Grease	pH	Suspended solids	Temp.	Un-ionised ammonia
Limit	**g/m³**	**mS/m@20C**	**g/m³ P**	**g/m³**	**pH**	**g/m³**	**Deg.C**	**g/m³**
Minimum	0.6	1.6	0.004	0.4	6	2	7.5	0
Maximum	66	33.9	4.44	45	9.1	1100	22.2	0.04622
Median	5	6.3	0.108	1.3	7.1	24	15.6	0.00051
Number	32	68	31	46	68	68	65	32
18 Jan 2016 (w)	**65**	16.4	0.218	b	7.1	33	20.0	0.01008
26 Feb 2016 (d)	b	b	b	b	b	b	b	b
17 Mar 2016 (w)	3.3	2.2	0.030	<0.5	6.9	34	16.1	0.00057
25 May 2016 (w)	**7.2**	9.9	0.175	b	7.2	59	11.5	0.00093
RWFP limits	*5*	-	-	*15*	*6-9*	-	*100*	*0.025*

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

8.2.2 Investigations, interventions, and incidents

In the period under review, the Council was required log and incident 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. One incident was logged in regard to a sewer odour that was identified as coming from the NPDC sewer network.

21 January 2016
A complaint was received regarding a sewage odour affecting an industrial property on Connett road, Bell Block. Investigation found no sewage related odours present at the affected parties location, very slight sewage odours were found at the upwind pumping station. NPDC were informed of the complaint and investigated the cause, this was identified as a local contractor discharging odorous products via trade waste. NPDC contacted the contractor in question and dealt with the matter.

8.2.2.1 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.

9 November 2015
An overflow of sewage occurred on Connett Rd, Bell Block Road due to a damaged pipe. The damage was repaired and the site was sanitised.

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

14 December 2015
A sewer line blockage from fat deposit was caused an overflow of wastewater from a manhole at Coby Sydney Drive, Bell Block. The blockage was cleared and the site was cleaned and sanitised.

8 June 2016
At the Bell Block Sewage Pumping Station (SPS) a power outage resulted in pump failure causing wastewater overflow from the pump station. This was found to be the result of an un-notified planned power outage. Power outage notification processes were reviewed as result of this incident.

8.3 Discussion

8.3.1 Discussion of site performance

The wetlands were found to be well maintained during the year under review and no significant issues were noted.

There was only one sewage overflow to the Mangati Stream and this was dealt with in a timely manner.

8.3.2 Environmental effects of exercise of consent

No significant adverse effects were noted as direct result of the exercise of NPDC's stormwater discharge consent. Discharges from NPDC outfalls are likely to have contributed to the transitory elevation in concentrations of BOD found in the stream during wet weather surveys. However, 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 20 covering the combined discharges and Section 21 covering the Mangati Stream chemical monitoring.

8.3.3 Evaluation of performance

A tabular summary of NPDC's compliance record for the year under review is set out in Table 21.

Table 21 Summary of performance for NPDC's Consent 4302-2

Purpose: ***To discharge up to 5,200 litres/second of stormwater from industrial sealed areas and roofs***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Consent to be exercised in accordance with application information	Inspection and discussion with consent holder	Yes
2. Adoption of best practicable option to minimise effects	Inspection and discussion with consent holder	Yes
3. Provision of designs, specifications and operating procedures	Review of Council records	Yes
4. Prevention and mitigation of erosion	Inspection	Yes
5. Optional review provision re environmental effects	No further option for review prior to expiry	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

N/A = not applicable or not assessed

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

8.3.4 Recommendation from the 2014-2015 Annual Report

In the 2014-2015 Annual Report, it was recommended:

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

This recommendation was implemented.

8.3.5 Alterations to monitoring programmes for 2016-2017

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 2016-2017 the programme remains similar to that undertaken in the 2015-2016 year. A recommendation to this effect is attached to this report.

8.4 Recommendation

THAT monitoring programmed for consented activities of New Plymouth District Council in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

9. Nexans New Zealand Ltd

9.1 Introduction

9.1.1 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 bund 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 July 2016 being received and accepted by the Council.

A comprehensive Environmental Management System has been put in place at the Nexans site, and a revised stormwater management plan was received in May 2015.

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.

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. The current consent was granted 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.

Consent 4497-3 contains the standard special conditions as given in Section 1.2 and one additional special condition;

Condition 3 requires all hazardous substances storage areas to be bunded.

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

9.1.3 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.

Nexans 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.

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

9.2 Results

9.2.1 Water

9.2.1.1 Inspections

The site was inspected on 6 August 2015, 13 November 2016, 27 January 2015, and 13 June 2016.

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 13 June 2016 that the area around the dangerous goods store had a layer of sediment that required attention.

9.2.1.2 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 22 and Table 23.

The uppermost monitoring point was visited three times and two samples were collected during wet weather surveys at this site during the period under review. The third occasion was during a dry weather survey and no discharge was occurring. The pH range and oil grease concentrations 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 therefore inspected visually and analysed for turbidity with full suspended solids analysis to be undertaken if required.

Table 22 Chemical monitoring results for Nexans cooling water and eastern stormwater discharge-site STW001025

Parameter	Conductivity	Acid soluble copper	Dissolved copper	Oil and grease	pH	Temp.	Turbidity	Acid soluble zinc	Dissolved zinc
Unit	**mS/m@20C**	**g/m³**	**g/m³**	**g/m³**	**pH**	**Deg.C**	**NTU**	**g/m³**	**g/m³**
Minimum	0.4	0.01	0.01	0.5	6.3	9.5	0.68	0.028	0.025
Maximum	72.4	0.16	0.1	2.5	8.2	28	31	1.98	1.98
Median	5.1	0.03	0.01	0.2	7.1	15.7	2.2	0.182	0.071
Number	64	57	35	30	64	64	25	58	35
18 Jan 2016 (w)	5.5	0.04	0.03	a	7.0	19.4	5.4	0.068	0.064
26 Feb 2016 (d)	b	b	b	b	b	b	b	b	b
17 Mar 2016 (w)	9.9	0.01	<0.01	<0.5	6.7	16.5	7.8	0.116	0.071
Consent limits	-	-	-	*15*	*6-9*	-	-	-	-

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.

Acid soluble copper and dissolved copper concentrations in the discharge were above median on 18 January 2016 and below median on 17 March 2016. Acid soluble zinc and dissolved zinc concentrations were equal to or below median on both sampling occasions.

Overall the concentrations of these metals were found to be at acceptable levels.

Three samples were collected during wet weather surveys from the central drain and Nexans western stormwater discharge during the period under review (STW001011, Table 23). The site was visited on one further occasion during a dry weather survey and was not discharging at this time. All results complied with consent conditions.

Table 23 Chemical monitoring results for NPDC's central drain and Nexans western stormwater discharge-site STW001011

Parameter	Ammoniacal nitrogen	Conductivity	Oil and Grease	pH	Temp.	Turbidity
Unit	**g/m³ N**	**mS/m@20C**	**g/m³**	**pH**	**Deg.C**	**NTU**
Minimum	0.024	1.1	0.5	5.9	8.7	6.1
Maximum	4.2	55.7	110	9.7	22.4	53
Median	0.109	5.8	1.2	7	15.3	15
Number	63	67	32	67	65	28
18 Jan 2016	1.12	8.8	a	7.1	20.5	18
26 Feb 2016	b	b	b	b	b	b
17 Mar 2016	0.048	1.1	<0.5	6.8	16.3	6.1
25 May 2016	0.087	8.3	a	6.9	10.6	17
Consent limits	-	-	*15*	*6-9*	-	-

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 on 18 January 2016. 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.

9.2.2 Air

Air inspections were carried out in conjunction with site water inspections on 6 August and 13 November 2015 and 27 January and 13 June 2016.

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

9.2.3 Investigations, interventions, and incidents

In the period under review, 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.

9.3 Discussion

9.3.1 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.

9.3.2 Environmental effects of exercise of consents

No adverse environmental effects were observed as a result of stormwater discharges or air emissions originating from the Nexan's site during the 2015-2016 monitoring period.

9.3.3 Evaluation of performance

A tabular summary of Nexans compliance record for the year under review is set out in Table 24, and Table 25.

Table 24 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?**
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. Above ground hazardous substance storage to be bunded and not to drain directly to stormwater catchment	Inspection and discussion with consent holder	Yes
4. Limits on chemical composition of discharge	Sampling	Yes
5. Discharge cannot cause specified adverse effects beyond mixing zone	Receiving water and sediment sampling. Biomonitoring	Yes
6. Maintenance of a contingency plan for action to be taken to prevent spillage	Review of documents provided. Plan on file dated July 2013	Yes
7. Maintenance of stormwater management plan	Plan on file June 2015	Yes
8. Written notification required regarding changes to activities at the site	Inspection and discussion with consent holder	Yes
9. 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 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

Table 25 Summary of performance for Nexans Consent 5417-2

Purpose: ***To discharge emissions to air***		
Condition 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	Plan received	Yes
8. Optional review provision re environmental effects	Option for review in June 2020	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

N/A = not applicable 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.

9.3.4 Recommendation from the 2014-2015 Annual Report

In the 2014-2015 Annual Report, it was recommended:

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

This recommendation was implemented during the 2015-2016 monitoring period.

9.3.5 Alterations to monitoring programmes for 2016-2017

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 2016-2017 the programme remains similar to that undertaken in the 2015-2016 year. A recommendation to this effect is attached to this report.

9.4 Recommendation

THAT monitoring programmed for consented activities of Nexans New Zealand Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

10. OMV New Zealand Ltd

10.1 Introduction

10.1.1 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.

10.1.2 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 **3913-3** to cover the discharge of treated stormwater from a transport depot into the Mangati Stream from this site. This consent replaces permit **3913-2** which 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. Consent 3913-3 was granted on 24 September 2015.

Consent 3913-3 contains the standard special consent conditions as given in Section 1.2 with one modified condition that places a limit of the BOD concentration in the discharge.

10.2 Results

10.2.1 Water

10.2.1.1 Inspections

The site was visited on 17 November 2015, 27 January 2016 and 13 June 2016.

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 were noted during the 13 June 2016 inspections including some sediment tracking from an unsealed to a sealed section of the site and a stormwater drain that required cleaning.

10.2.1.2 Results of discharge monitoring

OMV's primary monitoring site is immediately below the oil separator for treating the site stormwater discharged (IND002013). This site was visited on four occasions during the year and three samples were collected during wet weather surveys. The fourth occasion was during a dry weather survey and no discharge was occurring. The results from chemical monitoring at this site are given in Table 26.

Table 26 Results from monitoring of stormwater from OMV-site IND002013

Parameter	BOD	Conductivity	Dissolved reactive phosphorus	Oil and Grease	pH	Suspended solids	Temp.	Ammoniacal nitrogen
Units	**g/m³**	**mS/m@ 20'C**	**g/m³ P**	**g/m³**	**pH**	**g/m³**	**Deg.C**	**g/m³ N**
Minimum	2	1.3	0.018	0.5	6.5	6	7.7	0.017
Maximum	500	74.4	11.2	230	9.4	1000	22.3	36.5
Median	7	7.29	0.249	2.2	7.2	68	14.4	0.33
Number	52	62	59	42	62	61	60	62
18 Jan 2016	**26**	10.8	0.185	a	6.7	100	20.9	1.77
26 Feb 2016	b	b	b	b	b	b	b	b
17 Mar 2016	2.0	1.3	0.025	<0.5	6.6	12	18.8	0.067
25 May 2016	5.4	6.8	0.018	<0.5	6.6	80	7.7	0.035
Consent Limits	*16*	-	-	*15*	*6-9*	*100*	-	*10*

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 and suspended solids during the period under review. There was one exceedance of BOD in the sample taken on 18 January 2016 and as result an incident was raised and this is discussed in Section 10.2.2.

All subsequent results were found to be compliant with consent conditions for all parameters including BOD.

10.2.2 Investigations, interventions, and incidents

In the period under review, the Council was 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.

26 January 2016
Analysis of samples collected during a wet weather survey on 18 January 2016 recorded a BOD of 26 g/m^3, exceeding the consented limit of 16 g/m^3. A letter requesting an explanation was sent to the consent holder and a reply was received. OMV investigated its site and found no obvious point source of contamination onsite and considered whether there was potential for there being a significant to diffuse contamination from the large number of sea gulls that frequent the area. It was outlined that OMV had invested in bird deterrents to rectify the issue. This explanation was accepted and it noted that all subsequent samples were compliant with consent conditions.

10.3 Discussion

10.3.1 Discussion of site performance

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

Stormwater monitoring found elevated biochemical oxygen demand on 18 January 2016, resulting in an explanation being requested and received. Preventative measures to avoid further breaches were put in place and all subsequent samples were compliant with consented limits. All other monitored parameters were compliant with consented limits on all occasions.

10.3.2 Environmental effects of exercise of consent

During the year under review, there were no significant adverse effects noted as a result of the exercise of OMV's water discharge consent. The exceedance in B0D found on 18 January is likely to have contributed to the elevations of BOD found downstream of the pond system during this survey. As noted in earlier sections, this was as found to be largely a transitory effect.

10.3.3 Evaluation of performance

A tabular summary of OMV's compliance record for the year under review is set out in Table 27 and Table 28.

Table 27 Summary of performance for OMV's Consent 3913-2

Purpose: ***To discharge up to 125 litres/second of treated stormwater from a transport depot***		
Condition 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
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

N/A = not applicable or not assessed

Table 28 Summary of performance for OMV's Consent 3913-3

Purpose: ***To discharge stormwater from an industrial site into an unnamed tributary of the Mangati Stream***		
Condition 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. Limits on chemical composition of discharge	Sampling	No
4. Discharge cannot cause specified adverse effects beyond mixing zone	Inspection/sampling	Yes
5. Maintenance of a contingency plan for action to be taken to prevent spillage	Inspection	Yes
6. Maintenance of stormwater management plan	Inspection	Yes
7. Written notification required regarding changes to activities at the site	Inspection and discussion with consent holder	N/A
8. Optional review provision re environmental effects and notifications of changes (S.C.9)	Next opportunity for review June 2020	Yes
Overall assessment of consent compliance and environmental performance in respect of this consent		**Good**
Overall assessment of administrative performance in respect of this consent		**High**

During the year, OMV New Zealand Ltd demonstrated a good level of environmental performance and a high level of administrative performance and

compliance with the resource consents as defined in Section 1.1.4. OMV had one non-compliance in regard to the BOD concentration of its discharge, however the matter was addressed and all subsequent samples have found to be compliant.

10.3.4 Recommendation from the 2014-2015 Annual Report

In the 2014-2015 Annual Report, it was recommended:

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

This recommendation was implemented during the 2015-2016 monitoring period.

10.3.5 Alterations to monitoring programmes for 2016-2017

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 2016-2017 the monitoring programme remains similar to that undertaken in the 2015-2016 year. A recommendation to this effect is attached to this report.

10.4 Recommendation

THAT monitoring programmed for consented activities of OMV New Zealand Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

11. Schlumberger New Zealand Ltd

11.1 Introduction

11.1.1 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 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 m^3 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.

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 m in height that are used to mix up the drilling mud. Once mixed the mud is tankered from the site. The LMP area is outdoors and is not covered with a roof to prevent stormwater from entraining contaminants. 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.

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.

11.1.2 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.

Consent 5987-1 contains the standard consent conditions as given in Section 1.2 and one additional special condition;

Special condition 3 requires the discharge from the LMP is treated in the manner detailed in the MI SWACO *Paraite Road Facility Stormwater Management Plan* or to an equivalent or better standard as approved by the Taranaki Regional Council.

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.

Consent 6032-1 contains the standard special conditions as given in Section 1.2 and three additional special conditions;

Condition 1 requires the consent to be exercised in accordance with the documentation supplies at the time of application.

Condition 5 places the standard and additional limits on the constituents of the discharge with special regard to dissolved copper, dissolved lead and dissolved zinc.

Condition 9 prohibits the discharge of wastes containing surfactants, solvents and any other degreasing agents.

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

11.2 Results

11.2.1 Water

11.2.1.1 Inspections

This site was inspected on 7 August 2015, 18 November 2015, 21 March 2016 and 14 June 2016.

The inspections focussed on evidence of spills, the maintenance and operation of treatment systems, and general housekeeping.

The site was found to be generally tidy and clean during all inspections. The 14 June 2016 inspection found some leaf litter and sediment in the gutter, while the bund around the brine tank was not secure. It was unknown whether this tank was empty.

11.2.1.2 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 (site STW001056), and the ABB site (site 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 29, and the results from the chemical monitoring at site STW001118 are given in Table 30.

Site STW002071 was visited on three occasions during the year, twice during wet weather surveys and once during a dry weather survey. Samples were collected on both wet weather sampling occasions, whilst no discharge was occurring during the dry weather survey. Compliance was achieved with the component concentrations for unionised ammonia, oil and grease, BOD and suspended solids on all monitoring occasions.

Table 29 Chemical monitoring results for stormwater discharged from Schlumberger's LMP site TRC site-STW002071

Parameter	BOD	Conductivity	Oil and Grease	pH	Suspended solids	Temperature	Un-ionised ammonia
Unit	g/m³	mS/m@20C	g/m³	pH	g/m³	Deg.C	g/m³
Minimum	0.5	0.55	0.5	6.6	3	8.7	0.00002
Maximum	100	301	4.2	8.7	270	22.1	0.01222
Median	1.8	5.9	1.2	7	19	15.3	0.00023
Number	17	17	8	17	17	17	17
26 Feb 2016 (d)	b	b	b	b	b	b	b
17 Mar 2016 (w)	0.5	0.55	<0.5	6.6	5	17.4	0.00008
25 May 2016 (w)	0.8	8.1	a	7.0	6	12.3	0.00007
Consent limit	*5*	-	*15*	*6-8*	*100*	-	*0.025*

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

Site STW001118 was visited four times during the year, three times during wet weather surveys and once during a dry weather survey. Samples were obtained on two of the wet weather surveys, while no discharge was occurring on the other two occasions.

Table 30 Chemical monitoring results for stormwater discharged from Schlumberger's warehouse/storage area-site STW001118

Parameter	BOD	Conductivity	Oil and Grease	pH	Suspended solids	Temperature	Un-ionised ammonia
Unit	g/m³	mS/m@20C	g/m³	pH	g/m³	Deg.C	g/m³
Minimum	0.9	1.9	0.5	6.8	16	8.4	0.00005
Maximum	9	12.6	3	9.4	320	18.9	0.00454
Median	2.7	5.6	0.2	7	34	14.1	0.0003
Number	15	15	6	15	15	15	15
18 Jan 2016 (d)	b	b	b	b	b	b	b
26 Feb 2016 (d)	b	b	b	b	b	b	b
17 Mar 2016 (w)	1.2	1.9	<0.5	6.9	24	17.5	0.00020
25 May 2016 (w)	0.9	9.0	a	7.0	16	11.6	0.00030
Consent limit	*5*	-	*15*	*6-8*	*100*	-	*0.025*

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 from the warehouse and storage site complied with limits imposed on BOD, unionised ammonia, oil and grease, pH and suspended solids.

The majority of the stormwater and washdown water exit the site at monitoring point (STW001056, Figure 2) which is also affected by stormwater discharged from the area housing the LMP. The site was visited three times during the year, twice during wet weather surveys and once during a dry weather survey. Samples were collected during both wet weather surveys, while no discharge was occurring during the dry weather survey. The results of this sampling are given in Table 31.

Table 31 Chemical monitoring results for Schlumberger's stormwater discharge site-STW001056

Parameter	Conductivity	Dissolved copper	Acid soluble lead	Oil and grease	pH	Suspended solids	Temp,	Dissolved zinc
Unit	**mS/m@20C**	**g/m³**	**g/m³**	**g/m³**	**pH**	**g/m³**	**Deg.C**	**g/m³**
Minimum	1.4	0.01	0.05*	0.5	6.3	2	8.3	0.034
Maximum	163	0.05	0.05	119	8.7	970	22.1	0.232
Median*	6.6	0.005	0.02*	1.7	7.2	12	14.9	0.082
Number	41	10	10	21	41	39	39	10
26 Feb 2016 (d)	b	b	b	b	b	b	b	b
17 Mar 2016 (w)	3.4	<0.01	<0.05	2.1	6.8	10	17.5	0.040
25 May 2016 (w)	7.6	<0.01	<0.05	4	6.9	15	12.3	0.078
Consent limits	-	*0.05*	*0.02***	*15*	*6-9*	*100*	-	-

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
* Medians are calculated by taking one half of "less than" values in the data set. The minimum therefore can in some cases be less than the median as the minimum is calculated from raw values in the data set (including "less thans")
** limit is for dissolved lead
b not discharging at time of sampling survey
(d) dry weather survey (w) wet weather survey

The samples were within consented limits for dissolved copper, oil and grease, dissolved lead, pH, and suspended solids.

11.2.2 Investigations, interventions, and incidents

In the period under review, 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.

26 August 2015
Self-notification was received from Schlumberger regarding a spill of drilling muds onsite at Paraite Road, Bell Block.

Investigation found that a spill of synthetic drilling mud had occurred onsite and some drilling mud had discharged into the stormwater network. Further investigation found that drilling muds had entered the Mangati stormwater treatment ponds. Schlumberger and Council staff undertook an immediate containment and recovery operation in the primary pond.

Further investigation found that drilling muds had discharged to the fourth settling pond and the open catchment area above this pond. It is likely this was a result of the flushing carried out of the stormwater network using a fire hose. The system is designed to divert stormwater during periods of high flow to pond four via the industrial drain. Contractors set up booms and recovery equipment in the fourth pond and the open tributary above it to contain the spill and remove it.

The recovery continued for several days and extensive sampling was undertaken of pond discharges and the receiving environment. No environmental effects beyond the ponds were detected.

Further investigation determined that Schlumberger were mixing and transferring drilling muds in an area that was not designated for this purpose in their stormwater management plan or spill contingency plan as it had insufficient protections against a spill. Schlumberger was issued with an infringement fine as result of the spill.

11.3 Discussion

11.3.1 Discussion of site performance

There was a major issue with site performance in regard to undertaking the mixing and transferring of drilling muds in an area that was not designated for this purpose in their stormwater management plan or spill contingency plan. Despite the spill, no environmental effects were noted however an improvement in site performance is required.

11.3.2 Environmental effects of exercise of consent

There were no significant adverse environmental effects identified by the Council as a result of the discharges from the Schlumberger Seaco site during the year under review. The spill of drilling mud was contained by the pond system and no instream effects were detected during the incident investigation.

11.3.3 Evaluation of performance

A tabular summary of Schlumberger's compliance record for the year under review is set out in Table 32 and Table 33.

Table 32 Summary of performance for Schlumberger's Consent 5987-1

Purpose: ***To discharge treated stormwater from a synthetic liquid mud plant and storage site into the Mangati Stream***		
Condition 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	No
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	No

Purpose: ***To discharge treated stormwater from a synthetic liquid mud plant and storage site into the Mangati Stream***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
4. Limits on chemical composition of discharge	Discharge sampling	Yes
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	No
9. Optional review provision re environmental effects or changes	Not required during period under review	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**Improvement required** **Poor**

N/A = not applicable or not assessed

Table 33 Summary of performance for Schlumberger's Consent 6032-1

Purpose: ***To discharge treated wash water and stormwater from a storage and maintenance premises for oil field exploration equipment into the Mangati Stream***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Consent to be exercised in accordance with information submitted at application, and in plans (S.C. 3,4,and 7)	Inspection and discussion with consent holder. Some changes, plans to be reviewed	Yes
2. Council to be advised in writing with assessment of effects prior to changes	Inspection and discussion with consent holder. No further changes	Yes
3. Maintenance of plan for wash water treatment system	Inspection and discussion with consent holder, and review of documentation on file	Yes
4. Maintenance of stormwater management plan	Inspection and discussion with consent holder, and review of documentation on file	Yes
5. Limits on chemical composition of discharge	Sampling, and review of self-monitoring data	Yes
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	Plan on file received September 2010 – review overdue	Yes
8. Optional review provision re environmental effects and notifications of changes (S.C.2)	Not required during period under review	N/A
9. Prohibition of wastes containing degreasers, solvents or surfactants	Inspection and discussion with consent holder. Observations at sampling	Yes
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**Good**

N/A = not applicable or not assessed

During the year, Schlumberger demonstrated and a poor level of environmental performance and a poor level of administrative performance and compliance with their resource consents as defined in Section 1.1.4. There were significant issues in regard to the handling of drilling fluids which resulted in a spill. Schlumberger was issued with an infringement fine and were charged significant clean up and response costs in regard to this incident.

11.3.4 Recommendation from the 2014-2015 Annual Report

In the 2014-2015 Annual Report, it was recommended:

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

This recommendation was implemented during the 2015-2016 monitoring period.

11.3.5 Alterations to monitoring programmes for 2016-2017

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 2016-2017, the monitoring programme remains similar to that undertaken in the 2015-2016 year. A recommendation to this effect is attached to this report.

11.4 Recommendation

THAT monitoring programmed for consented activities of Schlumberger New Zealand Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

12. Tasman Oil Tools Ltd

12.1 Introduction

12.1.1 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. Historically the wash water 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.

Washing is now undertaken in a roofed wash pad and directed to a three-stage oil separator and then to trade waste. Occasionally larger items are washed outdoors, however this requires notification to the Council prior to commencement.

Stormwater from the site is collected in open perimeter drains, treated in a three stage interceptor and setting pond, and then directed to the Mangati Stream.

The discharge from the settling pond 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.

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.

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 renewed on 26 November 2001 and reviewed in August 2014. It is due to expire on 1 June 2020.

Consent 4812-2 contains the standard special conditions and four additional special conditions and one modified condition;

Condition 1 requires the consent to be exercise in accordance with the documentation supplied at the time of application.

Condition 2 requires the consent holder to keep records of washing conducted outside the constructed wash pad and make these records available to the Taranaki Regional Council upon request.

Condition 3 requires that 48 hours notice is required prior to yard washing for periods in excess of eight hours in any seven day period.

Condition 6 places the standard and additional limits on the constituents of the discharge with special regard to dissolved copper, dissolved lead and dissolved zinc.

Condition 10 prohibits the discharge of wastes containing surfactants, solvents and any other degreasing agents.

The permit is attached to this report in Appendix I.

12.2 Results

12.2.1 Water

12.2.1.1 Inspections

Inspections were undertaken on 7 August 2015, 17 November 2015 and 21 March 2016, and 13 June 2016.

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. It was noted during the 17 November 2016 that the wash pad sumps required cleaning. During the 13 June inspection further options for stormwater treatment were discussed. It was also noted that some rust coloured wash water was entering the settling pond, although the discharge was observed to be clear.

12.2.1.2 Results of discharge monitoring

The primary monitoring site is at the discharge point from Tasman Oil skimmer pit (site STW001057). Samples of the discharge were collected on two occasions during the period under review, while on two other occasions the site was visited and no discharge was occurring. The results for the period under review are given in Table 34, along with a summary of results for previous monitoring.

Table 34 Chemical monitoring results for Tasman Oil's stormwater discharge for 2015-2016 (site 32) with a summary of previous monitoring data-site STW001057

Parameter	Conductivity	Acid soluble copper	Dissolved copper	Acid soluble lead	Oil and grease	pH	Suspended solids	Temp.	Acid soluble zinc	Dissolved zinc
Unit	**mS/m@20C**	**g/m³**	**g/m³**	**g/m³**	**g/m³**	**pH**	**g/m³**	**Deg.C**	**g/m³**	**g/m³**
Minimum	1.7	0.01	0.01	0.05	0.5	6.4	8	7.8	0.06	0.017
Maximum	19	0.4	0.09	0.29	600	8.2	620	22.6	1.18	0.56
Median	5.1	0.09	0.01	0.08	2.2	7.1	96	14.8	0.311	0.094
Number	46	37	33	37	45	46	46	46	37	33
18 Jan 2016 (w)	b	b	b	b	b	b	b	b	b	b
26 Feb 2016 (d)	b	b	b	b	b	b	b	b	b	b
17 Mar 2016 (w)	1.7	0.03	<0.01	<0.05	<0.5	7.0	34	15.9	0.099	0.052
25 May 2016 (w)	7.9	0.14	<0.01	0.08	1.0	7.0	**150**	9.6	0.324	0.091
Consent limits	-	-	*0.05*	*0.5*	*15*	*6-9*	*100*	-	-	*0.65*

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 discharge occurring
(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 at the discharge point from the combined drain to the stream (MGT000495, where this site, Greymouth Petroleum

and Vector discharges to the stream), were only found to be 43 g/m^3 and no adverse effects in the stream were noted.

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 21).

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 one occasion.

12.2.2 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 Tasman Oil's conditions in resource consents or provisions in Regional Plans.

25 May 2016
Analysis of samples collected during a wet weather survey on 25 May 2016 recorded a suspended solids concentration of 150 g/m^3, exceeding the consented limit of 100 g/m^3. A letter requesting an explanation was sent to the consent holder and an explanation was received. An abatement notice was issued in respect to this non-compliance on 7 June 2016. The consent holder is undertaking work to rectify the consistent suspended solid exceedances found at this site.

12.3 Discussion

12.3.1 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.

12.3.2 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's 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.

12.3.3 Evaluation of performance

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

Table 35 Summary of performance for Tasman Oil's Consent 4812-2

Purpose: ***To discharge wash water and stormwater***		
Condition 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	Yes
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?**
11. Maintenance of stormwater management plan	Inspection and discussion with consent holder, and review of documentation on file	Plan received
Overall assessment of consent compliance and environmental performance in respect of this consent		**Good**
Overall assessment of administrative performance in respect of this consent		**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. There was one minor non-compliance in regard to suspended solids however the consent holder is undertaking works to improve sediment control at the site.

12.3.4 Recommendation from the 2014-2015 Annual Report

In the 2014-2015 Annual Report, it was recommended:

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

This recommendation was implemented during the 2015-2016 monitoring period.

12.3.5 Alterations to monitoring programmes for 2016-2017

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 2016-2017 the monitoring programme remains similar to that undertaken in the 2015-2016 year. A recommendation to this effect is attached to this report.

12.4 Recommendation

THAT monitoring programmed for consented activities of Tasman Oil Tools Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

13. Tegel Foods Ltd – feed mill

13.1 Introduction

13.1.1 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.

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.

13.1.2 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. The consent was issued by the Council on 12 February 2014 under Section 87(e) of the RMA. It is due to expire on 1 June 2026.

Consent 2335-4 contains the standard special conditions as given in Section 1.2 (two of which have been modified) and three additional special conditions.

Condition 1 requires the adoption of best practicable option to minimise environmental effects, and gives specific regard to biochemical oxygen demand (BOD).

Condition 3 places the standard and additional limits on the constituents of the discharge with special regard to total recoverable hydrocarbons (in place of oil and grease) and biochemical oxygen demand (BOD).

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. 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.

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

13.1.3 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. The permit 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/m^3 normal temperature and pressure (NTP)), dust deposition rate beyond the boundary (less than 4.0 g/m^2/30 days), and suspended particulate matter at or beyond the boundary (3 mg/m^3). Conditions also address maintenance, operation, and control of, or alteration to the plant and processes. These also 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.

13.2 Results

13.2.1 Water

13.2.1.1 Inspections

The feed mill site was inspected on 11 August 2015, 2 December 2015 , 7 April 2016 and 30 June 2016.

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

The site was found to be generally clean and tidy, although the area below the silos contained organic matter on 11 August 2015 and 30 June 2016. On the latter occasion this was also an issue around the amount of organic matter accumulating around the weighbridge. The inspections of 7 April 2016 and 30 June 2016 noted that organic matter was present in some of the stormwater sumps.

13.2.1.2 Results of discharge monitoring

Stormwater from the Tegel Feed site discharges to the NPDC network and then the NPDC wetlands. The stormwater enters the networks at two points one is on Paraite Road and the other is via the central drain. The primary monitoring site is at a manhole over the stormwater drain at the northern entrance to the mill from Paraite Road (site STW001015). The site is not influenced by discharges from other sources. The results from chemical monitoring at that site are given in Table 36.

Samples were collected in three wet weather surveys and one dry weather survey during the monitoring period. The consent conditions for pH range, BOD, suspended solids and oil and grease were complied with on all monitoring occasions.

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 36 Chemical monitoring results for Tegel's feed mill stormwater discharge-site STW001015

Parameter	Ammoniacal nitrogen	Chemical Oxygen Demand	BOD	Conductivity @ 20'C	Oil and Grease	pH	Suspended solids	Temp.	Un-ionised ammonia
Unit	**g/m³ N**	**g/m³**	**g/m³**	**mS/m@20C**	**g/m³**	**pH**	**g/m³**	**Deg.C**	**g/m³-N**
Minimum	0.016	5	1.2	2	0.5	6.5	14	8.6	0.00015
Maximum	5.34	10500	730	3550	990	7.9	8440	22.2	0.03016
Median	0.638	86	26.5	13.7	2.2	7.1	74	15.4	0.00274
Number	55	58	44	66	52	65	68	62	54
18 Jan 2016 (w)	0.988	74	23	17.4	b	7.6	66	20.0	0.01855
17 Feb 2016 (w)	0.197	41	12	18.5	b	7.5	40	20.6	0.00308
26 Feb 2016 (d)	0.021	11	1.4	16.7	<0.5	7.9	16	19.7	0.00076
17 Mar 2016 (w)	0.077	22	11	2.0	<0.5	7.0	47	18.2	0.00032
Consent limits	-	-	*25*	-	*15*	*6-9*	*100*	-	-

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

All samples taken in the period under review complied were close to or below the median for the site and complied with consent conditions.

During the dry weather survey, a discharge with a flow rate of approximately 0.5 L/s was occurring. The results from this sample indicate that this was relatively clean water would not cause any environmental effects, however as the consent only provides for stormwater discharges, the consent was notified of this discharge.

13.2.2 Air

13.2.2.1 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 28 August and 16 December 2015 and 7 April 2016.

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. No issues were found regarding deposited dust either on or off site, and no off-site objectionable air borne dust or odours were detected.

A dust sample was taken from the cyclone discharge point on the roof on 28 August and 16 December 2015. The average concentrations of dust recorded were 2.92 and 2.0 mg/m^3 respectively. These indicative results were well within the 125 mg/m^3 consent limit. Air sampling was not undertaken on 7 April 2016 as the plant was shut down for maintenance.

An odour complaint was investigated on 5 May 2016 and is discussed in section 13.2.3

13.2.2.2 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.

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 undertaken during the period under review, and the results are given in Table 37 with site locations and a wind rose for the gauging period given in Figure 6 and Figure 7 respectively.

Table 37 Air deposition results for Tegel Feeds

Site	Date collected	Air Deposition Weight	Number of days	Particulate deposited	Volume air deposition samples
		g	Days	$g/m^2/d$	Litres
AIR009101	12 Aug 2015	0.0200	20	0.3	5.2
AIR009102	12 Aug 2015	0.126	20	**0.19**	4.8
Consent limit	-	-	-	*0.13*	-

Figure 6 Location of Tegel's feed mill deposition gauges

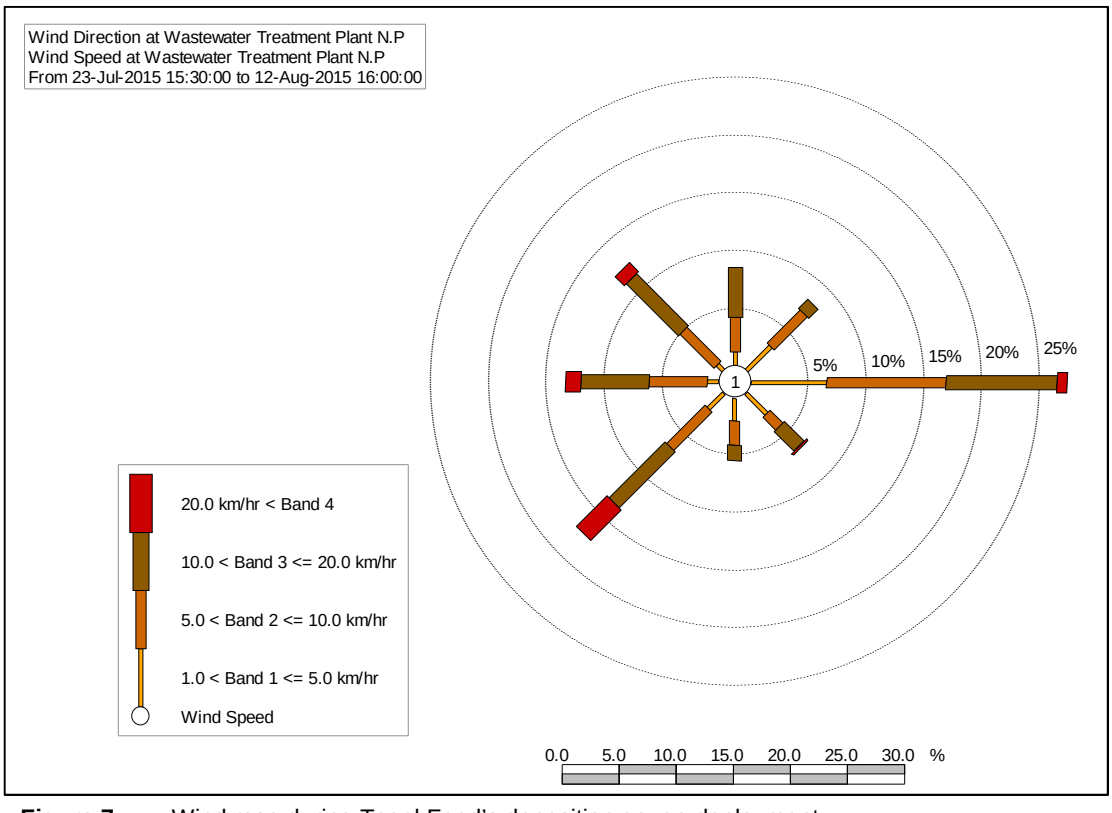


Figure 7 Wind rose during Tegel Feed's deposition gauge deployment

There was one result that exceeded the consent limit of 0.013 g/m²/day at site AIR009102. However the comments made during the processing of the sample noted that organic growth in the deposition gauge media may have artificially increased the result. It is also noted that the prevailing easterly wind may have sourced dust

from areas other than the feed mill. Due to these considerations no action was pursued and a non-compliance was not recorded.

No dust complaints were received during the gauge deployment.

13.2.3 Investigations, interventions, and incidents

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

5 May 2016
An odour complaint was received by the Council. Odour surveys were undertaken at approximately 1110 and 1315 hours. These surveys found light intermittent odours the time. No further action was taken by the Council.

13.3 Discussion

13.3.1 Discussion of site performance

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

All stormwater samples were compliant with consented limits for all parameters, and only minor issues were noted during inspections. One complaint was made against the consent holder during the period, which was not upheld.

In terms of administrative compliance with the stormwater consent, there was one non-compliance related to the provision of an annual report on activities undertaken in association with the performance plan received in 2014. This is currently being addressed by the consent holder.

13.3.2 Environmental effects of exercise of consents

During the year 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.

13.3.3 Evaluation of performance

A tabular summary of Tegel's compliance record for the year under review is set out in Table 38 and Table 39.

Table 38 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 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	Improvements required with regard to tracking of organic material
2. Limits stormwater catchment area	Inspections	Yes
3. Limits on chemical composition of discharge	Sampling of discharges	Yes
4. Discharge cannot cause specified adverse effects beyond mixing zone	Receiving water sampling	Yes
5. Waste water tank to be replaced with trade waste connection by 30 November 2014	Installation complete	Yes
6. Provision of performance based improvement programme by 1 April 2014	Received July 2014	Yes
7. Performance report to be provided by 1 July each year	Not received- currently being drafted by consent holder	No
8. Maintenance of a contingency plan for action to be taken to prevent spillage	Received July 2014 (incorporated into Stormwater Management Plan)	Yes
9. Prepare and maintain stormwater management plan	Received July 2014	Yes
10. Written notification required regarding changes to activities at the site	Council notified of PKE being stored on site	Yes
11. Optional review provision re environmental effects and notifications of changes (S.C.9)	Next opportunity for review June 2017	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**Good**
Overall assessment of administrative performance in respect of this consent		**Good**

Table 39 Summary of performance for Tegel's Consent 4038-6

Purpose: ***To discharge emissions into the air from the milling and blending of grain and/or animal meals together with associated activities***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Adoption of best practicable option to prevent or minimise effects on the environment	Inspection and discussion with consent holder. Investigation of complaint	Yes
2. No alterations that might change the nature/quantity of discharge without prior consultation with Council	Council notified of PKE being stored on site	Yes
3. Maintenance of plan to prevent accumulation of dust in stormwater catchment	Inspection and discussion with consent holder	Yes
4. Limit on point source particulate emissions (125 mg/m^3)	Discharge monitoring at inspection	Yes
5. Limit on dust deposition beyond boundary (4.0 mg/m^2/day)	Deposition gauging	Yes
6. Limit on boundary suspended particulates (3 mg/m^3)	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
8. Clearance of accumulated dust	Inspection	Yes
9. 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		**High**
Overall assessment of administrative performance in respect of this consent		**High**

N/A = not applicable or not assessed

During the year, the Tegel Foods Ltd (feed mill) demonstrated a good level of administrative performance and a good of environmental performance and compliance with their resource consents as defined in Section 1.1.4.

13.3.4 Recommendations from the 2014-2015 Annual Report

In the 2014-2015 Annual Report, it was recommended:

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.

This recommendation was implemented during the 2015-2016 monitoring period.

13.3.5 Alterations to monitoring programmes for 2016-2017

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 2016-2017 the programme remains similar to that undertaken in the 2015-2016 year with the exception of the triennial deposition gauging which next due in the 2018-2019 period. A recommendation to this effect is attached to this report.

13.4 Exercise of optional review of consent

Resource consent 2335-4 provides for an optional review of the consent in June 2017. Condition eleven allows the Council to review the consent, 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.

Based on the results of monitoring in the year under review, and in previous years as set out in earlier annual compliance monitoring reports, it is considered that there are no grounds that require a review to be pursued.

13.5 Recommendation

1. THAT monitoring programmed for consented activities of Tegel Foods Ltd (feed mill) in the 2016-2017 year continues at a similar level to that programmed for 2015-2016 with the exception of the triennial deposition gauging which next due in the 2018-2019 period.

2. THAT the option for a review of resource consent 2335-4 in June 2017, as set out in condition 11 of the consent, not be exercised, on the grounds that the current 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.

14. Tegel Foods Ltd – poultry processing plant

14.1 Introduction

14.1.1 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 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 m^2 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.

14.1.2 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.

The permit is attached to this report in Appendix I.

14.1.3 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.

Water discharge permit **3470-4** to discharge stormwater from a poultry processing plant site to the NPDC drainage network was renewed on 23 December 2013 under Section 87(e) of the RMA. It is due to expire on 1 June 2026.

Consent 3470-4 contains the standard special conditions as given in Section 1.2. Two of those standard conditions contain modifications and there is one additional special condition.

Condition 1 requires the adoption of best practicable option to minimise environmental effects, and gives specific regard to biochemical oxygen demand (BOD).

Condition 3 places the standard and additional limits on the constituents of the discharge with special regard total recoverable hydrocarbons (in place of oil and grease), free chlorine and biochemical oxygen demand (BOD).

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 can be managed effectively.

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.

Consent 7389-1 contains the standard special conditions as given in Section 1.2. Two of those standard conditions contain modifications and there is one additional special condition.

Condition 4 requires above ground hazardous substances storage areas to be bunded.

Condition 5 places the standard and additional limits on the constituents of the discharge with special regard to unionised ammonia and BOD.

Condition 7 limits BOD concentration in the receiving waters.

These permits are attached to this report in Appendix I.

14.1.4 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 renewed 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.

14.1.5 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 renewed 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.

14.2 Results

14.2.1 Water

14.2.1.1 Reporting on exercise of groundwater abstraction consent

During the period under review, Tegel undertook investigations to reinstate the bore on its property. This resulted in the abstraction of minor amounts of water. The pump test showed that the water was not suitable for use and the bore redevelopment was abandoned.

14.2.1.2 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 20 August 2015, 2 December 2015, and 21 March 2016, and 14 June 2016. The site was found to be generally clean and tidy and well managed, however there were a few issues with fugitive discharges from a leaking building (on 20 August 2015 and 2 December 2015); however no effects were observed.

The 14 June inspection found that the old spiral freezer building had been removed. This was discussed as sediment tracking from this may have contributed to a recent non-compliance found during a wet weather survey. Mitigation measures for future works were discussed.

14.2.1.3 Results of discharge monitoring

Consent 7389 – treated stormwater discharge via wetland
Site STW001053 is the point at which Tegel discharges to the wetland. The site was visited three times during the monitoring period under review, twice during wet weather surveys and once during a dry weather survey. Samples were collected during the wet weather surveys, while no discharge was occurring during the dry weather survey. These results are given in Table 40 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 pH and suspended solids on both monitoring occasions. An elevated BOD result was recorded on 18 January 2016, however at the downstream discharge point, BOD concentrations had decreased significantly and was compliant with consent conditions

Table 40 Chemical monitoring results for Tegel's poultry processing plant lower stormwater discharge to Mangati Stream tributary-site STW001053

Parameter	Ammoniacal nitrogen	BOD	Conductivity @ 20'C	Dissolved reactive P	Oil and Grease	pH	Suspended solids	Temp	Un-ionised ammonia
Unit	**g/m³ N**	**g/m³**	**mS/m**	**g/m³ P**	**g/m³**	**pH**	**g/m³**	**Deg.C**	**g/m³**
Minimum	0.109	0.5	1.6	0.049	0.5	6.6	2	9.7	0.00015
Maximum	5.3	96	142	23.9	68	9.9	400	27.2	0.99937
Median	0.76	9.8	13.7	0.272	1	7.4	36	14.7	0.00712
Number	60	58	61	60	43	62	61	61	59
18 Jan 2016 (w)	0.795	37	19.4	0.243	a	7.6	22	17.3	0.01224
26 Feb 2016 (d)	b	b	b	b	b	b	b	b	b
17 Mar 2016 (w)	0.196	4.1	2.2	0.131	<0.5	7.0	15	15.6	0.00067

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, three during wet weather surveys and one during a dry weather survey. 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 41 along with a summary of all data from the site.

Table 41 Chemical monitoring results for stormwater discharge to Mangati Stream from wetland-site MGT000489

Parameter	Ammoniacal nitrogen	BOD	Conductivity @ 20'C	Dissolved reactive P	pH	Oil and Grease -visual	Suspended solids	Temp	Un-ionised ammonia
Unit	**g/m³ N**	**g/m³**	**mS/m**	**g/m³ P**	**pH**	**-**	**g/m³**	**Deg.C**	**g/m³**
Minimum	0.018	0.5	4.7	0.003	6.2	-	2	9.6	0.00002
Maximum	5.44	73	39.4	0.214	7.2	-	260	20.6	0.00725
Median	0.258	2.1	17.6	0.017	6.6	-	14	14.8	0.00044
Number	83	83	85	83	84	-	83	84	82
18 Jan 2016 (w)	0.986	3.8	19.8	0.035	7.0	p	3	17.8	0.00400
26 Feb 2016 (d)	0.781	2.3	18.2	0.032	6.8	p	11	17.6	0.00197
17 Mar 2016 (w)	0.169	4.5	4.7	0.066	6.6	p	21	16.0	0.00024
25 May 2016 (w)	0.235	2.3	12.5	0.019	6.6	p	12	12.4	0.00025
Consent Limit	-	*15*	-	-	*6-9*	-	*100*	-	-

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded
p oil and grease visual pass
(d) dry weather survey (w) wet weather survey

All results for the period under review were compliant with consent conditions. Oil and grease were not analysed for as each sample was visually inspected and found to be free of any obvious sheens or scums.

Consent 3470 – untreated stormwater discharges via De Havilland Drive (Site 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 two of these occasions. These results are given in Table 42 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. This site was visited four times during the year, three times during wet weather surveys and once during a dry weather survey. Samples were collected on three occasions (two wet weather and one dry weather), while no discharge was occurring on the other occasion.

The samples collected from this monitoring location complied with the BOD, oil and grease and pH limits of the consent. The suspended solids limits were exceeded on one sampling occasion and an incident was recorded as a result (see Section 14.2.4).

Table 42 Chemical monitoring results for Tegel's poultry processing plant stormwater discharge site-STW001130

Parameter	Ammoniacal nitrogen	BOD	Conductivity @ 20'C	Dissolved reactive P	Oil and Grease	pH	Suspended solids	Temp	Un-ionised ammonia
Unit	**g/m³ N**	**g/m³**	**mS/m**	**g/m³ P**	**g/m³**	**pH**	**g/m³**	**Deg.C**	**g/m³**
Minimum	0.027	2.1	1.4	0.012	0.5	6.9	6	8	0.00011
Maximum	0.964	28	14.2	0.6	2.3	7.4	630	19.9	0.00382
Median	0.174	9.3	3.9	0.202	0.6	7.1	46	15.2	0.0006
Number	12	12	12	10	5	12	12	12	12
18 Jan 2016 (w)	b	b	b	b	b	b	b	b	b
26 Feb 2016 (d)	b	b	b	b	b	b	b	b	b
17 Mar 2016 (w)	0.094	2.1	1.4	0.052	<0.5	7.0	35	17.2	0.00036
25 May 2016 (w)	0.027	7.5	6.9	0.012	a	7.3	**630**	8.0	0.00011
Consent Limit	-	*15*	-	-	*15*	*6-9*	*100*	-	-

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

Table 43 Chemical monitoring results for Tegel's poultry processing plant stormwater discharge-site STW001129

Parameter	Ammoniacal nitrogen	BOD	Conductivity @ 20'C	Dissolved reactive P	Oil and Grease	pH	Suspended solids	Temp	Un-ionised ammonia
Unit	**g/m³ N**	**g/m³**	**mS/m**	**g/m³ P**	**g/m³**	**pH**	**g/m³**	**Deg.C**	**g/m³**
Minimum	0.041	0.5	1.1	0.016	0.5	6.6	2	7.1	0.00006
Maximum	20	160	28.8	4.24	9.2	8.3	700	22.1	0.24637
Median	0.241	4.9	5	0.076	0.2	7.2	8	15.4	0.00106
Number	17	17	17	15	8	17	17	17	17
18 Jan 2016 (w)	b	b	b	b	b	b	b	b	b
26 Feb 2016 (d)	7.02	**>15**	12.7	1.15	a	7.5	10	22.1	**0.12252**
17 Mar 2016 (w)	0.179	1.7	1.1	0.032	<0.5	6.9	26	16.8	0.00054
25 May 2016 (w)	0.052	9.2	6.5	0.022	a	7.0	**260**	7.1	0.00010
Consent Limit	-	*15*	-	-	*15*	*6-9*	*100*	-	-

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

The stormwater samples collected from this monitoring location complied with the BOD, oil and grease and pH limits on all monitoring occasions. The suspended solids limit was exceeded on one occasion, and is noted that non-compliant result was also obtained from the adjacent sampling point STW001130 on the same occasion. This is discussed in more detail in Section 14.2.4

It is noted that (as in the previous monitoring period) there were discharges occurring during a dry weather survey (26 February 2016). 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 2 L/min.

In this sample the unionised ammonia concentration of this unconsented discharge was around five times that permitted by the RFWP (0.025 g/m^3). It is noted that the unionised ammonia concentration in the final discharge to the stream was not determined as the small discharge found at site STW001129 was not sufficient to travel though the network to the outfall to the stream.

Due to the presence of the fugitive discharge at site STW001129, an incident was logged and this is discussed in more detail in Section 14.2.4.

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 STW001128. Two samples were collected from this monitoring location during the period under review, while it was visited on four occasions. Both samples complied with all of the component concentration limits imposed by consent 3470.

Table 44 Chemical monitoring results for Tegel's poultry processing plant stormwater discharge-site STW001128

Parameter	Ammoniacal nitrogen	BOD	Conductivity @ 20'C	Dissolved reactive P	Oil and Grease	pH	Suspended solids	Temp	Un-ionised ammonia
Unit	**g/m³ N**	**g/m³**	**mS/m**	**g/m³ P**	**g/m³**	**pH**	**g/m³**	**Deg.C**	**g/m³**
Minimum	0.035	1.2	1.9	0.029	0.5	7	5	8.3	0.00018
Maximum	42.6	41	90	5.39	0.9	8.3	51	20.8	1.33121
Median	0.107	2.6	4.2	0.074	0.7	7.4	14	15	0.00096
Number	13	13	13	11	3	13	12	13	13
18 Jan 2016 (w)	c	c	c	c	c	c	c	c	c
26 Feb 2016 (d)	b	b	b	b	b	b	b	b	b
17 Mar 2016 (w)	0.095	3.9	2.4	0.051	<0.5	7.0	5	16.7	0.00035
25 May 2016 (w)	0.067	4.5	8.5	0.074	a	7.3	29	9.8	0.00030
Consent Limit	-	*15*	-	-	*15*	*6-9*	*100*	-	-

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

14.2.2 Air

14.2.2.1 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 on-site, 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 20 August and 2 December 2015, and 21 March and 14 June 2016.

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 DAF on 2 December 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.

14.2.3 Exercise of discharge to land consent

It was confirmed that no discharges to land occurred during the 2015-2016 monitoring period.

14.2.4 Investigations, interventions, and incidents

In the period under review, the Council was required to record incidents, in association with Tegel's conditions in resource consents or provisions in Regional Plans on four occasions.

14.2.4.1 Land/water

9 March 2016
Analysis of samples collected during a dry weather survey on 26 February 2016 recorded a unionised ammonia concentration of 0.12252 g/m^3 at site STW001129, exceeding the RFWP limit of 0.025 g/m^3. It was also noted that the BOD concentration was potentially above consented limits. Council staff worked with Tegel to find the source of the non-compliant discharge and ensure compliance with resource consent conditions at all times. The source of the contamination was found to be yard washing operations which have since ceased. A review of instream sampling data indicated that no significant effects had occurred in the stream.

25 May 2016
Analysis of samples collected during a wet weather survey on 25 May 2016 recorded a suspended solids concentration of 260 g/m^3 at site STW001129 and 630 g/m^3 at site STW001130, exceeding the consented limit of 100 g/m^3. A review of instream sampling data indicated that no effects had occurred in the stream. A letter requesting an explanation was issued in respect to this non-compliance on 8 June 2016. It was outlined that construction work on the site had exposed bare earth which is likely to have being the source of the suspended solids and that a number of steps had been taken to address this. This explanation was received and accepted.

14.2.4.2 Air

3 January 2016
On 5 January 2015 a complaint was received regarding odours emanating from the plant. Odour surveys were carried out on 3 January 2016 and 4 January 2016. Both surveys noted a weak odour beyond the boundary of the site, however the odour was not considered to be objectionable at either time.

30 March 2016
A complaint was received on 30 March 2016 regarding odours from the site. An odour survey was carried out and no offensive or objectionable odours were found beyond the site boundary.

14.3 Discussion

14.3.1 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.

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.

There was one water related incident recorded as a result of findings during sampling and inspection that in relation to a fugitive wastewater discharge to the stormwater system during dry weather sampling. Tegel undertook works to identify and divert the source. No effects were noted from this discharge.

There was one incident recorded in relation to non-compliant discharges found during wet weather sampling. Tegel undertook works to identify and divert the source. No effects were noted from this discharge.

No objectionable or offensive odours were found beyond the boundary. During the period under review there were two odour complaints received by the Council none of which could be substantiated.

14.3.2 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 were more than minor.

14.3.3 Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Table 45, Table 46, Table 47, Table 48 and Table 49.

Table 45 Summary of performance for Tegel's Consent 6357-1

Purpose: ***To take and use groundwater from a bore for food processing and washdown purposes***		
Condition requirement	**Means of monitoring during period under review**	**Compliance 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: 3000m^3/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
Overall assessment of consent compliance and environmental performance in respect of this consent		**N/A**
Overall assessment of administrative performance in respect of this consent		**N/A**

N/A = not applicable or not assessed

Table 46 Summary of performance for Tegel's Consent 3470-4

Purpose: ***To discharge stormwater from a poultry processing plant site to NPDC's drainage network***		
Condition 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	No
2. Limits stormwater catchment area	Inspection	Yes
3. Limits on chemical composition of discharge	Sampling and analysis of discharges	No
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

Purpose: ***To discharge stormwater from a poultry processing plant site to NPDC's drainage network***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
6. Maintenance of contingency plan	Review of documents provided. Reviewed plan provided May 2016	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 the nature of the 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
Overall assessment of consent compliance and environmental performance in respect of this consent		**Good**
Overall assessment of administrative performance in respect of this consent		**High**

N/A = not applicable or not assessed

Table 47 Summary of performance for Tegel's Consent 7389-1

Purpose: ***To discharge stormwater from a poultry processing plant via a wetland into the Mangati Stream***		
Condition 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. 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/m^3)	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	**Means of monitoring during period under review**	**Compliance achieved?**
10. Maintenance of a contingency plan for action to be taken to prevent spillage	Review of documents provided. Reviewed plan received November 2010	Yes
11. Maintenance of and adherence to stormwater management plan	Review of documents provided. Reviewed plan provided August 2014	Yes
12. 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
13. 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		**Good**
Overall assessment of administrative performance in respect of this consent		**High**

N/A = not applicable or not assessed

Table 48 Summary of performance for Tegel's Consent 4026-3

Purpose: *To discharge emissions into the air from the processing of animal matter and associated processes*		
Condition 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. 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. Optional review provision re environmental effects	Next opportunity for review June 2020	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

N/A = not applicable or not assessed

Table 49 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	**Means of monitoring during period under review**	**Compliance achieved?**
1. To be exercised in emergency only, as confirmed by Council	Not exercised during period under review	N/A
2. Details to be provided to Council prior to exercise of consent	Not exercised during period under review	N/A
3. Adopt BPO to prevent or minimise adverse effects	Not exercised during period under review	N/A
4. Burial trenches to be more than 25 m from any surface water body	Not exercised during period under review	N/A
5. Base of burial trenches to be located above groundwater level	Not exercised during period under review	N/A
6. Consent holder to maintain records of disposal	Not exercised during period under review	N/A
7. Maintain and update a Burial Management Plan	Updated plan received August 2014	Yes
8. Lapse of consent June 2032		N/A
9. Optional review provision re environmental effects	Next opportunity for review June 2020	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

N/A = not applicable or not assessed

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. One minor non-compliant fugitive discharge was observed during a dry weather survey and non-compliant stormwater discharges were found during one wet weather survey. No effects were noted in the stream as a result of these and subsequent samples have returned compliant results.

14.3.4 Recommendations from the 2014-2015 Annual Report

In the 2014-2015 Annual Report, it was recommended:

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.

The first recommendation was implemented during the 2015-2016 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.

14.3.5 Alterations to monitoring programmes for 2016-2017

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 2016-2017 the programme remains similar to that undertaken in the 2015-2016 year. A recommendation to this effect is attached to this report.

14.4 Exercise of optional review of consent

Resource consent 3470-3 provides for an optional review of the consent in June 2017. Condition nine allows the Council to review the consent, 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.

Based on the results of monitoring in the year under review, and in previous years as set out in earlier annual compliance monitoring reports, it is considered that there are no grounds that require a review to be pursued.

14.5 Recommendations

1. THAT monitoring programmed for consented activities of Tegel Foods Ltd (poultry processing plant) in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

2. THAT the option for a review of resource consent 3470-3 in June 2017, as set out in condition nine of the consent, not be exercised, on the grounds that the current 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.

15. TIL Freighting Ltd

15.1 Introduction

15.1.1 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 m^2 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.

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.

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.

Consent 7578-1 contains the standard special conditions as given in section 1.2 with one modified condition and one additional special condition;

Condition 3 requires that all above ground hazardous storage areas be bunded (including the molasses area).

Special condition 5 places the standard and additional limits on the constituents of the discharge as well as a limit on biochemical oxygen demand (BOD).

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

15.1.3 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 is 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.

15.2 Results

15.2.1 Water

15.2.1.1 Inspections

The TIL site was visited on 5 August 2015, 19 November 2015, 21 March 2016 and 13 June 2016.

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 the removal of sediment from drain and yard areas as well as debris over sump grates.

An unpleasant odour was detected downwind of tanks containing stock feed products on 9 November 2015, however this odour was not detected offsite.

15.2.1.2 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.

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, STW001133). The results from chemical monitoring at this location are given in Table 50. The site was visited three times during the year, twice during wet weather surveys and once during a dry weather survey. Samples were collected during the wet weather surveys and no discharge was occurring during the dry weather survey.

The consent limits on oil and grease, pH range and suspended solids were observed as being complied with for the samples collected from the southern areas of the site during the period under review. At 22 g/m^3, the biochemical oxygen demand concentration exceeded the allowable limit of 7 g/m^3 in the sample collected on 18 January 2016.

Table 50 Chemical monitoring results for TIL's stormwater discharge (outside Turners and Growers) for 2015-2016 (site 46)-site STW001133

Parameter	BOD	Conductivity	Dissolved reactive P	Oil and Grease	pH	Suspended solids	Temp	Turbidity
Unit	g/m^3	mS/m@ 20'C	g/m^3 P	g/m^3	pH	g/m^3	Deg.C	NTU
Minimum	1.6	1.3	0.011	0.5	6.8	4	8.4	2.2
Maximum	22	13.7	0.597	2.5	7.7	70	21.7	34
Median	4.4	2.7	0.152	0.5	7.2	10	15.1	3.9
Number	13	13	10	7	13	13	13	13
18 Jan 2016 (w)	**22**	8.3	0.597	a	7.7	70	21.7	22
26 Feb 2016 (d)	b	b	b	b	b	b	b	b
17 Mar 2016 (w)	3.6	2.0	0.122	<0.5	7.1	10	19.0	3.8
Consent limits	*7*	-	-	*15*	*6-9*	*100*	-	-

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 STW001132). This site was visited three times during the year, twice during wet weather surveys and once during a dry weather survey. Samples were taken in both wet weather surveys. The results from chemical monitoring at this location are given in Table 51.

Table 51 Chemical monitoring results for TIL's loading canopy stormwater discharge for 2015-2016 (site 45)-site STW001132

Parameter	BOD	Conductivity	Dissolved reactive P	Oil and Grease	pH	Suspended solids	Temp	Turbidity
Unit	g/m³	mS/m@ 20'C	g/m³ P	g/m³	pH	g/m³	Deg.C	NTU
Minimum	1.5	1.7	0.005	0.5	6.7	11	8.5	6.5
Maximum	65	37.3	2.88	5	7.6	150	20.9	80
Median	8.5	4.6	0.472	0.8	7.3	44	15.6	22
Number	13	13	10	8	13	13	13	13
18 Jan 2016 (w)	**15**	9.0	0.650	a	7.5	13	20.9	11
26 Feb 2016 (d)	b	b	b	b	b	b	b	b
17 Mar 2016 (w)	**8.6**	2.1	0.188	1.0	6.8	44	18.7	19
Consent limits	*7*	-	-	*15*	*6-9*	*100*	-	-

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, however, the biochemical oxygen demand limit was exceeded on both sampling occasions.

As a result of the non-compliances an incident was raised, this is discussed in the incidents section below.

15.2.2 Investigations, interventions, and incidents

In the period under review, the Council was required to record two incidents, in association with TIL conditions in resource consents or provisions in Regional Plans.

Analysis of samples taken during a sampling survey on 18 January 2016 found that resource consent conditions were not being complied with. A letter requesting an explanation was issued and an abatement notice was issued. As a result TIL has instigated a major cleaning programme to address the stormwater contamination at the site.

15.3 Discussion

15.3.1 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 may have being causing stormwater contamination at the site.

At the time of the preparation of this report, TIL has instigated major cleaning programme to remove contamination sources from the site. The programme

included the roof and yard being cleaned and the instigation of a programme of regular inspections and sweeping to maintain the site.

15.3.2 Environmental effects of exercise of consents

No significant adverse environmental effects were found during the year under review as a result of the exercise of TIL's consents. The levels of BOD found in the discharges from TIL may have contributed to the elevated BOD concentrations in Mangati Stream during two of the wet weather surveys.

15.3.3 Evaluation of performance

A tabular summary of TIL's (Hooker's prior to December compliance record for the year under review is set out in Table 52 and Table 53.

Table 52 Summary of performance for TIL's Consent 6952-1

Purpose: ***To discharge stormwater to land in the Waiwhakaiho catchment***		
Condition 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	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. Thirty metre buffer zone between discharge to land and any surface water	Observation at inspection	Yes
9. Provision for lapse of consent	Consent exercised	N/A
10. Optional review provision re environmental effects	Next opportunity for review June 2014	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

N/A = not applicable or not assessed

Table 53 Summary of performance for TIL's Consent 7578-1

Purpose: ***To discharge stormwater to the Mangati Stream***		
Condition 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
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 two 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 two 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
Overall assessment of consent compliance and environmental performance in respect of this consent		**Improvement required**
Overall assessment of administrative performance in respect of this consent		**Improvement Required**

N/A = not applicable or not assessed

During the year, an improvement is required in TIL Freighting Ltd's level of administrative performance and environmental performance and compliance with their resource consents as defined in Section 1.1.4. There has been an on-going issue in regards to BOD concentrations in the discharges from the site. The consent holder has recently undertaken a major cleaning programme to reduce contamination of stormwater at their premises.

15.3.4 Recommendation from the 2014-2015 Annual Report

In the 2014-2015 Annual Report, it was recommended:

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

This recommendation was implemented during the 2015-2016 monitoring period.

15.3.5 Alterations to monitoring programmes for 2016-2017

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 2016-2017 the monitoring programme remains similar to that undertaken in the 2015-2016 year. A recommendation to this effect is attached to this report.

15.4 Recommendation

THAT monitoring programmed for consented activities of TIL Freighting Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

16. Vector Gas (now First Gas Ltd)

16.1 Introduction

16.1.1 Process description

Vector Gas Ltd (Vector Gas) operated 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 STW001055), and periodically at the southern discharge point which enters the open stormwater drain below Tasman Oil and Greymouth Petroleum.

The site is considered to pose only a very low environmental risk and is therefore only scheduled for two inspections per year, however on occasion additional inspections are carried out when the inspecting officer is in the area.

During the period under review the site was bought by First Gas Ltd and the consent was transferred to the new owner's name.

16.1.2 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 the consent 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 December 2015 when consent 4700-2 was issued.

Conditions attached to consent 4780-1 in respect of concentration of stormwater components (maximum total recoverable hydrocarbons 15 g/m^3, pH range 6 - 9, suspended solids 100 g/m^3), prohibiting specified effects in the receiving water after reasonable mixing, and provision for review of conditions.

Vector Gas held consent 4780-2 to discharge stormwater and vehicle wash water to the Mangati Stream. This permit was issued to Vector Gas Ltd by the Council on 17 December 2016 under Section 87(e) of the RMA and is due to expire on 1 June 2032.

This consent was transferred to First Gas Ltd on 20 June 2016.

The consent contains the standard special conditions as set out in Section 1.2. It also contains extra conditions that are specific to the site.

Special condition 3 requires the vehicle wash water be treated to a certain standard.

Special condition 5 requires that the consent holder sample and analyse the wash water.

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

16.2 Results

16.2.1 Water

16.2.1.1 Inspections

The site was inspected twice during the period under review, on 5 August 2015 and 6 May 2016.

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

No issues were noted during the inspections, and it was noted that the vehicle wash was closed off for use pending a decision of whether to continue using it or seek other arrangements.

16.2.2 Investigations, interventions, and incidents

In the period under review, the Council was not required to undertake additional investigations in association with Vector Gas' conditions in resource consents or provisions in Regional Plans.

16.3 Discussion

16.3.1 Discussion of site performance

The site was found to be well managed throughout the period under review, with no issues noted during inspections.

16.3.2 Environmental effects of exercise of consent

There were no adverse effects found as a result of activities undertaken at the Vector Gas site.

16.3.3 Evaluation of performance

A tabular summary of Vector Gas' compliance record for the year under review is set out in Table 54 and Table 55.

Table 54 Summary of performance for Vector Gas' Consent 4780-1 (to 17 December 2016)

Purpose: ***To discharge stormwater to Mangati Stream***		
Condition 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
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

Table 55 Summary of performance for Vector Gas' Consent 4780-2 (from 17 December 2016)

Purpose: ***To discharge stormwater and vehicle wash water to Mangati Stream***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Require best practice be adopted	Inspection and liaison with consent holder	Yes
2. Specifies catchment area	Inspection	Yes
3. Require treatment of vehicle wash water	Wash bay closed	N/A
4. Limits on chemical composition of discharge	Visual inspection	Yes
5. Sampling of wash water	Wash bay closed	N//A
6. Limits effects on receiving waters	Visual inspection and sampling	Yes
7. Maintain contingency plan	Plan received with application	Yes
8. Maintain and adhere to a management plan	Plan received with application	Yes
9. Notification of changes to site processes	Notification received that wash bay was closing	Yes
10. Review condition	No review option until June 2020	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

During the period under review, Vector Gas Ltd and First Gas Ltd demonstrated a high level of environmental and administrative performance and compliance with their resource consent as defined in Section 1.1.4

16.3.4 Recommendation from the 2014-2015 Report

In the 2014-2015 Report, it was recommended:

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

This recommendation was implemented.

16.3.5 Alterations to monitoring programmes for 2016-2017

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 2016-2017 the monitoring programme remains at a similar level as that for the 2015-2016 period. A recommendation to this effect is attached to this report.

16.4 Recommendation

THAT monitoring programmed for consented activities of First Gas Ltd's site (formerly Vector Gas Ltd's site) in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

17. W Abraham Ltd

17.1 Introduction

17.1.1 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.

Effects from the discharge may arise from;

- Visible emissions
- Odour
- Toxic by-products (from wood treatments and plastic parts)
- Particulate deposition
- Nitrogen and sulphur oxides

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 17.1.2, below) provide reassurance over the unit's environmental performance.

17.1.2 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 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.

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.

17.2 Results

17.2.1 Air

17.2.1.1 Inspections

The crematorium was visited on 28 July 2015, 19 November 2015, 2 March 2016 and 17 May 2016.

The inspections focussed on visual emissions, odour, smoke opacity reading, furnace temperature records, condition of the plant and environmental effects.

Visible emissions or odours were not detected upwind or downwind of the site during the routine inspections undertaken. Temperature and smoke opacity indicated that the plant was being operated in a satisfactory manner. Compliance with all consent conditions was achieved in all inspections.

17.2.2 Investigations, interventions, and incidents

In the period under review, 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.

17.3 Discussion

17.3.1 Discussion of site performance

During the period under review it was found that the cremator was operated in a satisfactory manner.

Compliance with all consent conditions was achieved during all inspections. No visible smoke or emissions were detected during any inspection.

17.3.2 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.

17.3.3 Evaluation of performance

A tabular summary of Abraham's compliance record for the year under review is set out in Table 56.

Table 56 Summary of performance for Abraham's Consent 7147-2

Purpose: ***To discharge emissions to air from a crematorium***		
Condition 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. 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

Purpose: ***To discharge emissions to air from a crematorium***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
9. Consent holder to remove external casket fittings containing metals or PVC prior to combustion	Inspections and liaison with consent holder	Yes
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
14. Not more than two one-minute averages of the opacity readings shall exceed 20% obscuration per cremation	Inspection and discussion with consent holder	Yes
15. Limits maximum carbon monoxide concentration at outlet of secondary chamber (100 mg/m^3)	Not monitored. Meter to be installed if adverse effects noted	Yes
16. 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
19. Control of emissions of CO, NO_2, PM_{10} and SO_2 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

Purpose: *To discharge emissions to air from a crematorium*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

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.

17.3.4 Recommendation from the 2014-2015 Annual Report

In the 2014-2015 Annual Report, it was recommended:

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

This recommendation was implemented during the 2015-2016 monitoring period.

17.3.5 Alterations to monitoring programmes for 2016-2017

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 2016-2017 the monitoring programme remains similar to that undertaken in the 2015-2016 year. A recommendation to this effect is attached to this report.

17.4 Recommendation

THAT monitoring programmed for consented activities of W Abraham Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

18. 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.

18.1 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.

18.1.1 Discharge monitoring

Stormwater discharged from Mainland's site enters the indusial drain which then feeds into pond 4 of the NPDC system. The primary monitoring site is at the plant boundary, at the drop-structure immediately above the outlet of the industrial stormwater drain (site STW001048) and the results from chemical monitoring at this site 11 are given in Table 57.

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 two 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 57 Chemical monitoring results for stormwater discharged from Mainland Products-site STW001048

Parameter	Conductivity @ 20'C	Oil and Grease	pH	Suspended solids	Temperature	Zinc Acid Soluble	Zinc Dissolved
Unit	**mS/m@20C**	**g/m³**	**pH**	**g/m³**	**Deg.C**	**g/m³**	**g/m³**
Minimum	1.2	0.5	6.2	2	9.8	0.016	0.005
Maximum	20.6	83	7.6	670	22.3	1.71	1.44
Median	10.7	1	6.8	21	15.8	0.35	0.24
Number	51	30	51	49	48	34	33
18 Jan 2016 (w)	11.2	a	7.3	12	19.1	0.466	0.415
26 Feb 2016 (d)	b	b	b	b	b	b	b
17 Mar 2016 (w)	1.5	<0.5	6.7	17	17.2	0.097	0.011
RFWP limit	-	15	6-9	100	-	-	-

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

b no discharge occurring

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

19. 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 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 26 unauthorised incidents recorded on the Council's database in the Mangati catchment during the 2015-2016 period.

A summary of the responsible parties, and whether or not the incident could be substantiated, is provided in Table 58.

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 58 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)	0	0
Greymouth Petroleum Acquisitions Company Ltd	1	0
Halliburton New Zealand Ltd	1	0
J Swap Contracting Ltd	4 (odour) 1(water)	2
TIL Freighting	1	0
McKechnie Aluminium Solutions Ltd	0	0
MI New Zealand Ltd	0	0
Vector Gas Ltd	0	0
New Plymouth District Council	1 (odour)	0
Nexans New Zealand	0	0

Company	Number of substantiated incidents/complaints	Number of unsubstantiated incidents/complaints
OMV New Zealand Ltd	1	0
Schlumberger New Zealand Ltd	1	0
Tasman Oil Tools Ltd	1	0
Tegel Foods Ltd – feed mill	0	2 (odour/dust)
Tegel Foods Ltd – poultry processing plant	2 (water)	2 (odour)
W Abrahams Ltd	0	0
Permitted activities		
Airport Farm Trust	0	2 (odour)
Graham Harris (2000) Ltd	0	1 (dust)
Steven and Deborah Holmes	0	1 (odour)
Natural event	0	1(algae on beach)
Unsourced	0	1 (odour)
Total	**14**	**12**

Details of Incidents not otherwise reported in earlier sections of the report are given below.

Airport Farm Trust 29 July 2015
A complaint was received regarding odour emanating from a poultry shed on Henwood Road, Bell Block. Investigations found a noticeable odour upon arrival but it dissipated within ten minutes. The poultry farm had been loading out chickens an hour earlier and this is thought to be the cause of the odour.

Airport Farm Trust 27 August 2015
A complaint was received concerning an objectionable odour emanating beyond the boundary of a poultry farm located on Manutahi Road, Bell Block. An odour survey was undertaken. Early in the survey a weak intermittent poultry odour was detected. However this odour dissipated and no odour was detected at the completion of the survey.

Graham Harris (2000) Ltd 30 November 2015
A complaint was received regarding dust arising from earthworks at a residential subdivision in Bell Block. An inspection of the site found that there was no offsite emissions and that a water cart was in use.

Unsourced 7 December 2015
A complaint was received regarding an odour on Smeaton Street, Bell Block. Investigation found very intermittent noticeable odour at the complainants' property. The source of the odour could not be found.

Steven and Deborah Holmes 1 May 2016
A complaint was received about an odour on Parkview Drive, Bell Block. An inspection found some chicken shed manure had been used on a small section and watered into the lawn. No odour was found offsite at time of inspection.

Natural Event 27 April 2016
A complaint was received about discolouration in the foam line on Bell Block beach. An inspection found that some sea algae had being washed up in the wave foam which was causing some discolouration.

20. Chemical monitoring of combined discharges

20.1 Drain between De Havilland Drive West and Connett Road West

Discharges from Tasman Oil 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.

Table 59 Chemical monitoring results for the combined stormwater discharge downstream of De Havilland Drive-site MGT000495

Parameter	Conductivity	Acid soluble copper	Dissolved copper	Acid soluble lead	Oil and grease	pH	Suspended solids	Temp.	Acid soluble zinc	Dissolved zinc
Unit	**mS/m@20C**	**g/m³**	**g/m³**	**g/m³**	**g/m³**	**pH**	**g/m³**	**Deg.C**	**g/m³**	**g/m³**
Minimum	3	0.01	0.01	0.05	0.5	6.3	2	9.1	0.013	0.024
Maximum	404	0.27	0.02	0.36	46	8	680	22.3	0.89	0.196
Median	8.14	0.06	0.01	0.02	1.4	7	45	15	0.214	0.056
Number	44	33	23	32	29	44	43	42	36	20
18 Jan 2016 (w)	b	b	b	b	b	b	b	b	b	b
26 Feb 2016 (d)	b	b	b	b	b	b	b	b	b	b
17 Mar 2016 (w)	3.0	0.03	<0.01	<0.05	<0.5	7.0	100	16.0	0.099	0.029
25 May 2016 (w)	8.8	0.06	<0.01	<0.05	a	6.8	43	11.3	0.162	0.080
Greymouth Consent Limit	-	-		-	*15*	*6-9*	*100*	-	-	-
Tasman Tools Consent Limit			*0.05*	-	*15*	*6-9*	*100*	-	-	-

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

This site was visited four times during the year under review, three times during wet weather surveys and once during a dry weather survey. Samples were taken on two occasions (both during wet weather surveys), while no discharge was occurring on the other two occasions.

During the period under review acid soluble and dissolved metal levels were found to be generally equal to or less than the median values recorded for this site, at the discharge point to the stream.

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, than it is from the Greymouth Petroleum site.

20.2 Industrial stormwater and the wetland discharges

Twelve of the 17 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 (site STW002056, Figure 2).

Under normal conditions the remainder of the stormwater flow continues to be directed through the 'industrial drain outlet' (site STW001026, 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 (site STW002055, Figure 2)

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 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.

20.2.1 Connett Road pond one inlet (STW001055)

The Connett Road inlet to Pond 1 is the combined discharges from industrial sites and roading serviced by the Paraite Road and Connett Road stormwater network.

The site was sampled four times during the year, three times during wet weather surveys and once during a dry weather survey. The results for the Connett Road inlet to Pond 1 of the treatment system are given in Table 60.

Table 60 Chemical monitoring results for stormwater discharged to pond 1 from Connett Road for 2015-2016 (site 33), with a summary of previous monitoring data-site STW001055

Parameter	Unit	Min	Max	Med	N	18 Jan 2016 (w)	26 Feb 2016 (d)	17 Mar 2016 (w)	25 May 2016 (w)	*RFWP guideline*
Ammoniacal nitrogen	g/m³ N	0.003	9.37	0.096	29	1.05	0.028	0.096	0.193	-
BOD	g/m³	0.2	2900	6.9	23	**12**	1.3	2.7	**9.1**	*5*
Conductivity @ 20'C	mS/m	1	335	20.5	254	13.5	21.5	1.1	8.9	-
Acid soluble copper	g/m³	0.01	0.06	0.01	18	0.06	0.03	<0.01	0.05	-
Dissolved copper	g/m³	0.01	0.06	0	17	0.06	0.02	<0.01	<0.01	-
DRP	g/m³ P	0.004	5.33	0.035	18	0.150	0.159	0.031	0.055	-
Oil and Grease	g/m³	0.5	29	0.2	45	a	a	<0.5	a	*15*
pH	pH	4.1	10.1	7.6	254	**10.1**	7.4	6.7	6.8	*6-9*
Temperature	Deg.C	10.1	25.2	15.7	84	19.7	17.9	16.5	11.1	-
Turbidity	NTU	0.63	240	7.8	40	21	1.1	71	17	-
Un-ionised ammonia	g/m³	0.00003	1.05729	0.0004	18	**1.05729**	0.00029	0.00018	0.00030	*0.025*
Acid soluble zinc	g/m³	0.014	0.31	0.129	19	0.221	0.112	0.083	0.294	-
Dissolved zinc	g/m³	0.024	0.262	0.107	17	0.057	0.084	0.066	0.155	-

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 RFWP oil and grease limits on all occasions. Elevations of BOD were recorded on 18 January and 25 May 2016. On 18 January 2016 OMV and TIL were found to be breaching their limits in regard to BOD and it was noted that on same day BOD levels on the whole were elevated through the catchment which would have contributed to the elevated BOD result. The pH was found to have exceeded the upper limit on 18 January 2016, resulting in the limit for unionised ammonia also being exceeded.

The sample of 26 March 2016 was also found to have an elevated BOD result, and on this occasion there were no non-compliant discharges found during routine monitoring of the consent holders that contribute to this outfall.

It is worth noting that this discharge point is to the NPDC pond system and not directly to the Mangati Stream.

20.2.2 Industrial drain outlet (STW001026) and discharge (MGT000503)

The industrial drain outlet was sampled on four occasions. The results are given in Table 61 along with a summary of all data from the site.

Table 61 Chemical monitoring results for industrial drain outlet for 2015-site STW001026

Parameter	Unit	Min	Max	Med	N	18 Jan 2016 (w)	26 Feb 2016 (d)	17 Mar 2016 (w)	25 May 2016 (w)	*RFWP guideline*
Ammoniacal nitrogen	g/m³	0.003	13.3	0.156	79	1.26	0.364	0.245	0.082	-
BOD	g/m³	0.7	330	4.5	37	**8.9**	2.0	3.2	**5.8**	*5*
Conductivity @ 20'C	mS/m	1.2	79.7	14.8	168	11.3	23.5	3.6	9.5	-
Acid soluble copper	g/m³	0.01	0.62	0.04	82	0.07	0.04	<0.01	0.03	-
Dissolved copper	g/m³	0.006	0.107	0.015	58	0.06	0.02	<0.01	<0.01	-
DRP	g/m³ P	0.003	2.86	0.036	38	0.142	0.164	0.016	0.037	-
Oil and Grease	g/m³	0.5	62	1.2	60	a	a	<0.5	a	*15*
pH	pH	6.5	9.4	7.3	170	7.3	7.3	6.7	7.0	*6-9*
Temperature	Deg.C	9.6	27.1	16.1	86	20.2	18.1	17.3	11.5	-
Turbidity	NTU	1.1	110	15	40	12	4.3	9.2	26	-
Un-ionised ammonia	g/m³	0.00001	6.12525	0.00111	77	0.01213	0.00300	0.00048	0.00021	*0.025*
Acid soluble zinc	g/m³	0.042	2.24	0.371	82	0.436	0.168	0.142	0.245	-
Dissolved zinc	g/m³	0.025	1.18	0.19	57	0.415	0.122	0.062	0.171	-

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

The samples taken on 18 January 2016 and 25 May 2016 had elevated BOD results and this is consistent with the elevated results found at the inlet to pond 1 and in the Connett Road system during these runs. It is also noted that on 18 January 2016, the ammoniacal nitrogen concentration was found to be elevated, however unionised ammonia levels were well below the RWFP guideline value of 0.025 g/m³.

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 62. This site was visited four times during the year, three times during wet weather surveys and once during a dry weather survey. Samples were taken twice during wet weather surveys, and no discharge was occurring on the other two occasions.

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 the period under review this was generally reflected in all parameters monitored with all results.

Table 62 Chemical monitoring results for the industrial drain discharge to Mangati Stream-site MGT000503

Parameter	Unit	Min	Max	Med	N	17 Mar 2016 (w)	25 May 2016 (w)	*RWFP Guideline*
Aluminium acid soluble	g/m³	0.1	9.1	0.72	51	0.44	0.72	-
Ammoniacal nitrogen	g/m³ N	0.017	6.7	0.148	66	0.095	0.057	-
BOD	g/m³	0.5	76	3.5	60	2.6	1.7	*5*
Conductivity @ 20'C	mS/m	1.3	80.4	19.4	172	1.5	11.3	-
Acid soluble copper	g/m³	0.003	1.63	0.04	79	0.014	0.015	-
Dissolved copper	g/m³	0.001	0.15	0.006	148	0.007	0.006	-
Dissolved oxygen	g/m³	2.5	10.7	8.4	55	9.85	7.52	-
Oxygen saturation %	%	28	102	85	53	101.1	69.8	-
DRP	g/m³ P	0.003	0.293	0.024	60	0.040	0.014	-
Acid soluble lead	g/m³	0.02	0.2	0.02	53	<0.05	<0.05	-
Oil and Grease	g/m³	0.5	590	1.2	50	<0.5	a	*15*
pH	pH	4.3	8.9	6.9	163	6.8	6.5	6-9
Suspended solids	g/m³	2	190	14	75	22	14	*100*
Temperature	Deg.C	9.7	21.7	16.4	89	16.9	11.0	-
Turbidity	NTU	2	37	15	22	6.5	15	-
Un-ionised ammonia	g/m³	0.00001	0.03291	0.00045	62	0.00023	0.00004	*0.025*
Acid soluble zinc	g/m³	0.025	4.84	0.23	92	0.129	0.232	-
Dissolved zinc	g/m³	0.005	2.5	0.103	153	0.097	0.202	-

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

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.

All parameters were found to be below or similar to the median values for this site and where given, within RFWP permitted activity limits.

20.2.3 Pond 3 and 4 discharges

The results for the treated discharge from pond 3 to the stream are given in Table 63. 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. However, during the period under review, pond 3 was only found to be discharging on three of the four occasions it was visited.

Table 63 Chemical monitoring results for pond 3 discharge to the Mangati Stream for 2015-2016-site STW002056

Parameter	Unit	Min	Max	Med	N	26 Feb 2016 (d)	17 Mar 2016 (w)	25 May 2016 (w)	*RWFP Guideline*
Acid soluble aluminium	g/m³	0.01	0.8	0.2	43	<0.1	0.46	0.11	-
Ammoniacal nitrogen	g/m³ N	0.007	1.48	0.172	45	0.120	0.412	0.273	-
BOD	g/m³	0.9	150	5.4	47	**6.8**	**6.6**	2.0	*5*
COD	g/m³	5	280	18	43	50	19	9	-
Conductivity @ 20'C	mS/m	3.8	43.5	14.2	51	16.3	5.7	10.9	-
Acid soluble copper	g/m³	0.001	0.04	0.012	45	0.011	0.013	0.009	-
Dissolved copper	g/m³	0.001	0.026	0.006	48	<0.001	0.007	0.005	-
DRP	g/m³ P	0.003	1.16	0.012	47	0.009	0.012	0.036	-
Acid soluble lead	g/m³	0.05	0.05	0.02	42	<0.05	<0.05	<0.05	-
Oil and Grease	g/m³	0.5	49	0.2	18	a	<0.5	a	*15*
pH	pH	4.8	7.5	6.9	51	6.6	6.8	6.6	-
Suspended solids	g/m³	3	110	14	48	42	22	5	*100*
Temperature	Deg.C	9.5	24.2	17.3	49	20.6	16.8	11.8	-
Turbidity	NTU	2.9	41	10	43	20	12	5.5	-
Un-ionised ammonia	g/m³	0	0.00452	0.0006	45	0.00024	0.00098	0.00028	0.025
Acid soluble zinc	g/m³	0.01	0.348	0.15	46	0.022	0.157	0.218	-
Dissolved zinc	g/m³	0.007	0.335	0.122	47	0.013	0.122	0.202	-

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

On two occasions it was found that the BOD concentrations were above median and exceeded the desired 5.0 g/m³ 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/m³ value.

Table 64 Chemical monitoring results for pond 4 discharge to the Mangati Stream for 2015-2016 -site STW002055 (site 37)

Parameter	Unit	Min	Max	Med	N	18 Jan 2016 (w)	17 Mar 2016 (w)	25 May 2016 (w)	*RWFP Guideline*
Acid soluble aluminium	g/m³	0.1	1.6	0.46	24	0.13	0.27	0.43	-
Ammoniacal nitrogen	g/m³ N	0.021	0.854	0.261	22	0.309	0.111	0.467	-
BOD	g/m³	2.6	98	5	23	5.0	4.4	3.8	*5*
COD	g/m³	6	100	16	24	52	8	11	-
Conductivity @ 20'C	mS/m	4	39.6	10.5	26	18.1	4.0	12.0	-
Acid soluble copper	g/m³	0.002	0.045	0.015	25	0.002	0.010	0.017	-
Dissolved copper	g/m³	0.001	0.023	0.008	26	<0.001	0.005	0.007	-
DRP	g/m³ P	0.003	0.595	0.013	25	0.010	0.044	0.040	-
Acid soluble lead	g/m³	0.05	0.05	0.02	22	<0.05	<0.05	<0.05	-
Oil and Grease	g/m³	0.5	5.2	0.6	8	a	<0.5	a	*15*
pH	pH	5.5	8.8	6.7	26	6.9	6.7	6.7	-
Suspended solids	g/m³	7	53	17	25	12	26	18	*100*
Temperature	Deg.C	11.4	21.8	16	25	19.8	16.4	11.7	-
Turbidity	NTU	5.4	34	13	22	7.8	7.4	11	-
Un-ionised ammonia	g/m³	0	0.00206	0.0004	22	0.00115	0.00020	0.00060	0.025
Acid soluble zinc	g/m³	0.018	0.349	0.213	25	0.018	0.087	0.279	-

Parameter	Unit	Min	Max	Med	N	18 Jan 2016 (w)	17 Mar 2016 (w)	25 May 2016 (w)	*RWFP Guideline*
Dissolved zinc	g/m³	0.006	0.304	0.2	25	0.006	0.057	0.233	-

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 copper and zinc concentrations were similar or below median on all monitoring occasions, and lead concentrations were below detection limits.

Ammoniacal nitrogen concentrations were above the median for two of the three results, however the concentration of unionised ammonia at the time was well below the 0.025 g/m³ RFWP permitted activity limit in both samples.

BOD concentrations in the discharge were found to be equal to or below the median value and compliant with RFWP limits.

21. Receiving environment monitoring in the Mangati Stream

21.1 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 18 January 2016, 17 March 2016, and 25 May 2016. One dry weather survey was also undertaken on 26 February 2016.

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 3 and Figure 2, and are described in Table 65.

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 66.

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 65 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 66 Results from chemical surveys of the Mangati Stream for 2014-2015

Parameter		Mangati Stream					
		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 Jan 2016 - wet		*MGT000485*	*MGT000493*	*MGT000497*	*MGT000500*	*MGT000512*	*MGT000550*
BOD	g/m³	2.4	2.6	2.8	6.2	5.5	4.4
Conductivity @ 20'C	mS/m	22.9	23.0	26.8	25.0	25.0	19.7
Acid soluble copper	g/m³	0.001	0.003	0.005	0.007	0.009	0.006
Dissolved copper	g/m³	<0.001	<0.001	<0.001	0.001	0.003	0.003
Dissolved oxygen	g/m³	3.5	5.61	3.8	4.75	6.06	8.94
DRP	g/m³ P	0.017	0.357	0.018	0.012	0.011	0.005
Un-ionised ammonia	g/m³	0.00225	0.00330	0.00925	0.00088	0.00108	0.00225
Ammoniacal nitrogen	g/m³ N	0.413	0.386	1.38	0.127	0.122	0.163
Nitrate/nitrite	g/m³	0.35	-	-	-	-	1.02
pH	pH	7.1	7.3	7.2	7.2	7.3	7.5
Suspended solids	g/m³	8	3	42	49	32	8
Temperature	Deg.C	18.7	18.6	18.4	18.9	19.1	18.9
Turbidity	NTU	7.1	6.0	23	25	24	11
Acid soluble zinc	g/m³	<0.005	0.010	0.014	0.018	0.012	0.018
Dissolved zinc	g/m³	<0.005	0.007	0.007	0.006	0.006	0.008

Parameter		Mangati Stream					
		Railway	Above DeHavilland Drive	Above Connett Road	Below pond 3 Discharge (formerly above industrial drain)	Below pond 4 and wetland bypass drain	At Coast
26 Feb 2016 - dry		*MGT000485*	*MGT000493*	*MGT000497*	*MGT000500*	*MGT000512*	*MGT000550*
BOD	g/m³	2.0	4.1	3.0	4.1	5.6	1.3
BODCF	g/m³	0.7	0.9	<0.5	0.6	0.5	
Conductivity @ 20'C	mS/m	26.3	24.9	27.6	26.1	25.5	20.9
Acid soluble copper	g/m³	0.001	0.001	0.001	0.001	0.002	0.001
Dissolved copper	g/m³	<0.001	<0.001	<0.001	<0.001	0.002	<0.001
Dissolved oxygen	g/m³	2.04	4.23	4.44	5.06	6.39	9.34
DRP	g/m³ P	0.033	0.024	0.021	0.019	0.014	0.008
E.Coli	/100ml	2600	4600	3800	2500	1700	450
Enterococci	/100ml	3000	6400	3100	2700	2200	1600
Fecal coliforms	/100ml	2700	4900	4000	2500	1700	450
Un-ionised ammonia	g/m³	0.00351	0.00382	0.00244	0.00177	0.00201	0.00064
Ammoniacal nitrogen	g/m³ N	0.899	0.957	0.483	0.350	0.318	0.051
Nitrate/nitrite	g/m³	0.02	-	-	-	-	1.06
pH	pH	7.0	7.0	7.1	7.1	7.2	7.5
Suspended solids	g/m³	11	24	5	6	21	2
Temperature	Deg.C	17.3	17.6	17.7	17.7	17.6	17.7
Turbidity	NTU	11	17	6.9	7.5	13	4.4
Acid soluble zinc	g/m³	<0.005	0.025	0.007	0.010	0.017	0.009
Dissolved zinc	g/m³	<0.005	0.016	-	0.010	0.007	<0.005
17 March 2016 - wet		*MGT000485*	*MGT000493*	*MGT000497*	*MGT000500*	*MGT000512*	*MGT000550*
BOD	g/m³	3.2	8.6	7.3	3.7	6.0	4.9
Conductivity @ 20'C	g/m³	15.2	10.3	4.6	4.4	4.6	4.5
Acid soluble copper	g/m³	0.002	0.011	0.021	0.018	0.012	0.013
Dissolved copper	mS/m	<0.001	0.004	0.003	0.003	0.006	0.003
Dissolved oxygen	g/m³	5.45	6.24	8.24	7.96	8.76	9.12
DRP	g/m³ P	0.043	0.032	0.020	0.017	0.016	0.013
Un-ionised ammonia	g/m³	0.00169	0.00092	0.00029	0.00028	0.00036	0.00029
Ammoniacal nitrogen	g/m³ N	0.605	0.413	0.125	0.149	0.193	0.122
Nitrate/nitrite	g/m³	0.21	-	-	-	-	0.21
pH	pH	6.9	6.8	6.8	6.7	6.7	6.8
Suspended solids	g/m³	13	110	120	100	43	40
Temperature	Deg.C	15.9	15.9	16.3	16.6	16.6	16.9
Turbidity	NTU	11	54	85	60	24	23
Acid soluble zinc	g/m³	0.008	0.229	0.100	0.092	0.097	0.056
Dissolved zinc	g/m³	<0.005	0.041	0.010	0.015	0.042	0.018
25 May 2016 - wet		*MGT000485*	*MGT000493*	*MGT000497*	*MGT000500*	*MGT000512*	*MGT000550*

Parameter		Mangati Stream					
		Railway	Above DeHavilland Drive	Above Connett Road	Below pond 3 Discharge (formerly above industrial drain)	Below pond 4 and wetland bypass drain	At Coast
BOD	g/m³	5.5	2.3	3.0	2.6	2.7	3.1
Conductivity @ 20'C	mS/m	22.4	16.7	18.0	15.8	12.5	12.8
Acid soluble copper	g/m³	0.005	0.016	0.006	0.006	0.009	0.009
Dissolved copper	g/m³	0.002	0.001	0.002	0.004	0.004	0.006
Dissolved oxygen	g/m³	8.24	8.29	7.82	7.86	8.21	9.98
DRP	g/m³ P	0.065	0.015	0.024	0.022	0.013	0.013
Un-ionised ammonia	g/m³	0.00249	0.00116	0.00085	0.00073	0.00053	0.00053
Ammoniacal nitrogen	g/m³ N	0.804	0.458	0.404	0.350	0.155	0.156
Nitrate/nitrite	g/m³	1.30	-	-	-	-	0.48
pH	pH	7.1	7.0	6.9	6.9	7.1	7.1
Suspended solids	g/m³	17	210	28	20	14	43
Temperature	Deg.C	11.1	11.5	12.0	11.9	12.3	12.2
Turbidity	NTU	13	110	20	15	12	40
Acid soluble zinc	g/m³	0.025	0.102	0.048	0.089	0.106	0.107
Dissolved zinc	g/m³	0.007	0.038	0.034	0.073	0.087	0.088

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

21.1.1 Biochemical oxygen demand

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.

BOD levels were found to be elevated to levels higher than seen in the previous periods. A transitory unsourced discharge containing a high level of BOD was found at site MGT000097 on 18 January 2016 and this would have contributed to the elevated result in this survey. The highest result of the period under review was found at site MGT000493 downstream of Tegel's wetland on 17 March 2016. However on the same day, Tegel's wetland discharge was found to be compliant with consent conditions and was unlikely to be the sole cause of this elevated result.

Also of interest is the trend in increasing BOD levels found at the site upstream of the industrial catchment. Whilst there is potential for this site to affected by inputs from air deposition from industrial activities the steadily increasing levels of over the past five years are potentially more indicative of changes in rural activities in the upper catchment. The Council is currently investigating this trend.

It is worth noting that the BOD measures the biological oxygen demand of both dissolved and suspended contaminants containing compounds that can be oxidised

biologically, of which the dissolved carbonaceous fraction (BODCF) is the analyte that is considered best for measuring instream effects. BODCF is more bioavailable and apt to produce sewage fungus if concentrations are sustained at over 2.0 g/m^3.

Monitoring of BODCF during the period under review found that all results were below this limit and no evidence of sewage fungus was noted during sampling or inspections.

21.1.2 Ammoniacal nitrogen

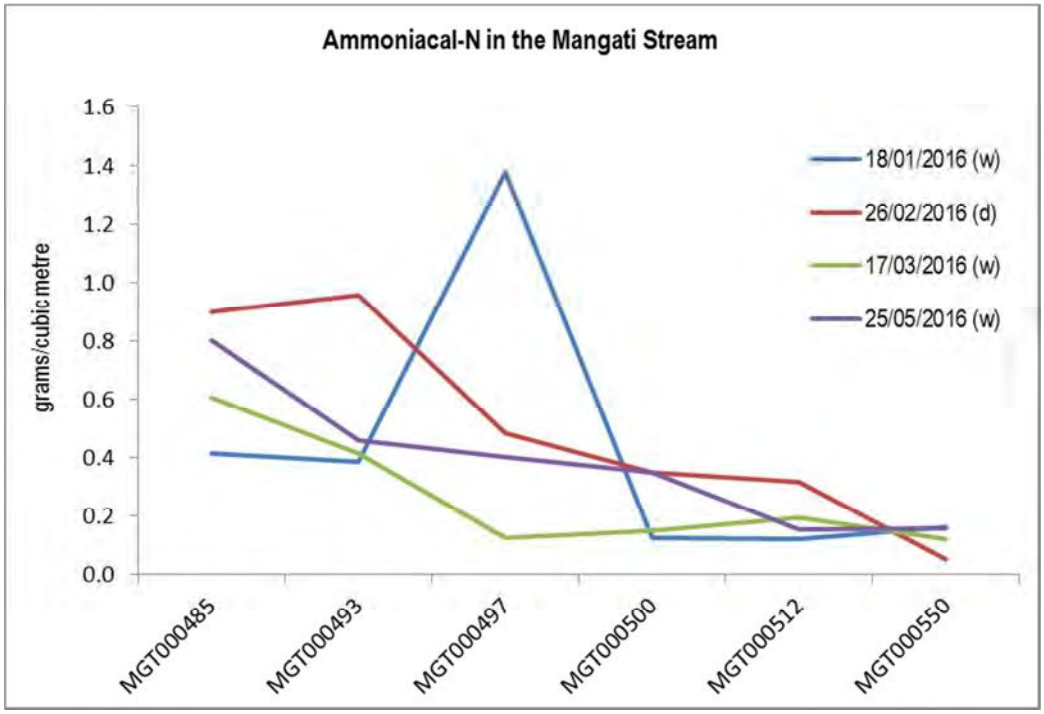


Figure 8 Longitudinal ammoniacal nitrogen profile of Mangati Stream

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

Ammonia levels were for the most part above historical medians. In one of the surveys (26 February 2016) there was a slight peak of ammoniacal nitrogen immediately downstream of Tegel's wetland (at site MGT000493).

In the 18 January 2016 survey there was a second far more pronounced peak at site MGT000497. All of the monitored discharges above this site were found to have ammoniacal nitrogen concentrations lower than this instream result. It is possible the discharge from the eastern leg of the de Havilland Drive network may have contributed to this and the monitoring of this area is being phased into the monitoring programme. Overall it was found that ammoniacal nitrogen concentrations decreased when moving down the catchment. All unionised ammonia results were found to be well below the RFWP and MfE limit of 0.025 g/m^3 with the highest level being 0.00925 g/m^3 at site MGT000497 on 18 January 2016.

21.1.3 Zinc and copper

The results for the period under review along with summaries of the monitoring data monitoring year, for acid soluble and dissolved zinc (Zn) and copper (Cu) concentrations in the water column of the Mangati Stream, are given in Table 67 and Table 68.

Table 67 Summary of zinc monitoring data for Mangati Stream water

Date	Above industrial area (MGT000485)		Above DeHavilland Drive (MGT000493)		Above Connett Road (MGT000497)		Below pond 3 Discharge (formerly above the industrial drain) (MGT000500)		Below pond 4 and wetland bypass drain (MGT000512)		Mangati at Coast (MGT000550)	
	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
Minimum	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.004	0.005	0.005	0.006	0.005
Maximum	0.043	0.034	0.229	0.104	0.147	0.052	0.28	0.141	0.637	0.377	0.358	0.179
Median	0.002	0.002	0.022	0.007	0.011	0.008	0.018	0.012	0.049	0.013	0.043	0.026
Number	82	79	24	23	60	55	62	81	106	182	76	75
18 Jan 2016 (w)	<0.005	<0.005	0.010	0.007	0.014	0.007	0.018	0.006	0.012	0.006	0.018	0.008
26 Feb 2016 (d)	<0.005	<0.005	0.025	0.016	0.007	0.014	0.010	0.010	0.017	0.007	0.009	<0.005
17 Mar 2016 (w)	0.008	<0.005	0.229	0.041	0.100	0.010	0.092	0.015	0.097	0.042	0.056	0.018
25 May 2016 (w)	0.025	0.007	0.102	0.038	0.048	0.034	0.089	0.073	0.106	0.087	0.107	0.088

Key: (d) dry weather survey (w) wet weather survey
ZnAs = Acid soluble zinc ZnD = Dissolved zinc

Table 68 Summary of copper monitoring data for Mangati Stream water

Date	Above industrial area (MGT000485)		Above DeHavilland Drive (MGT000493)		Above Connett Road (MGT000497)		Below pond 3 Discharge (formerly above the industrial drain) (MGT000500)		Below pond 4 and wetland bypass drain (MGT000512)		Mangati at Coast (MGT000550)	
	CuAs, g/m³	CuD, g/m³	CuAs, g/m³	CuD, g/m³	CuAs, g/m³	CuD, g/m³	CuAs, g/m³	CuD, g/m³	CuAs, g/m³	CuD, g/m³	CuAs, g/m³	CuD, g/m³
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	0.017	0.01	0.039	0.01	0.09	0.016	0.06	0.016	0.28	0.066	0.21	0.025
Median	0.005	0.001	0.003	0	0.005	0.002	0.005	0.003	0.01	0.003	0.01	0.005
Number	82	84	23	23	59	61	74	88	96	190	76	80
18 Jan 2016 (w)	0.001	<0.001	0.003	<0.001	0.005	<0.001	0.007	0.001	0.009	0.003	0.006	0.003
26 Feb 2016 (d)	0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001	0.002	0.002	0.001	<0.001
17 Mar 2016 (w)	0.002	<0.001	0.011	0.004	0.021	0.003	0.018	0.003	0.012	0.006	0.013	0.003
25 May 2016 (w)	0.005	0.002	0.016	0.001	0.006	0.002	0.006	0.004	0.009	0.004	0.009	0.006

Key: (d) dry weather survey (w) wet weather survey
CuAs = Acid soluble copper ZnD = Dissolved copper

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 g/m^3 $CaCO_3$, are 0.005 g/m^3 for Cu and 0.058 g/m^3 for Zn respectively as a four 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.

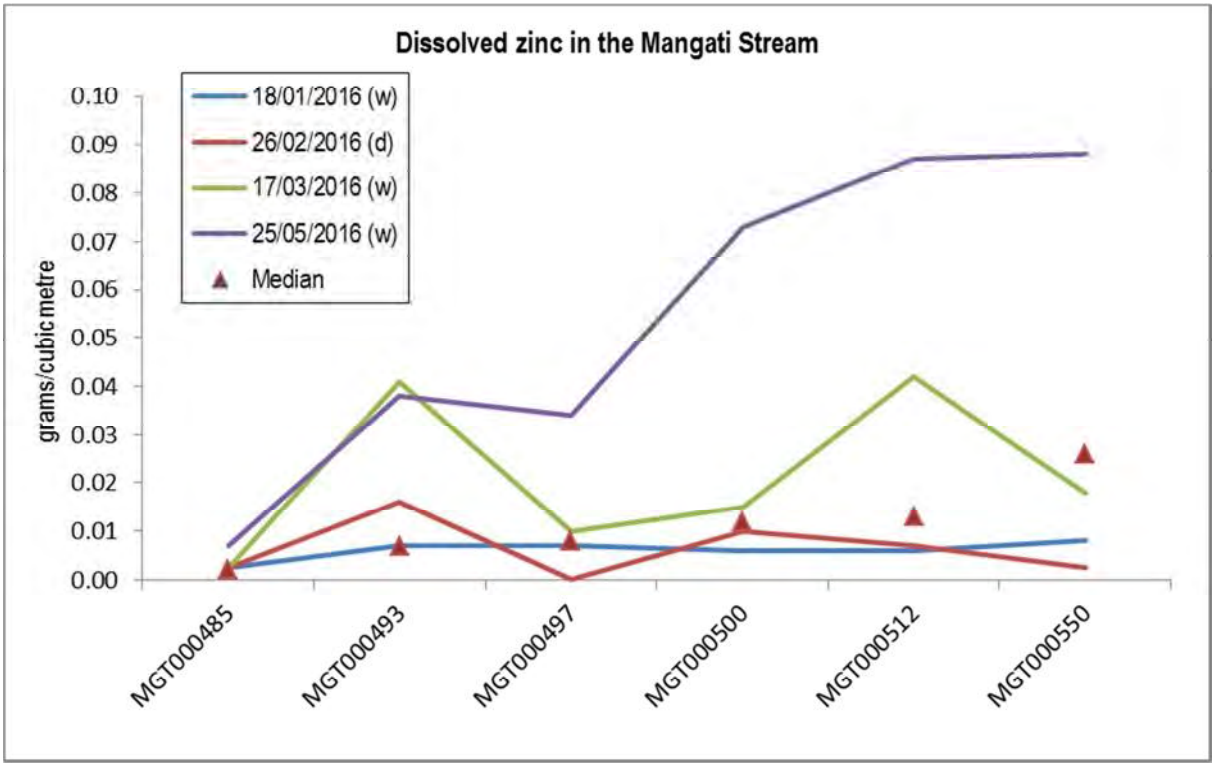


Figure 9 Longitudinal dissolved zinc profile of Mangati Stream
Key: (d) dry weather survey (w) wet weather survey

During the wet weather surveys of 18 January, and 17 March the levels of dissolved zinc remained mostly stable and below the 0.064 g/m^3 acute guideline. The wet weather survey of 25 May 2016 exhibited elevated results of dissolved zinc samples in the stream after the discharges from pond three, four and the industrial drain outlet. Three of the six samples taken on 25 May 2016 were slightly above the USEPA acute guideline. Overall 21 of the 24 samples instream samples taken were found to be within the USEPA chronic limit for dissolved zinc.

During dry weather runs the concentrations of dissolved zinc remain relatively low and stable throughout 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. All results from the dry weather run were below the USEPA chronic guideline for zinc and all but one result was below the 95% protection ANZECC trigger value.

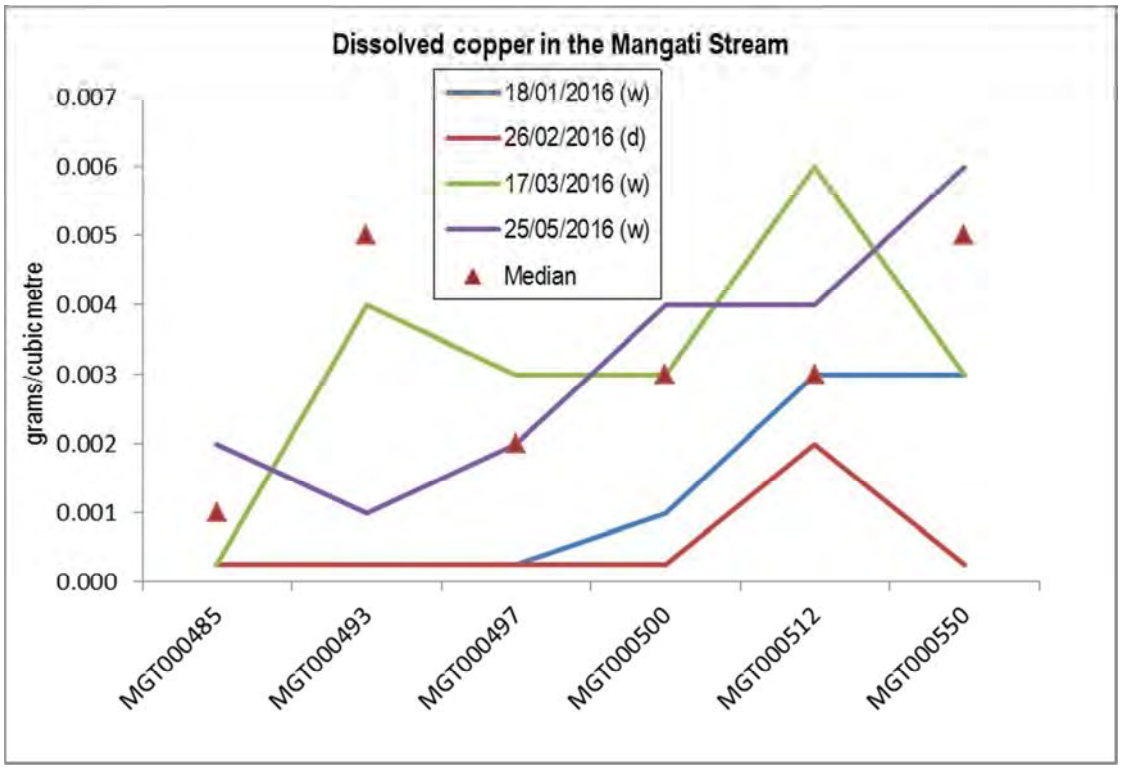


Figure 10 Longitudinal dissolved copper profile of Mangati Stream

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

The overall results however were found to be similar to historical medians

All 24 samples taken during both wet weather and dry surveys were below the 0.005 g/m^3 USEPA chronic exposure limit for dissolved copper.

21.2 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.

21.2.1 Macroinvertebrate surveys

The routine surveys for the period under review were carried out on 9 November 2015 and 10 February 2016. These were the 42nd and 43rd 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.

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.

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 69 and the summary and conclusions of the macroinvertebrate survey reports are given below.

Table 69 Numbers of taxa and MCI values recorded in previous surveys in the Mangati Stream, together with results of the November 2015 and February 2016 surveys

Site	Number of previous surveys	Numbers of taxa				MCI values				$SQMCI_s$ values			
		Med	Range	Nov 2015	Feb 2016	Med	Range	Nov 2015	Feb 2016	Med	Range	Nov 2015	Feb 2016
A	44	16	9-29	16	12	78	56-91	81	72	3.6	2.2-4.7	4.3	4.7
A2	42	16	10-29	16	17	75	57-92	74	64	3.6	1.8-4.7	3.4	2.1
A1	44	16	7-23	17	13	74	47-89	78	62	3.5	1.7-4.7	3.5	2.0
A3	42	17	8-23	11	14	69	52-81	75	59	2.6	1.6-4.6	3.5	2.5
B	50	14	3-29	14	21	69	50-86	77	61	2.5	1.1-4.5	2.8	2.5
D2	26	11	5-18	14	12	70	40-78	73	62	2.5	1.1-3.5	2.6	2.6
E	48	10	3-22	21	14	65	44-78	76	79	2.5	1.1-3.9	3.5	2.6
F	42	11	2-22	15	16	67	30-79	67	70	2.2	1.2-4.1	3.5	3.9

9 November 2015

On 19 November 2015 eight established sampling sites in the Mangati Stream catchment were sampled using kick sampling (sites A, A1, D2, and E) or a combination of the kick sampling and sweep-sample techniques (sites A2, A3, B, and F) 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 $SQMCI_s$ score for each site.

Overall, the changes in community structures, numbers of taxa, and MCI values in the upper reaches of the Mangati Stream, indicate that there may have been some adverse effects on macroinvertebrate communities resulting from discharges from Tegel Poultry. Furthermore, downstream of De Havilland Drive, where stormwater from De Havilland Drive West, Tasman Oil and Greymouth Petroleum enter, there was a decrease in taxonomic richness from that recorded upstream, possibly as a result of toxic discharges but no discharges were noted at the time of the survey. Downstream

of Connett Road West the discharges from the wetland ponds may have had subtle impacts on the macroinvertebrate community at sites B and D2 as indicated by the decrease in $SQMCI_s$ scores. Site E showed improved macroinvertebrate community health across all indices while Site F also showed some improvement. Overall, the results of the current survey indicate that macroinvertebrate health was generally 'poor' for the surveyed sites in the Mangati Stream and there was some evidence of discharges adversely effecting macroinvertebrate communities. However, results were either normal or better than usual indicating some improvements in water quality for most sites.

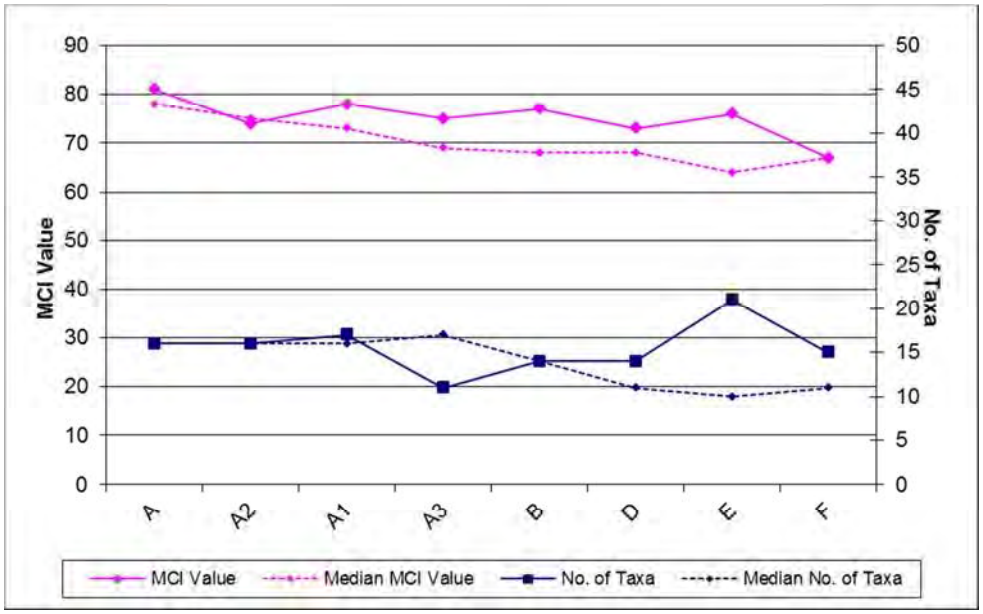


Figure 11 Numbers of taxa and MCI values recorded at sites in the Mangati Stream in the November 2015 survey

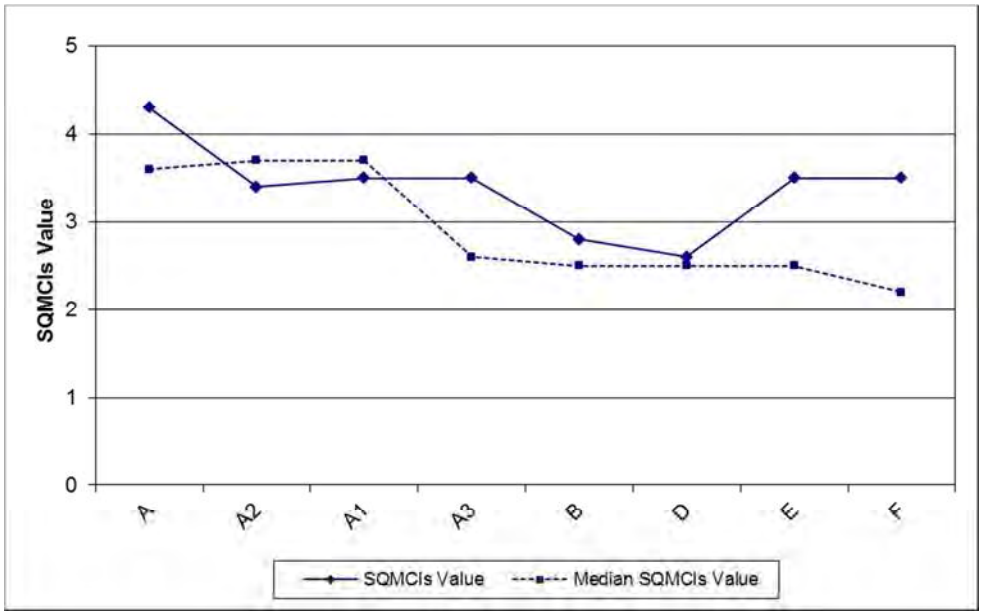


Figure 12 $SQMCI_s$ values recorded at sites in the Mangati Stream in the November 2015 survey

10 February 2016

On 10 February 2016 eight established sampling sites in the Mangati Stream catchment were sampled using kick samples (sites D2 and E), a combination of the 'kick sampling' and 'sweep-sample' techniques (sites A, A2, A1, B, and F), or 'sweep-sample' technique (site A3) 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 $SQMCI_s$ score for each site.

Upstream of De Havilland Drive (sites A, A2 and A1) MCI and $SQMCI_s$ scores for sites A2 and A1 were significantly lower than historical medians. MCI scores were non-significantly lower than the 'control' site, site A, but for the more sensitive SQMCIs, scores were significantly lower than site A. Site A equalled its highest equal recorded $SQMCI_s$ score suggesting either preceding water quality was higher than average or that habitat quality had increased at the site which would exaggerate differences with the two downstream sites. However, this would not explain the lower than normal scores at sites A2 and A1 suggesting that Tegel Poultry discharges were adversely affecting the health of the macroinvertebrate communities present in the Mangati Stream. The previous survey in November 2015 also noted concerns about Tegel Poultry discharges (DS047).

Results recorded at the next three sites (A3, B and D2) indicated that they were in a poor state suggesting discharges below De Havilland Drive and possibly also below the wetland were having a negative affect on the macroinvertebrate stream communities present there though discharges from Tegel Poultry may also have contributed to the lowered macroinvertebrate health.

At site E there was a significant drop of $SQMCI_s$ score at the site from the previous survey but little change in MCI score. It had five 'rare' 'moderately sensitive' taxa out of 14 taxa indicating that the $SQMCI_s$ score of 2.6 units is a more accurate reflection of the health of the macroinvertebrate community at the site suggesting that the site was degraded and had become so since the previous survey.

At site F macroinvertebrate indices were better than normal, especially the SQMCIs score which was significantly higher than the historical median and not significantly different to the control site score, indicating that the site was not being significantly impacted by discharges and habitat quality, which can sometimes be affected by the sea, was relatively normal.

Overall, the changes in community structures, MCI and SQMCIs score in the upper reaches of the Mangati Stream indicate that there have likely been some adverse affects on macroinvertebrate communities, possibly from discharges from Tegel Poultry but potentially from other sources as well. Downstream of De Havilland Drive, where stormwater from De Havilland Drive West, Tasman Oil and Greymouth Petroleum enter, there were also low MCI and $SQMCI_s$ scores suggesting some adverse effects on macroinvertebrates. Downstream of Connett Road West the discharges from the wetland ponds appear to have impacted on the macroinvertebrate community at sites B and D2 as indicated by the decreased, low, $SQMCI_s$ scores. Site E may also have been impacted by discharges while Site F showed improvement. Overall, the results of the current survey indicate that macroinvertebrate health was generally 'poor' for the surveyed sites in the Mangati Stream and discharges may have potentially adversely

affected macroinvertebrate communities though poor quality habitat may have also influenced the state of macroinvertebrate communities present in the stream.

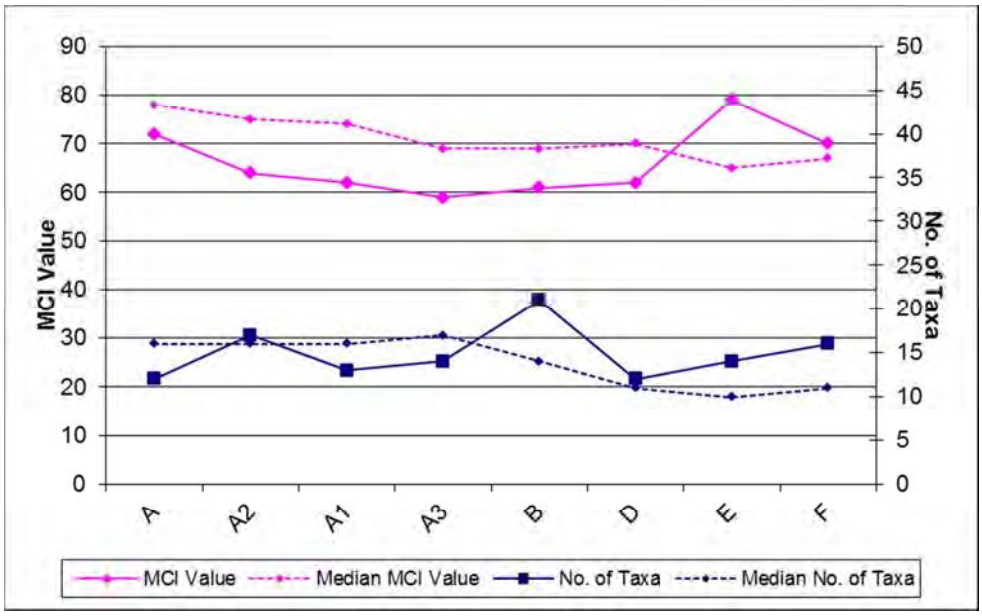


Figure 13 Numbers of taxa and MCI values recorded at sites in the Mangati Stream in February 2015 survey

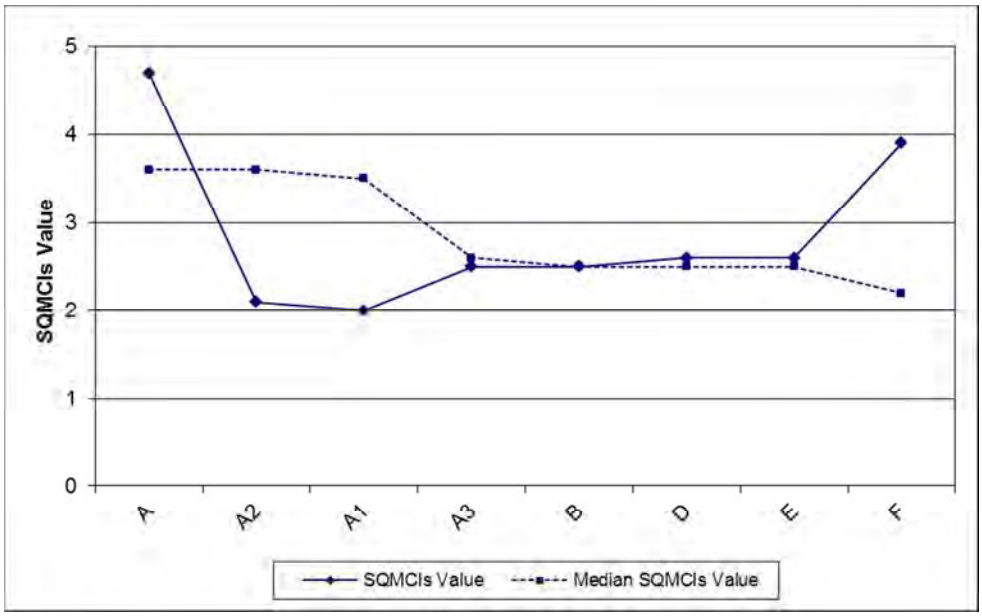


Figure 14 SQMCI values recorded at sites in the Mangati Stream in February 2015 survey

21.2.1.1 Summary 2015-2016 macroinvertebrate findings

The survey of November 2015 survey found MCI scores that were within the expected ranges and generally above the historical medians. The report comments that the industrial activities in the area were likely to be having some effects, however the results indicated that there may have being some improvement in water quality.

The February 2016 survey found MCI scores to lower than expected in the upper and mid catchment sites and the report notes that adverse effects may have been caused by discharges however summer habitat pressures may have also played a role. The chemical sampling undertaken in mid January 2016 did find elevated concentrations of BOD in the stream which may have contributed to the depressed MCI scores. It is noted however that in the lower reaches the MCI scores had recovered to higher than median results with site E recording its highest MCI score since monitoring of the site began.

21.2.1.2 Statistical analysis of macroinvertebrate results

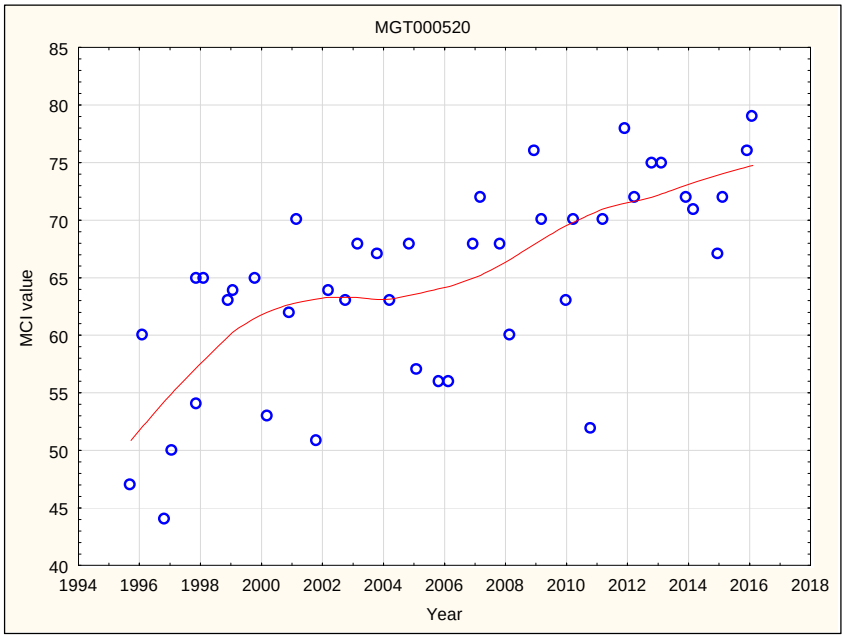
In the 2014-2015 period a 20 year trending analysis of MCI results at two sites used in monitoring the activities in the Mangati industrial catchment was published in *Freshwater Macroinvertebrate Fauna Biological Monitoring Programme Annual State of the Environment Monitoring Report 2014-2015 Technical Report 2015-66 (and Report CF622).*

The sites that were trended were site A (above industrial catchment) and site E (below industrial catchment).

The 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*".

It is noted that during this period that the highest MCI score ever recorded at site E which indicates that the positive trend is continuing. Updated trend graphs are given below in Figure 15 and Figure 16 for the two sites used in the statistical analysis.



N = 43
Kendall tau = + 0.530
p level < 0.001
FDR p < 0.001

Figure 15 LOWESS trend plot at the Te Rima Place, Bell Block (site E) (d/s of industrial area)

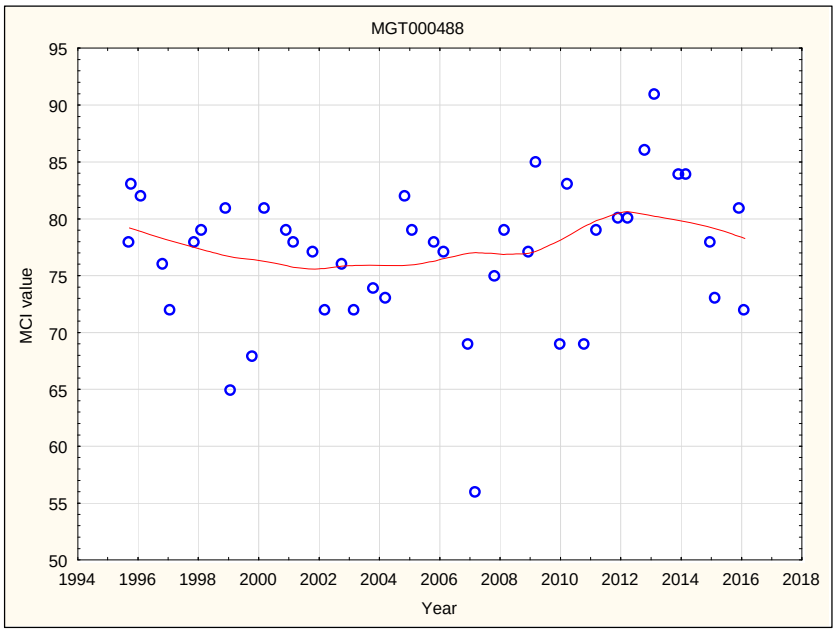


Figure 16 LOWESS trend plot of MCI data at Site A (u/s industrial area)

21.2.2 Fish survey

Summer spotlighting fish surveys are undertaken every three years, this is next scheduled during the 2016-2017 monitoring period.

22. Summary of recommendations

1. THAT monitoring programmed for the consented activities of ABB Ltd in the 2016-2017 year remains similar to that undertaken in the 2015-2016 year with exception of the triennial air deposition survey which is next scheduled for the 2018-2019 period.

2. THAT monitoring programmed for the consented activities of GrainCorp Feeds Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

3. THAT monitoring programmed for the consented activities of Greymouth Petroleum Acquisitions Company Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

4. THAT monitoring programmed for consented activities of Halliburton New Zealand Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

5. THAT monitoring programmed for consented activities of J Swap Contractors Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

   and

   That consent 10085-1 be reviewed under section 128(1) (c) of the RMA to redress the lack of discharge standards at the point where the combined roof water and truck wash stormwater enter the piped unnamed tributary of the Mangati Stream.

6. THAT monitoring programmed for consented activities of McKechnie Aluminium Solutions Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

7. THAT monitoring programmed for consented activities of New Plymouth District Council in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

8. THAT monitoring programmed for consented activities of Nexans New Zealand Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

9. THAT monitoring programmed for consented activities of OMV New Zealand Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

10. THAT monitoring programmed for consented activities of Schlumberger New Zealand Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

11. THAT monitoring programmed for consented activities of Tasman Oil Tools Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

12. THAT monitoring programmed for consented activities of Tegel Foods Ltd (feed mill) in the 2016-2017 year continues at a similar level to that programmed for 2015-2016 with the exception of the triennial deposition gauging which next due in the 2018-2019 period.

    and

    THAT the option for a review of resource consent 2335-4 in June 2017, as set out in condition 11 of the consent, not be exercised, on the grounds that the current 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.

13. THAT monitoring programmed for consented activities of Tegel Foods Ltd (poultry processing plant) in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

    and

    THAT the option for a review of resource consent 3470-3 in June 2017, as set out in condition nine of the consent, not be exercised, on the grounds that the current 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.

14. THAT monitoring programmed for consented activities of TIL Freighting Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

15. THAT monitoring programmed for consented activities of First Gas Ltd's site (formerly Vector Gas Ltd's site) in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

16. THAT monitoring programmed for consented activities of W Abraham Ltd in the 2016-2017 year continues at a similar level to that programmed for 2015-2016.

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
BODCF	filtered carbonaceous biochemical oxygen demand. A measure of the presence of dissolved degradable organic matter, excluding the biological conversion of ammonia to nitrate
Bund	a wall around a tank to contain its contents in the case of a leak
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
Condy	conductivity, an indication of the level of dissolved salts in a sample, usually measured at 20°C and expressed in mS/m
Cu*	copper
DO	dissolved oxygen
DRP	dissolved reactive phosphorus
E.coli	*escherichia coli,* an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 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
g/m^3	grams per cubic metre, and equivalent to milligrams per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures
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 occurred
Intervention	action/s taken by Council to instruct or direct actions be taken to avoid or reduce the likelihood of an incident occurring
Investigation	action taken by Council to establish what were the circumstances/events surrounding an incident including any allegations of an incident

Incident register	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
NH_4	ammonium, normally expressed in terms of the mass of nitrogen (N)
NH_3	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)
NO_3	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 consent	refer Section 87 of the RMA. Resource consents include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15)
RMA	Resource Management Act 1991 and subsequent amendments
SS	suspended solids
SQMCI	semi quantitative macroinvertebrate community index. MCI with taxa abundance factored in
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 (2015): *Mangati Stream Catchment Resource Consents Monitoring Programme Annual Report 2014-2015. Technical Report 2015-119.* June 2016.

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 Consent Holder:	ABB Limited [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

For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document

General conditions

a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.

b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.

c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:

i) the administration, monitoring and supervision of this consent; and
ii) charges authorised by regulations.

Special conditions

1. 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
pH	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.

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

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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 Consent Holder:	ABB Transformers Limited PO Box 7050 Fitzroy 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/m^3 (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 $g/m^2/day$.

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).

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 Consent Holder:	First Gas Limited Private Bag 2020 New Plymouth 4342
Decision Date:	17 December 2015
Commencement Date:	17 December 2015

Conditions of Consent

Consent Granted:	To discharge stormwater and vehicle wash water to the Mangati Stream
Expiry Date:	1 June 2032
Review Date(s):	June 2020, June 2026
Site Location:	38-48 Connett Road West, Bell Block
Legal Description:	Lot 1 DP 12815 (discharge source and discharge point 3) Lot 4 & 5 DP 12815 (discharge points 1 and 2)
Grid Reference (NZTM)	1699708E-5678603N (discharge point 1 to NPDC system) 1699629E-5678680N (discharge point 2 to receiving water via NPDC ponds) 1699809E-5678503N (discharge 3 point to receiving water)
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 an area not exceeding 4 hectares.

3. Within 12 months of the commencement of this consent the consent holder shall install a treatment system that will treat the vehicle wash water to meet the standards shown in the following table.

Constituent	Standard
pH	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}

4. Prior to leaving the property the constituents of all stormwater discharges shall meet the standards shown in the following table.

Constituent	Standard
pH	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. The consent holder shall sample the treated wash water at intervals not exceeding 6 months and analyse the samples for pH, suspended solids, biochemical oxygen demand, filtered biochemical demand, and oil and grease within 24 hours of the sample being taken. The consent holder shall supply the results of the sampling required, to the Chief Executive of the Taranaki Regional Council within 20 working days of the sampling.

6. After allowing for reasonable mixing, within a mixing zone extending 30 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.

7. The consent holder shall maintain and regularly update a 'Contingency Plan' that details measures and procedures that will be undertaken to prevent, and to avoid environmental effects from, a spillage or any discharge of contaminants not authorised by this consent. The plan shall be approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity.

8. The site shall be operated in accordance with a 'Stormwater Management 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 is to be managed to minimise the contaminants that become entrained in the stormwater and shall include as minimum:

    a) the loading and unloading of materials;
    b) storage of hazardous chemical;
    c) wash water sampling and analysis procedures;
    d) scheduling of wash water sampling;
    e) general housekeeping; and
    f) management and maintenance of the vehicle wash bay treatment 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 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.

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 2020 and/or June 2026; and/or
    b) within 3 months of receiving a notification under special condition 9 above;
    c) within 12 months of the installation of the vehicle wash treatment system.

    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 20 June 2016

For and on behalf of
Taranaki Regional Council

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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 Consent Holder:	GrainCorp Feeds Limited 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.

Constituent	Standard
pH	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:

   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. 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}.

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

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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 Consent Holder:	Greymouth Petroleum Acquisition Company Limited 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

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 [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	**Standard**
pH	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

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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 Consent Holder:	Halliburton New Zealand 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

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	Standard
pH	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.

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

Discharge Permit

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

Name of Consent Holder:	J Swap Contractors Limited PO Box 153 Matamata 3440
Decision Date:	7 October 2015
Commencement Date:	7 October 2015

Conditions of Consent

Consent Granted:	To discharge stormwater from a transport depot into an unnamed tributary of the Mangati Stream
Expiry Date:	1 June 2032
Review Date(s):	June 2020, June 2026 and in accordance with special condition 16
Site Location:	88 Corbett Road, Bell Block
Legal Description:	Lot 1 DP 19102 Blk II Paritutu SD & Lot 1 DP 365852 (Discharge source & site)
Grid Reference (NZTM)	1700503E-5678062N
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. This includes but is not limited to the minimisation of product being tracked or spilt within the stormwater catchment areas.

2. The stormwater discharged shall be from an area not exceeding 5.2 Ha

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. Constituents of the discharge at a point below the manhole/scruffy dome inlet, prior to the stormwater entering the existing piped gully network (at NZTM 1700503E-5678062N), shall meet the standards shown in the following table.

Constituent	Standard
pH	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}
carbonaceous biochemical oxygen demand	Concentration not greater than 5.0 gm^{-3}

5. The consent holder shall maintain safe and reasonable foot access to the site described in condition 4, so that samples of the discharge may be taken.

6. At a point 20 metres downstream of the confluence with the Mangati Stream (grid reference NZTM 1699964E-5678256N) the discharge shall not cause 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 and;
   f) an unionised ammonia concentration greater that 0.025 g/m^3.

7. Before 15 December 2015, the consent holder shall submit the final stormwater system design for Stage One of the proposal and preliminary proof of concept designs for all planned stages of development, to the Chief Executive, Taranaki Regional Council. The design shall be approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity, and shall:

    a) be prepared by a suitably qualified professional engineer;
    b) provide sufficient storage for a 1% AEP rainfall event less the pre-development flow (with allowance for climate change to 2090);
    c) ensure that in rainfall events up to 1% AEP all discharges are made through designated detention ponds (with allowance for climate change to 2090);
    d) ensure that discharges to the Mangati Stream are no greater than the pre-development flow rate; and
    e) indicate how and where flow from over design events leaves the property in a controlled manner.

8. Before 31 May 2016 the consent holder shall construct Stage One of the stormwater system in accordance with the design required by condition 7.

9. As-built plans shall be certified by a Chartered Professional Engineer (CPEng) as being in accordance with the design plans certified in accordance with condition 7 and a copy of the as-built certification shall be submitted to the Chief Executive, Taranaki Regional Council, within 10 working days of completion of the works.

10. Before commencing any development beyond stage one, a final stormwater system design will be submitted to, and be approved by, the Chief Executive, Taranaki Regional Council, acting in a certification capacity, and shall:

    a) be prepared by a suitably qualified professional engineer;
    b) provide sufficient storage for a 1% AEP rainfall event less the pre-development flow (with allowance for climate change to 2090);
    c) ensure that in rainfall events up to 1% AEP (with allowance for climate change to 2090) all discharges are made through designated detention ponds; and
    d) ensure that discharges to the Mangati Stream are no greater than the pre-development flow rate.

11. As-built plans of the stormwater system for each subsequent stage of development shall be certified by a Chartered Professional Engineer (CPEng) as being in accordance with the design plans certified in accordance with condition 9 and a copy of the as-built certification shall be submitted to the Chief Executive, Taranaki Regional Council, within 10 working days of completion of the works.

12. By 15 December 2015 the site shall be operated in accordance with a 'Management 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 is to be managed to minimise the contaminants that become entrained in the stormwater and shall include as minimum:

    a) the loading and unloading of materials;
    b) maintenance of conveyance systems;
    c) general housekeeping;
    d) management and maintenance of the truck wash grit trap and first flush diversion system;
    e) the maintenance and management of all treatment systems; and
    f) the minimisation of tracked and spilt product within stormwater catchment areas.

13. By 15 December 2015, shall submit a 'Contingency Plan' that details measures and procedures that will be undertaken to prevent, and to avoid environmental effects from, a spillage or any discharge of contaminants not authorised by this consent. The plan shall be kept up to date and be approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity.

14. 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 1991. 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.

15. This consent shall lapse on 31 December 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.

16. 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;
    b) within 3 months of receiving a notification under special condition 14 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 7 October 2015

For and on behalf of
Taranaki Regional Council

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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 Consent Holder:	McKechnie Aluminium Solutions Limited 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

For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document

General conditions

a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.

b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.

c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:

i) the administration, monitoring and supervision of this consent; and
ii) charges authorised by regulations.

Special conditions

1. The consent holder shall 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.

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

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Director-Resource Management

Consent 4302-2

Discharge Permit

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

Name of Consent Holder:	New Plymouth District Council 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

For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document

General conditions

a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council (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

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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 Consent Holder:	Nexans New Zealand Limited 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

For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document

General conditions

a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.

b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.

c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:

i) the administration, monitoring and supervision of this consent; and
ii) charges authorised by regulations.

Special conditions

1. 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
pH	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.

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

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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 Consent Holder:	Nexans New Zealand Limited 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

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. 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 (PM_{10}) 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.

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.

Transferred at Stratford on 21 May 2015

For and on behalf of
Taranaki Regional Council

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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 Consent Holder:	OMV New Zealand Limited 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

For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document

General conditions

a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.

b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.

c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:

i) the administration, monitoring and supervision of this consent; and
ii) charges authorised by regulations.

Special conditions

Condition 1 [changed]

1. Constituents in the discharge shall meet the standards shown in the following table:

Constituent	Standard
pH	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.

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

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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 Consent Holder:	OMV New Zealand Limited PO Box 2621 Wellington 6140
Decision Date:	24 September 2015
Commencement Date:	24 September 2015

Conditions of Consent

Consent Granted:	To discharge stormwater from an industrial site into an unnamed tributary of the Mangati Stream
Expiry Date:	01 June 2032
Review Date(s):	June 2020 and/or June 2026
Site Location:	29 Paraite Road, Bell Block
Legal Description:	Lot 3 DP 15627 (Discharge source) Lot 1 DP 13379 (Discharge site)
Grid Reference (NZTM)	1699369E-5678348N
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 an area not exceeding 1.08 hectares.

3. Constituents in the discharge shall meet the standards shown in the following table:

Constituent	Standard
pH	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.

4. At the point 1699596E- 5678691N 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.

5. The consent holder shall maintain and regularly update a 'Contingency Plan' that details measures and procedures that will be undertaken to prevent, and to avoid environmental effects from, a spillage or any discharge of contaminants not authorised by this consent. The plan shall be approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity.

6. The site shall be operated in accordance with a 'Management 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 is to be managed to minimise the contaminants that become entrained in the stormwater and shall include as minimum:

   a) the loading and unloading of materials;
   b) maintenance of conveyance systems;
   c) general housekeeping; and
   d) management of the interceptor system.

7. 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 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.

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
   b) within 3 months of receiving a notification under special condition 7 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 24 September 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 Consent Holder:	Schlumberger New Zealand Limited 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

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 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:

Constituent	Standard
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.

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

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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 Consent Holder:	Schlumberger New Zealand Limited 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

For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document

General conditions

a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.

b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.

c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:

i) the administration, monitoring and supervision of this consent; and
ii) charges authorised by regulations.

Special conditions

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.

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

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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 Consent Holder:	Tasman Oil Tools Limited 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

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. 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.

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:

   a) on site hazardous substance storage;
   b) general housekeeping; and
   c) management of the interceptor systems.

Signed at Stratford on 05 August 2014

For and on behalf of
Taranaki Regional Council

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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 Consent Holder:	Tegel Foods Limited 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

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. 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	Standard
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}
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.

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

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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 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

For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document

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/m^3 normal temperature and pressure (NTP).

5. The dust deposition rate beyond the property boundary arising from the discharge shall be less than 4.0 g/m^2/30 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/m^3 (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.

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

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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 Consent Holder:	Tegel Foods Limited 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

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 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.

Constituent	Standard
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.

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

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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 Consent Holder:	Tegel Foods Limited 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

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. 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;

    c. 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;

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

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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 Consent Holder:	Tegel Foods Limited 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

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. 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.

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

Water Permit

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

Name of Consent Holder:	Tegel Foods Limited 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

For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document

General conditions

a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.

b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.

c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:

   i) the administration, monitoring and supervision of this consent; and
   ii) charges authorised by regulations.

Special conditions

1. The 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.

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

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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 Consent Holder:	Tegel Foods Limited Private Bag 2015 NEW PLYMOUTH 4340
Decision Date (Review):	30 July 2012
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

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 m^2, 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.

Constituent	Standard
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.

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

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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 Consent Holder:	TIL Freighting Limited 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

For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document

General conditions

a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.

b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.

c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:

i) the administration, monitoring and supervision of this consent; and
ii) charges authorised by regulations.

Special conditions

1. The consent holder shall 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.

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.

Transferred at Stratford on 11 December 2014

For and on behalf of
Taranaki Regional Council

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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 Consent Holder:	TIL Freighting Limited 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

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 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.

Constituent	Standard
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:

   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. 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.

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

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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 Consent Holder:	First Gas Limited Private Bag 2020 New Plymouth 4342
Decision Date:	17 December 2015
Commencement Date:	17 December 2015

Conditions of Consent

Consent Granted:	To discharge stormwater and vehicle wash water to the Mangati Stream
Expiry Date:	1 June 2032
Review Date(s):	June 2020, June 2026
Site Location:	38-48 Connett Road West, Bell Block
Legal Description:	Lot 1 DP 12815 (discharge source and discharge point 3) Lot 4 & 5 DP 12815 (discharge points 1 and 2)
Grid Reference (NZTM)	1699708E-5678603N (discharge point 1 to NPDC system) 1699629E-5678680N (discharge point 2 to receiving water via NPDC ponds) 1699809E-5678503N (discharge 3 point to receiving water)
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 an area not exceeding 4 hectares.

3. Within 12 months of the commencement of this consent the consent holder shall install a treatment system that will treat the vehicle wash water to meet the standards shown in the following table.

Constituent	Standard
pH	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}

4. Prior to leaving the property the constituents of all stormwater discharges shall meet the standards shown in the following table.

Constituent	Standard
pH	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. The consent holder shall sample the treated wash water at intervals not exceeding 6 months and analyse the samples for pH, suspended solids, biochemical oxygen demand, filtered biochemical demand, and oil and grease within 24 hours of the sample being taken. The consent holder shall supply the results of the sampling required, to the Chief Executive of the Taranaki Regional Council within 20 working days of the sampling.

6. After allowing for reasonable mixing, within a mixing zone extending 30 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.

7. The consent holder shall maintain and regularly update a 'Contingency Plan' that details measures and procedures that will be undertaken to prevent, and to avoid environmental effects from, a spillage or any discharge of contaminants not authorised by this consent. The plan shall be approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity.

8. The site shall be operated in accordance with a 'Stormwater Management 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 is to be managed to minimise the contaminants that become entrained in the stormwater and shall include as minimum:

    a) the loading and unloading of materials;
    b) storage of hazardous chemical;
    c) wash water sampling and analysis procedures;
    d) scheduling of wash water sampling;
    e) general housekeeping; and
    f) management and maintenance of the vehicle wash bay treatment 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 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.

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 2020 and/or June 2026; and/or
    b) within 3 months of receiving a notification under special condition 9 above;
    c) within 12 months of the installation of the vehicle wash treatment system.

    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 20 June 2016

For and on behalf of
Taranaki Regional Council

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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 Consent Holder:	W Abraham Limited 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/m^3 (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;
    a. 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.

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

    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 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

Biomonitoring reports

To Job Manager, Scott Cowperthwaite
From Freshwater Biologist, Darin Sutherland
Report No DS047
Doc No 1677629
Date 4 May 2016

Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, November 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. Consents relating to discharges in the Mangati Stream can be found in Table 1.

Table 1 Consents relating to discharges in the Mangati Stream catchment

Consent holder	Consent number
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 November 2015 survey was undertaken as the first of two surveys scheduled for the 2015-2016 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 19 November 2015. 'Kick samples' were collected at sites A, A1, D2, and E, with the samples at sites A2, A3, B, and F collected using a combination of the 'kick sampling' and 'sweep-sample' techniques. 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 2 Biomonitoring sites in the Mangati Stream catchment

Site	Site code	Location	GPS
A	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
B	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 shown in Table 3:

Table 3 Macroinvertebrate abundance categories

Abundance category	Number of individuals
R (rare)	1-4
C (common)	5-19
A (abundant)	20-99
VA (very abundant)	100-499
XA (extremely abundant)	500+

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. Sensitivity scores for certain taxa have been modified in accordance with Taranaki experience. By averaging the scores obtained from a list of taxa collected from one site and multiplying by a scaling factor of 20, a Macroinvertebrate Community Index (MCI) value was obtained. The MCI is a measure of the overall sensitivity of macroinvertebrate

communities to the effects of organic pollution. A gradation of biological water quality conditions based upon MCI ranges which has been adapted for Taranaki streams and rivers (TRC, 2013) from Stark's classification (Stark, 1985 and Boothroyd and Stark, 2000) (Table 3). More 'sensitive' communities inhabit less polluted waterways. A difference of 10.83 units or more in MCI values is considered significantly different (Stark 1998).

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) (Table 4).

Table 4 Macroinvertebrate health based on MCI ranges which has been adapted for Taranaki streams and rivers (TRC, 2013) from Stark's classification (Stark, 1985 and Boothroyd and Stark, 2000)

Grading	MCI
Excellent	>140
Very Good	120-140
Good	100-119
Fair	80-99
Poor	60-79
Very Poor	<60

A semi-quantitative MCI value ($SQMCI_s$) 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 $SQMCI_s$ is not multiplied by a scaling factor of 20, so that its corresponding range of values is 20x lower. A difference of 0.83 units or more in $SQMCI_s$ values is considered significantly different (Stark 1998).

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.

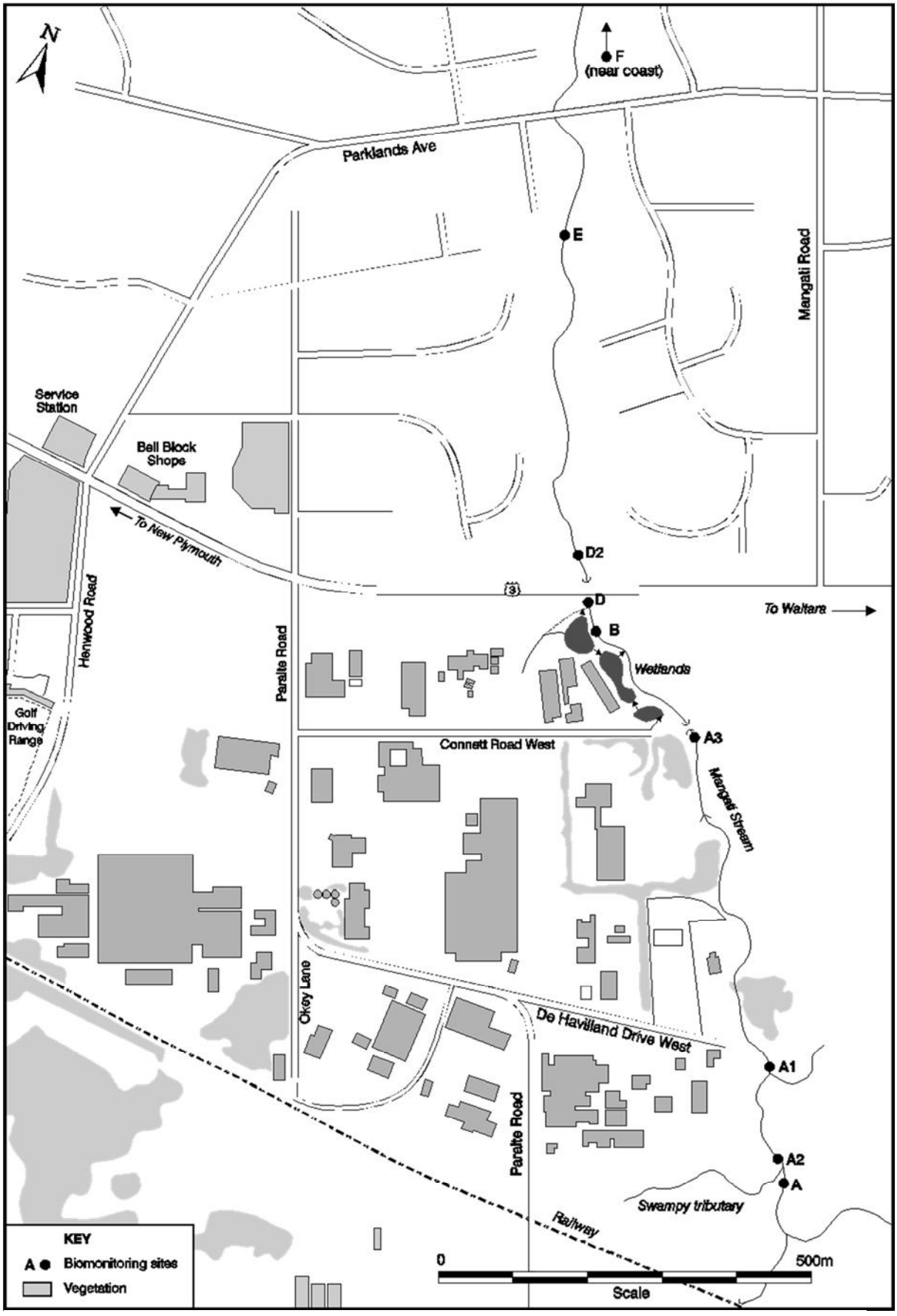


Figure 1 Sampling sites in the Mangati Stream catchment

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.

Site habitat characteristics and hydrology

This spring survey was performed under moderately low flow conditions (approximately half median flow), 15 days after a fresh in excess of both 3 times and 7 times median flow in the Mangati Stream (flow gauge at the Mangati Stream at SH3). The survey followed a relatively dry spring period with only two significant river freshes recorded over the preceding month, both of which were above 7 times median flow. The water temperatures during the survey were in the range 13.1-17.7 °C. Water speed was either swift or steady except for site A3 which had slow water speed. The water was uncoloured and either cloudy or clear.

The substrate was comprised predominately of silt and sand for the three furthest upstream sites (A, A1 and A2). Site A3 had a mostly hard clay substrate while sites B, D2, E and F had a broad mixture of substrate types comprising silt, sand, fine gravel, coarse gravel, cobble as well as either boulder, bedrock, hard clay or concrete/gabion basket. At site F gabion baskets were the predominant substrate (35%), but this was not sampled, with preference given to the macrophyte habitat at this time. Table 5 shows material on the substrate.

Table 5 Various material on the substrate for each site

Site	Algal mats	Algal filaments	Moss	Leaves	Wood	Aquatic plants	Iron oxide/ silt coating
A	Slippery	Patchy	None	None	Patchy	Edge	Iron oxide
A2	Slippery	None	None	None	None	Bed	Iron oxide
A1	Slippery	None	None	None	None	Edge	Iron oxide
A3	Slippery	None	None	None	None	Edge	Iron oxide
B	Slippery	Patchy	None	None	None	Edge	None
D2	Patchy	None	None	None	None	None	Iron oxide
E	Patchy	None	None	None	None	None	None
F	Patchy	Patchy	None	None	None	Edge	None

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, and 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.

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 30 taxa (TRC 1999, updated 2015)]. 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 few high scoring, 'sensitive' taxa are suited to these conditions [e.g. median score of 79 units: range from 47 to 103 units (TRC 1999, updated 2015)]. However, the values recorded at some sites downstream of the tributary have also been unusually low even for these conditions. A summary of previous and current results are presented in Table 6.

Table 6 Numbers of taxa and MCI values recorded in previous surveys in the Mangati Stream, together with results of the November 2015 survey

Site	Number of previous surveys	Numbers of taxa			MCI values			$SQMCI_s$ values		
		Median	Range	Nov 2015	Median	Range	Nov 2015	Median	Range	Nov 2015
A	43	16	9-29	16	78	56-91	81	3.6	2.2-4.7	4.3
A2	41	16	10-29	16	75	57-92	74	3.7	1.8-4.7	3.4
A1	43	16	7-23	17	73	47-89	78	3.7	1.7-4.7	3.5
A3	41	17	8-23	11	69	52-81	75	2.6	1.6-4.6	3.5
B	49	14	3-29	14	68	50-86	77	2.5	1.1-4.5	2.8
D2	25	11	5-18	14	68	40-78	73	2.5	1.1-3.5	2.6
E	47	10	3-22	21	64	44-78	76	2.5	1.1-3.9	3.5
F	41	11	2-22	15	67	30-79	67	2.2	1.2-4.1	3.5

Numbers of taxa and MCI scores recorded by the current survey in the Mangati Stream are illustrated in Figure 2.

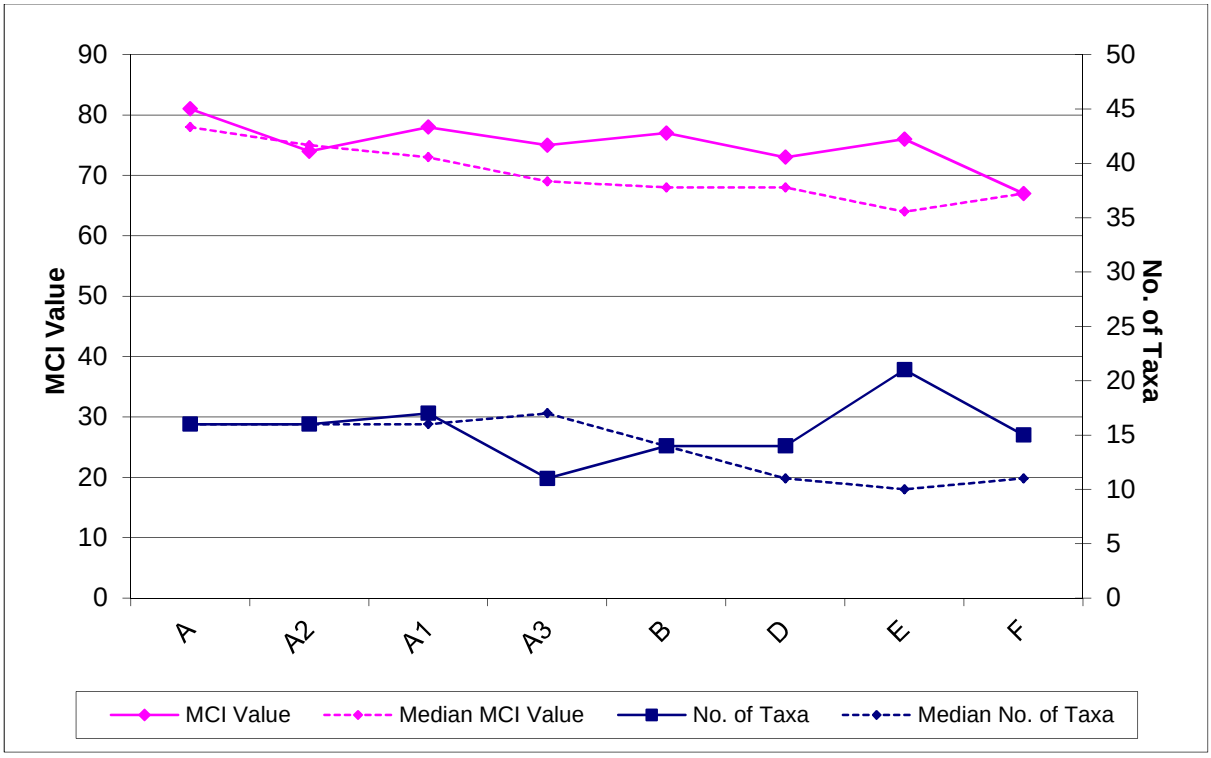


Figure 2 Numbers of taxa and MCI values recorded at sites in the Mangati Stream by the current survey

Table 7 Macroinvertebrate fauna of the Mangati Stream sampled on 19 November 2015

Taxa List	Site Number	MCI score	A	A2	A1	A3	B	D2	E	F
	Site Code MGT000___		488	490	491	497	500	512	520	550
	Sample Number FWB150__		95	96	97	98	99	100	101	102
PLATYHELMINTHES (FLATWORMS)	*Cura*	3	-	-	-	-	-	-	R	-
NEMERTEA	Nemertea	3	-	-	-	R	R	R	C	-
NEMATODA	Nematoda	3	-	-	-	-	-	-	R	-
ANNELIDA (WORMS)	Oligochaeta	1	A	VA	VA	VA	VA	XA	VA	VA
	Lumbricidae	5	-	-	-	-	-	R	R	-
HIRUDINEA (LEECHES)	Hirudinea	3	-	R	-	-	-	R	-	-
MOLLUSCA	*Physa*	3	-	R	-	R	-	-	-	-
	Potamopyrgus	4	C	C	VA	XA	VA	XA	XA	XA
	Sphaeriidae	3	R	-	-	-	R	-	-	-
CRUSTACEA	Cladocera	5	-	-	-	-	-	R	A	-
	Ostracoda	1	R	R	C	-	-	R	R	R
	Isopoda	5	R	R	-	-	R	-	-	-
	Paracalliope	5	VA	VA	VA	VA	A	A	C	C
	Paratya	3	-	-	-	-	-	-	-	R
EPHEMEROPTERA (MAYFLIES)	*Austroclima*	7	A	A	A	C	C	-	R	-
	Zephlebia group	7	R	-	R	-	-	-	-	-
HEMIPTERA (BUGS)	*Sigara*	3	-	-	-	R	-	-	-	-
COLEOPTERA (BEETLES)	Dytiscidae	5	-	-	R	-	-	-	-	-
TRICHOPTERA (CADDISFLIES)	*Hydrobiosis*	5	C	C	C	R	R	C	C	C
	Psilochorema	6	R	R	-	-	R	-	R	-
	Oxyethira	2	R	-	-	-	R	-	C	C
	Triplectides	5	-	R	R	-	-	-	R	C
DIPTERA (TRUE FLIES)	*Aphrophila*	5	-	-	-	-	-	-	R	C
	Limonia	6	-	-	-	-	-	R	-	-
	Zelandotipula	6	R	-	R	-	-	-	-	-
	Chironomus	1	-	C	R	-	-	-	-	-
	Maoridiamesa	3	-	-	R	-	-	-	-	R
	Orthocladiinae	2	A	C	A	VA	A	A	A	C
	Polypedilum	3	C	R	C	R	R	R	C	C
	Empididae	3	-	-	R	-	-	-	C	R
	Austrosimulium	3	C	R	R	-	R	R	A	A
	Tanyderidae	4	-	-	-	-	-	-	R	-
ACARINA (MITES)	Acarina	5	R	C	C	R	R	R	R	R
	No of taxa		16	16	17	11	14	14	21	15
	MCI		81	74	78	75	77	73	76	67
	SQMCIs		4.3	3.4	3.5	3.5	2.8	2.6	3.5	3.5
	EPT (taxa)		4	4	4	2	3	1	4	2
	%EPT (taxa)		25	25	24	18	21	7	19	13

'Tolerant' taxa | 'Moderately sensitive' taxa | 'Highly sensitive' taxa

R = Rare C = Common A = Abundant VA = Very Abundant XA = Extremely Abundant

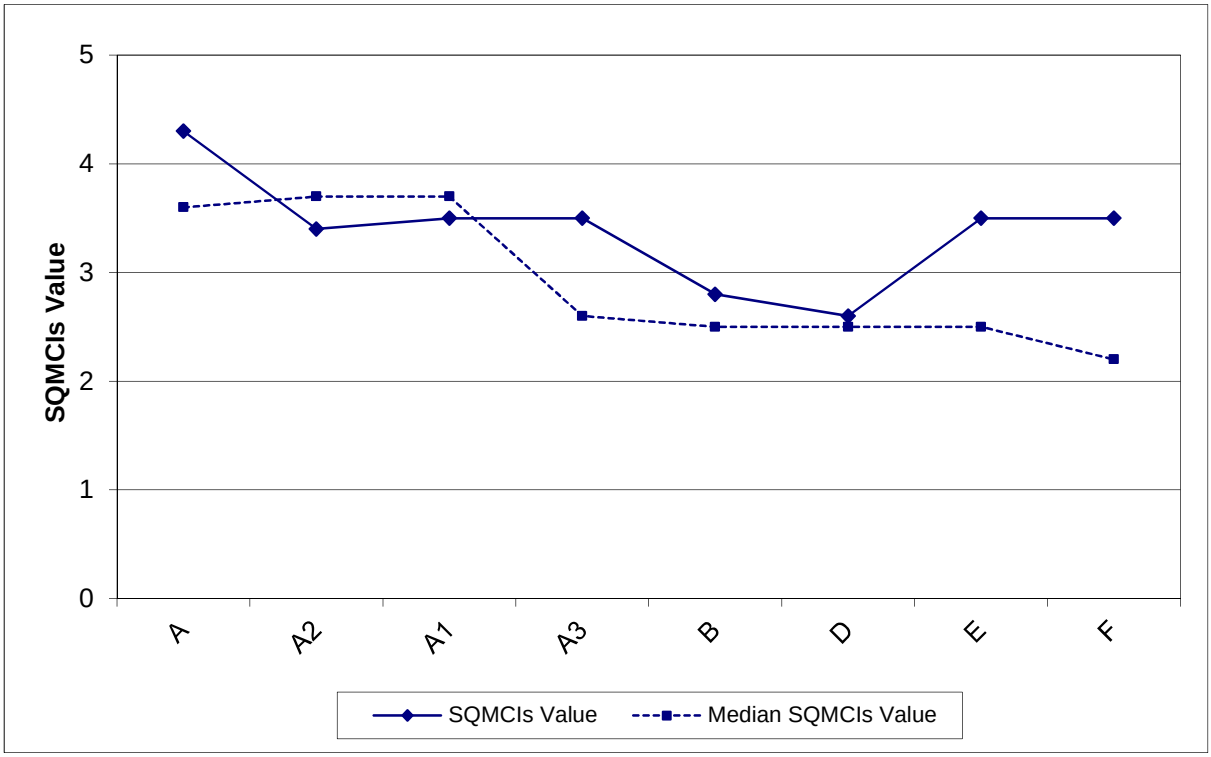


Figure 3 SQMCI$_S$ values recorded at sites in the Mangati Stream by the current survey

Site A (MGT000488)

A moderate macroinvertebrate community richness of 16 taxa was found at site A ('control' site) at the time of the survey (Table 6). This was equal to the historical median for this site and to the previous survey on February 2015 (Table 6, Figure 4).

The MCI score of 81 units indicated a community of 'fair' biological health which was not significantly different (Stark, 1998) to the median MCI score of 78 units. The MCI score was also not significantly different (Stark, 1998) to the preceding survey (73 units) and to similar streams (79 units, TRC, 2015).

The SQMCI$_S$ score of 4.3 units was not significantly different (Stark, 1998) to the median MCI score of 3.6 units (Stark, 1998) and to similar streams (4.0 units, TRC, 2015). It was also close to the upper range recorded from this site (4.7 units, Table 6).

The community was characterised by one 'very abundant' taxon ['moderately sensitive' amphipod (*Paracalliope*)], and three 'abundant' taxon ['tolerant' oligochaete worms, orthoclad midges, and a 'moderately sensitive' mayfly (*Austroclima*)] (Table 7).

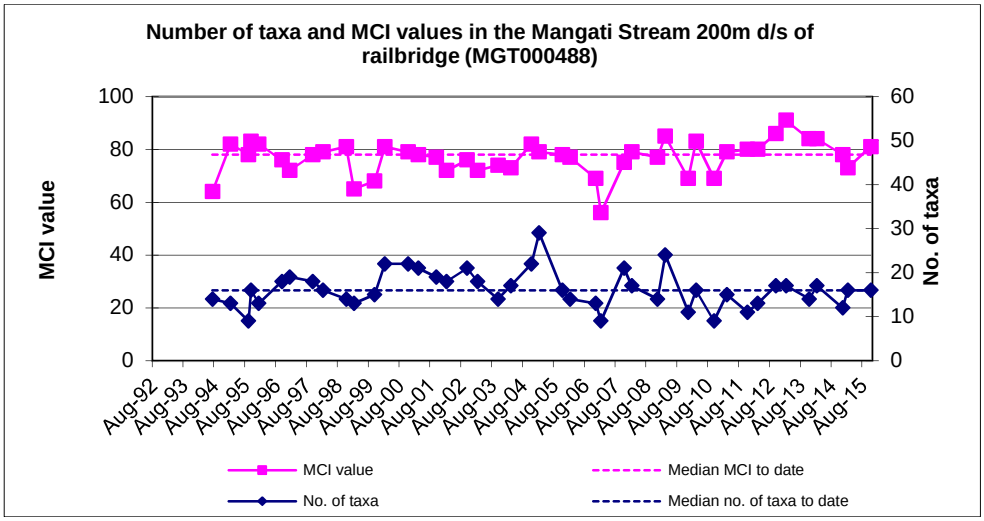


Figure 4 Numbers of taxa and MCI values recorded at site A to date

Site A2 (MGT000490)

A moderate macroinvertebrate community richness of 16 taxa was found at site A2 at the time of the survey (Table 6). This was equal to the historical median for this site and to the previous survey on February 2015 (Table 6, Figure 5).

The MCI score of 74 units indicated a community of 'poor' biological health which was not significantly different (Stark, 1998) to the median MCI score of 75 units. The MCI score was also not significantly different (Stark, 1998) to the preceding survey (73 units) and to similar streams (79 units, TRC, 2015).

The SQMCIs score of 3.4 units was not significantly different (Stark, 1998) to the median MCI score of 3.7 units (Stark, 1998) and to similar streams (4.0 units, TRC, 2015) (Table 6).

The community was characterised by two 'very abundant' taxon ['moderately sensitive' amphipod (*Paracalliope*) and 'tolerant' oligochaete worms], and one 'abundant' taxon ['moderately sensitive' mayfly (*Austroclima*)] (Table 7). Furthermore, blood worms (*Chironmus*), a key indicator taxon for nutrient enrichment, were 'common' at this site.

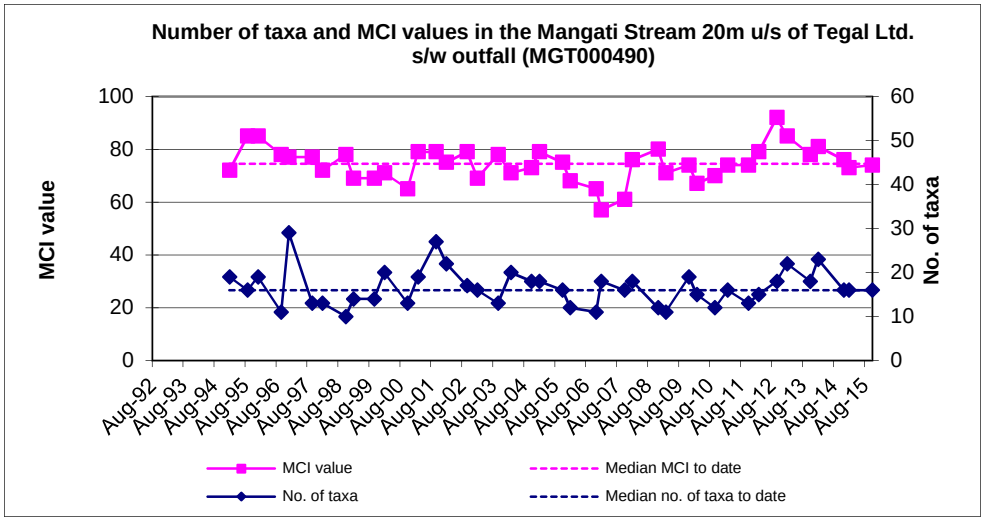


Figure 5 Numbers of taxa and MCI values recorded at site A2 to date

Site A1 (MGT000491)

A moderate macroinvertebrate community richness of 17 taxa was found at site A1 at the time of the survey (Table 6). This was similar to the historical median for this site (16 taxa) and to the previous survey (22 taxa) on February 2015 (Table 6, Figure 6).

The MCI score of 74 units indicated a community of 'poor' biological health which was not significantly different (Stark, 1998) to the median MCI score of 73 units. The MCI score was also not significantly different (Stark, 1998) to the preceding survey (78 units) and to similar streams (79 units, TRC, 2015).

The $SQMCI_S$ score of 3.5 units was not significantly different (Stark, 1998) to the median MCI score of 3.7 units (Stark, 1998) and to similar streams (4.0 units, TRC, 2015) (Table 6).

The community was characterised by two 'very abundant' taxa ['tolerant' oligochaete worms, and snails (*Potamopyrgus*)] and 'moderately sensitive' amphipod (*Paracalliope*) and two 'abundant' taxa ['tolerant' orthoclad midges and 'moderately sensitive' mayfly (*Austroclima*)] (Table 7). Furthermore, blood worms (*Chironmus*), a key indicator taxon for nutrient enrichment, were 'rare' at this site.

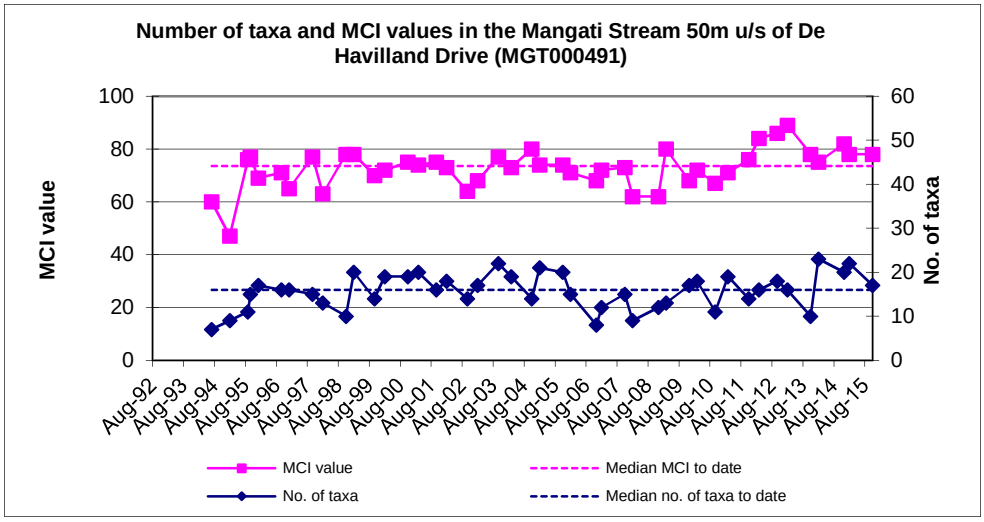


Figure 6 Numbers of taxa and MCI values recorded at site A1 to date

Site A3 (MGT000497)

A moderately low macroinvertebrate community richness of 11 taxa was found at site A3 at the time of the survey (Table 6). This was lower than the historical median for this site (17 taxa) and to the previous survey (15 taxa) on February 2015 (Table 6, Figure 7).

The MCI score of 75 units indicated a community of 'poor' biological health which was not significantly different (Stark, 1998) to the median MCI score of 69 units. The MCI score was also not significantly different (Stark, 1998) to the preceding survey (71 units) and to similar streams (79 units, TRC, 2015).

The $SQMCI_S$ score of 3.5 units was significantly higher (Stark, 1998) than the median MCI score of 2.6 units) but not significantly different (Stark, 1998) to similar streams (4.0 units, TRC, 2015) (Table 6).

The community was characterised by one 'extremely abundant' taxon ['tolerant' snails (*Potamopyrgus*)] and three 'very abundant' taxa ['tolerant' oligochaete worms, orthoclad midges, and 'moderately sensitive' amphipod (*Paracalliope*)] (Table 7).

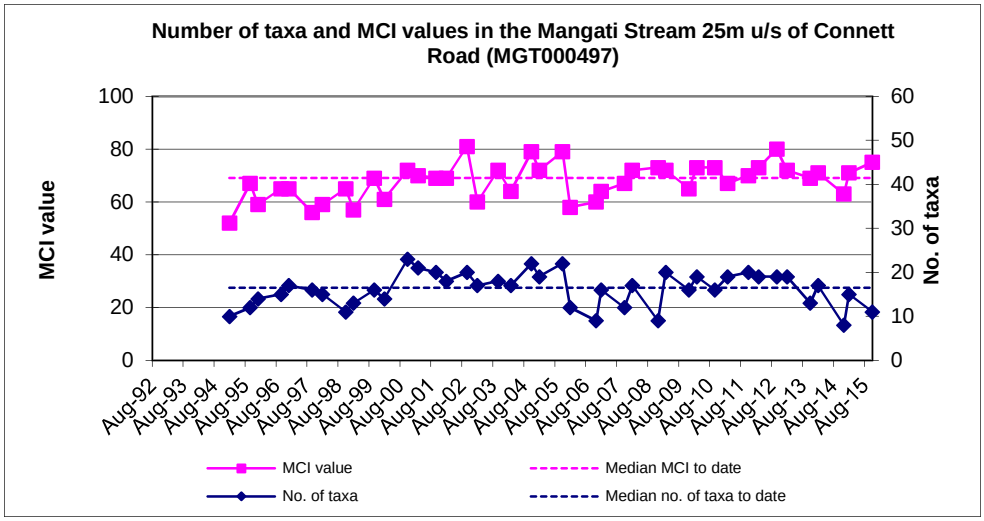


Figure 7 Numbers of taxa and MCI values recorded at site A3 to date

Site B (MGT000500)

A moderately low macroinvertebrate community richness of 14 taxa was found at site B in which the wetland that receives discharges from a large industrial area discharges to the Mangati Stream (Table 6). This was the same as the historical median for this site and similar to the previous survey (13 taxa) (Table 6, Figure 8).

The MCI score of 77 units indicated a community of 'poor' biological health which was not significantly different (Stark, 1998) to the median MCI score of 68 units. The MCI score was also not significantly different (Stark, 1998) to the preceding survey (68 units) and to similar streams (79 units, TRC, 2015).

The $SQMCI_S$ score of 2.8 units was not significantly different (Stark, 1998) to the median MCI score of 2.5 units but was significantly lower (Stark, 1998) than the score for similar streams (4.0 units, TRC, 2015) (Table 6).

The community was characterised by two 'very abundant' taxa ['tolerant' snails (*Potamopyrgus*) and oligochaete worms] and two 'abundant' taxa ['tolerant' orthoclad midges and 'moderately sensitive' amphipod (*Paracalliope*)] (Table 7).

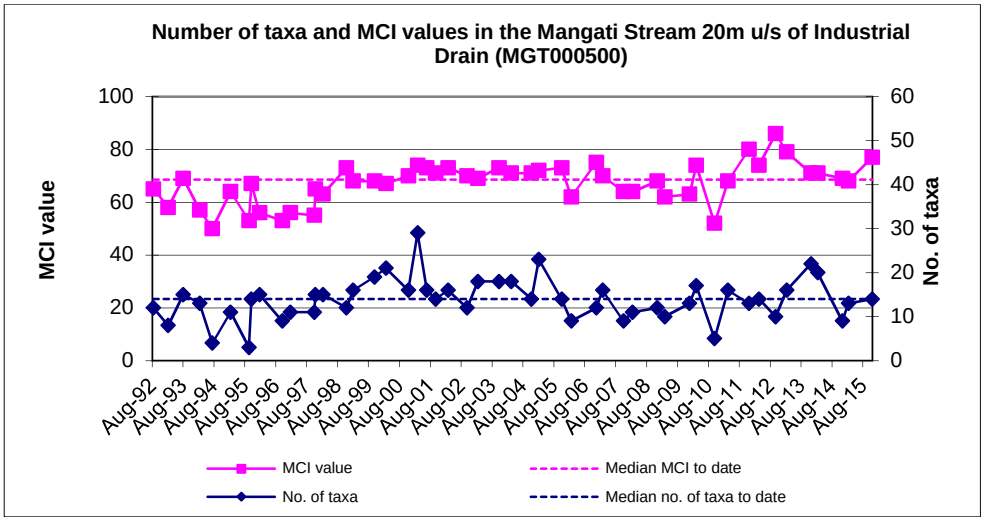


Figure 8 Numbers of taxa and MCI values recorded at site B to date

Site D2 (MGT000512)

A moderately low macroinvertebrate community richness of 14 taxa was found at site D2, below the industrial drain and wetlands high flow level outlet from pond 4 (Table 6). This was higher than the historical median for this site (11 taxa) and the same as the previous survey (14 taxa) (Table 6, Figure 9).

The MCI score of 73 units indicated a community of 'poor' biological health which was not significantly different (Stark, 1998) to the median MCI score of 68 units. The MCI score was also not significantly different (Stark, 1998) to the preceding survey (63 units) and to similar streams (79 units, TRC, 2015).

The $SQMCI_S$ score of 2.6 units was not significantly different (Stark, 1998) to the median MCI score of 2.5 units but was significantly lower (Stark, 1998) than the score for similar streams (4.0 units, TRC, 2015) (Table 6).

The community was characterised by two 'extremely abundant' taxa ['tolerant' snails (*Potamopyrgus*) and oligochaete worms] and two 'abundant' taxa ['tolerant' orthoclad midges and 'moderately sensitive' amphipod (*Paracalliope*)] (Table 7).

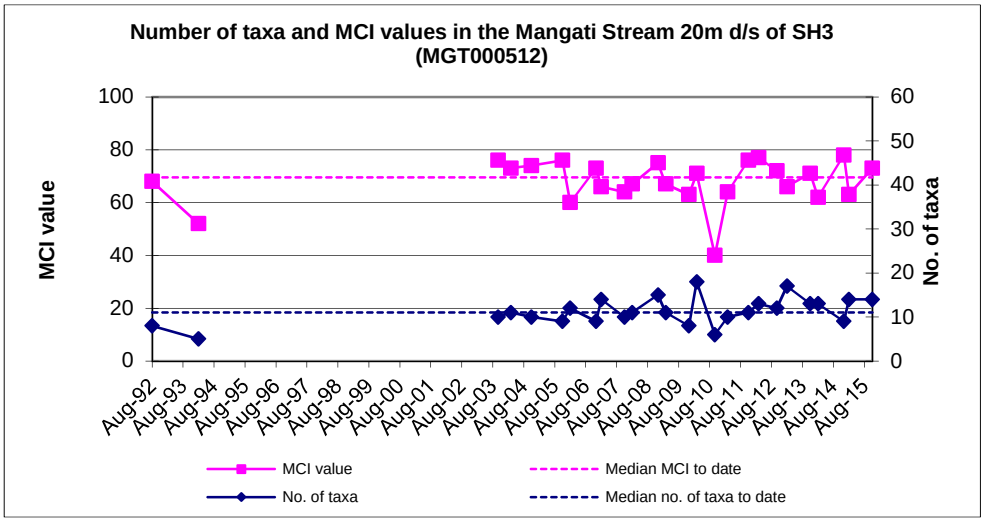


Figure 9 Numbers of taxa and MCI values recorded at site D2 to date

Site E (MGT000520)

A moderately high macroinvertebrate community richness of 21 taxa was found at site E at the time of the survey (Table 6). This was substantially higher than the historical median for this site (10 taxa) and close to the highest number recorded (22 taxa) but not substantially higher than the previous survey (17 taxa) (Table 6, Figure 10).

The MCI score of 76 units indicated a community of 'poor' biological health which was significantly higher (Stark, 1998) than the very low median MCI score of 64 units. The MCI score was also not significantly different (Stark, 1998) to the preceding survey (72 units) and to similar streams (79 units, TRC, 2015).

The $SQMCI_S$ score of 3.5 units was significantly higher (Stark, 1998) than the median MCI score of 2.5 units but not significantly different (Stark, 1998) to the score for similar streams (4.0 units, TRC, 2015) (Table 6).

The community was characterised by one 'extremely abundant' taxon ['tolerant' snails (*Potamopyrgus*)], one 'very abundant' taxon ['tolerant' oligochaete worms] and three'abundant' taxa ['tolerant' orthoclad midges and sandfly (*Austrosimulium*) and 'moderately sensitive' water flea (Cladocera)] (Table 7).

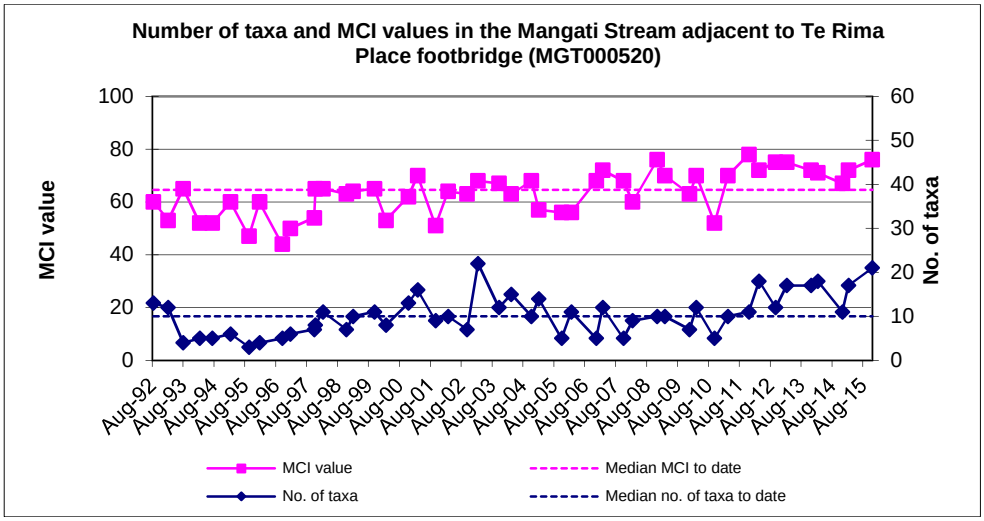


Figure 10 Numbers of taxa and MCI values recorded at site E to date

Site F (MGT000550)

A moderate macroinvertebrate community richness of 15 taxa was found at site F (Table 6). This was higher than the historical median for this site (11 taxa) and similar to the previous survey (18 taxa) (Table 6, Figure 11).

The MCI score of 67 units indicated a community of 'poor' biological health which was the same as the median MCI score for this site. The MCI score was also not significantly different (Stark, 1998) to the preceding survey (70 units) but significantly lower (Stark, 1998) compared to similar streams (79 units, TRC, 2015).

The $SQMCI_S$ score of 3.5 units was significantly higher (Stark, 1998) than the median MCI score of 2.2 units but not significantly different (Stark, 1998) to the score for similar streams (4.0 units, TRC, 2015) (Table 6).

The community was characterised by one 'extremely abundant' taxon ['tolerant' snails (*Potamopyrgus*)], one 'very abundant' taxon ['tolerant' oligochaete worms] and one 'abundant' taxon ['tolerant' sandfly (*Austrosimulium*)] (Table 7).

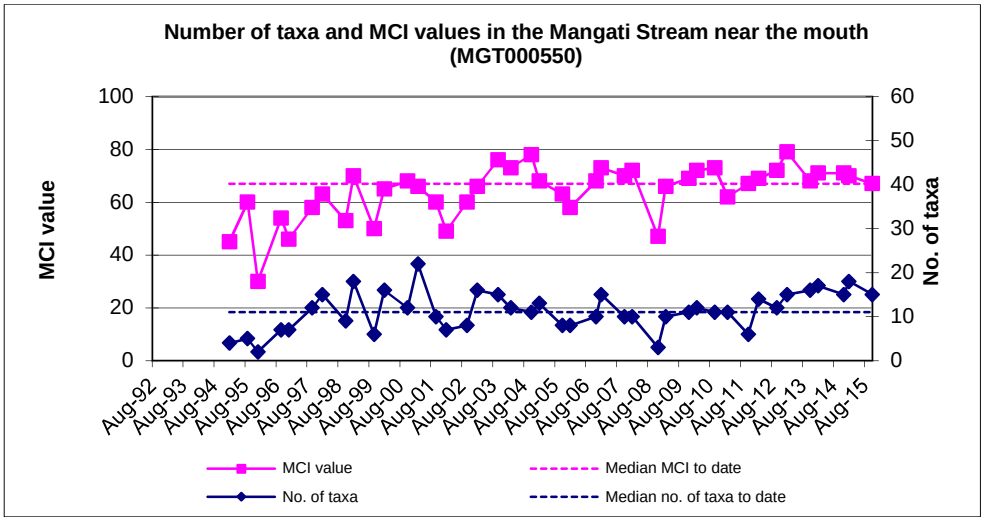


Figure 11 Numbers of taxa and MCI values recorded at site F to date

Microscopic streambed heterotrophic assessment

The microscopic heterotrophic assessments of substrate growths performed for all sites indicated an absence of any mats, plumes or dense growths of heterotrophic organisms at each of the eight sites.

Discussion and Conclusions

Macroinvertebrate richnesses among sites along the surveyed reach were generally similar to each other and to the median number recorded for lowland coastal streams below 25m altitude (17 taxa). Site A3 had slightly lower than normal richness which was also the lowest recorded taxa richness out of the eight sites surveyed and site E had higher than usual richness which was also the highest taxa richness recorded for the current survey. The other six sites had little variation in taxa richness (14-17 taxa).

During the previous spring survey on December 2014 site A3 recorded its lowest ever taxa number (8 taxa). It was suggested that some sort of toxic discharge may have affected taxa richness (BJ272). 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. There may be a toxic discharge between sites A1 and A3 as taxa number dropped by six taxa between the two sites.

Taxa richness is not necessarily correlated with water quality and mild eutrophication can cause an increase in taxa richness. However, site E appears to have benefited from improved water quality preceding the current survey which is probably the main contributing factor to higher than normal taxa richness. The site has some of the best macroinvertebrate habitat quality in the surveyed reach and poor water quality in the past has probably limited taxa richness at the site (it has the lowest median taxa richness out of all eight surveyed sites of ten taxa). At site F taxa number was relatively stable and has recovered 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.

MCI scores showed little variance. Sites A2-E had MCI scores ranging between 73-78 units which were all not significantly different to the median value (79 units) found for similar streams (TRC, 2015). This indicates that the sites in the survey reach apart from the 'control' site were all in 'poor' health but this was expected for soft bottom lowland coastal stream sites in Taranaki. The only significant difference (Stark, 1998) among sites was a 14 unit difference

between the top most site (81 units) and the bottom most site (67 units) (14 units). There appears to be a small drop in water quality from sites A to A2 (7 units) and E to F (9 units) which are both non-significant (Stark, 1998) decreases but together does suggest some decrease in the health of the macroinvertebrate community in the surveyed reach. However, MCI scores were slightly higher than historical medians at most sites and site E recorded a significantly higher MCI score compared with the historical median (12 units).

$SQMCI_s$ which can be more sensitive to pollution compared with the MCI indicates that there was a significant decrease in macroinvertebrate health from sites A to A2 (0.9 units) though no difference was found between sites E and F for $SQMCI_s$ score. This reinforces the finding from the MCI score and suggests a drop in water quality between sites A and A2 which would relate to discharges from Tegel Poultry negatively impacting on sites A2 and A1. Sites A3, E and F had significantly higher $SQMCI_s$ scores than normal indicating improvement in the health of the macroinvertebrate communities present at those sites in relation to nutrient enrichment. Sites B and D2 have similar historic median scores compared with sites E and F but showed no significant improvement in $SQMCI_s$ scores, suggesting an improvement in water quality between sites D2 and E.

The composition of the macroinvertebrate communities in the Mangati Stream are typical for a lowland, soft-bottom stream running through farmland, an industrial area and a residential area. The communities are usually dominated by taxa that are relatively 'tolerant' to organic pollution and prefer muddy substrates e.g. oligochaete worms and snail (*Potamopyrgus*), and those 'moderately sensitive' taxa commonly associated with macrophytes e.g. amphipod (*Paracalliope*). The results of this survey in respect to community composition are largely congruent with past results.

There were some noticeable changes in taxa abundances and species composition among sites. The 'control' site at site A was the only site to have the very low scoring 'tolerant' oligochaete worms numbers below 'very abundant' and the 'tolerant' snail (*Potamopyrgus*) was only 'common' at sites A and A2 whereas it was 'very abundant' to 'extremely abundant' downstream of those sites. Furthermore, the 'moderately sensitive' amphipod (*Paracalliope*) had abundances that decreased the further down in the catchment a sample was taken. The differences do not appear to be related to soft sediment as soft sediment percentages[KB1] (silt and sand) generally decreased the further downstream samples were taken and therefore taxa such as oligochaete worms would be expected to decrease not increase. Therefore, the changes in the abundances of the dominant taxa in the surveyed reach suggest that there is nutrient enrichment along the surveyed reach. Blood worms (*Chironomus*) are a key indicator taxon of nutrient enrichment and they were only found at sites A2 ('common') and A1 ('rare') which again suggests that nutrient inputs are occurring between sites A and A2.

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 December 2014 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 results of the current survey indicate that macroinvertebrate health was generally 'poor' for the surveyed sites in the Mangati Stream. However, results were normal or better

than normal for the surveyed sites indicating some improvements in water quality but there was evidence of discharges from Tegel Poultry having some impact.

Summary

On 19 November 2015 eight established sampling sites in the Mangati Stream catchment were sampled using kick sampling (sites A, A1, D2, and E) or a combination of the kick sampling and sweep-sample techniques (sites A2, A3, B, and F) 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 $SQMCI_s$ 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.

Upstream of De Havilland Drive at sites A, A2 and A1, taxa richnesses, MCI scores and $SQMCI_s$ scores were similar to their respective medians, reflecting that populations were in a normal condition for those sites though there was a reduction in MCI and $SQMCI_s$ scores between sites A and A2. At site A3, just upstream of Connett Road, there was a reduction in taxa richness which was possibly related to stock disturbances or toxic discharges but the site had a MCI score higher than normal and the $SQMCI_s$ score was significantly higher indicating an improvement in health of the macroinvertebrate community in relation to nutrient enrichment. Results recorded at the next two sites (B and D2) were similar to historical medians with normal but very low $SQMCI_s$ scores and slightly higher MCI scores. Site E showed significant improvement in macroinvertebrate health for all the indices examined and the current survey results were closes to the best results ever achieved for the site. Site F had the lowest recorded MCI score of the surveyed sites which was typical for the site but its $SQMCI_s$ score was higher than normal indicating some improvement in macroinvertebrate health.

The reduction in MCI and $SQMCI_s$ scores from site A to A2 and A1 suggests that there was a minor adverse effect on macroinvertebrate communities resulting from discharges from Tegel Poultry between sites A and A2. This deterioration was relatively subtle (the decrease in MCI was non-significant and $SQMCI_s$ was just significant) and may partially have been caused by increases in habitat quality at site A which had slightly higher MCI and $SQMCI_s$ scores compared with historical medians.

The previous (summer) survey indicated that site A3 had recovered somewhat from a loss of taxa, possibly from a toxic discharge, but only to 'average' conditions. The low taxa richness is still evident for the current survey but it is only subtle, and subsequently difficult to determine the cause, e.g. industrial discharges, stock disturbance etc. 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.

Sites B and D recorded a very low $SQMCI_s$ score, and although the MCI scores were slightly higher than 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. No significant deterioration was recorded between sites B

and D. Therefore it is unlikely that the industrial drain, which enters between these two sites, has caused a reduction in macroinvertebrate community health.

Overall, the changes in community structures, numbers of taxa, and MCI values in the upper reaches of the Mangati Stream, indicate that there may have been some adverse effects on macroinvertebrate communities resulting from discharges from Tegel Poultry. Furthermore, downstream of De Havilland Drive, where stormwater from De Havilland Drive West, Tasman Oil and Greymouth Petroleum enter, there was a decrease in taxonomic richness from that recorded upstream, possibly as a result of toxic discharges but no discharges were noted at the time of the survey. Downstream of Connett Road West the discharges from the wetland ponds may have had subtle impacts on the macroinvertebrate community at sites B and D2 as indicated by the decrease in $SQMCI_s$ scores. Site E showed improved macroinvertebrate community health across all indices while Site F also showed some improvement. Overall, the results of the current survey indicate that macroinvertebrate health was generally 'poor' for the surveyed sites in the Mangati Stream and there was some evidence of discharges adversely effecting macroinvertebrate communities. However, results were either normal or better than usual indicating some improvements in water quality for most sites.

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.

Jansma, 2015: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, February 2015. TRC report BJ272.

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, 2015a: Some statistics from the Taranaki Regional Council database of freshwater macroinvertebrate surveys performed during the period from January 1980 to 30 September 2014. TRC Technical Report 99-17 (updated September, 2015).

TRC, 2015b: Freshwater macroinvertebrate fauna biological monitoring programme Annual SEM Report 2012-2013. Technical Report 2015-66.

To Job Manager, Scott Cowperthwaite
From Freshwater Biologist, Darin Sutherland
Report No DS048
Doc No 1680069
Date 6 May 2016

Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, February 2016

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. Consents relating to discharges in the Mangati Stream can be found in Table 1.

Table 1 Consents relating to discharges in the Mangati Stream catchment

Consent holder	Consent number
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 10 February 2016 survey was undertaken as the second of two surveys scheduled for the 2015-2016 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 10 February 2016. 'Kick samples' were collected at sites D2 and E, a 'sweep-sample' techniques was used at site A3 while a combination of the 'kick-sampling' and 'sweep-sample' techniques were used at sites A, A2, A1, B, and F. 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 2 Biomonitoring sites in the Mangati Stream catchment

Site	Site code	Location	GPS
A	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
B	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 shown in Table 3:

Table 3 Macroinvertebrate abundance categories

Abundance category	Number of individuals
R (rare)	1-4
C (common)	5-19
A (abundant)	20-99
VA (very abundant)	100-499
XA (extremely abundant)	500+

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. Sensitivity scores for certain taxa have been modified in accordance with Taranaki experience. By averaging the scores obtained from a list of taxa collected from one site and multiplying by a scaling factor of 20, a Macroinvertebrate Community Index (MCI)

value was obtained. The MCI is a measure of the overall sensitivity of macroinvertebrate communities to the effects of organic pollution. A gradation of biological water quality conditions based upon MCI ranges which has been adapted for Taranaki streams and rivers (TRC, 2013) from Stark's classification (Stark, 1985 and Boothroyd and Stark, 2000) (Table 3). More 'sensitive' communities inhabit less polluted waterways. A difference of 10.83 units or more in MCI values is considered significantly different (Stark 1998).

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) (Table 4).

Table 4 Macroinverbrate health based on MCI ranges which has been adapted for Taranaki streams and rivers (TRC, 2015) from Stark's classification (Stark, 1985 and Boothroyd and Stark, 2000)

Grading	MCI
Excellent	>140
Very Good	120-140
Good	100-119
Fair	80-99
Poor	60-79
Very Poor	<60

A semi-quantitative MCI value ($SQMCI_s$) 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 $SQMCI_s$ is not multiplied by a scaling factor of 20, so that its corresponding range of values is 20x lower. A difference of 0.83 units or more in $SQMCI_s$ values is considered significantly different (Stark 1998).

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.

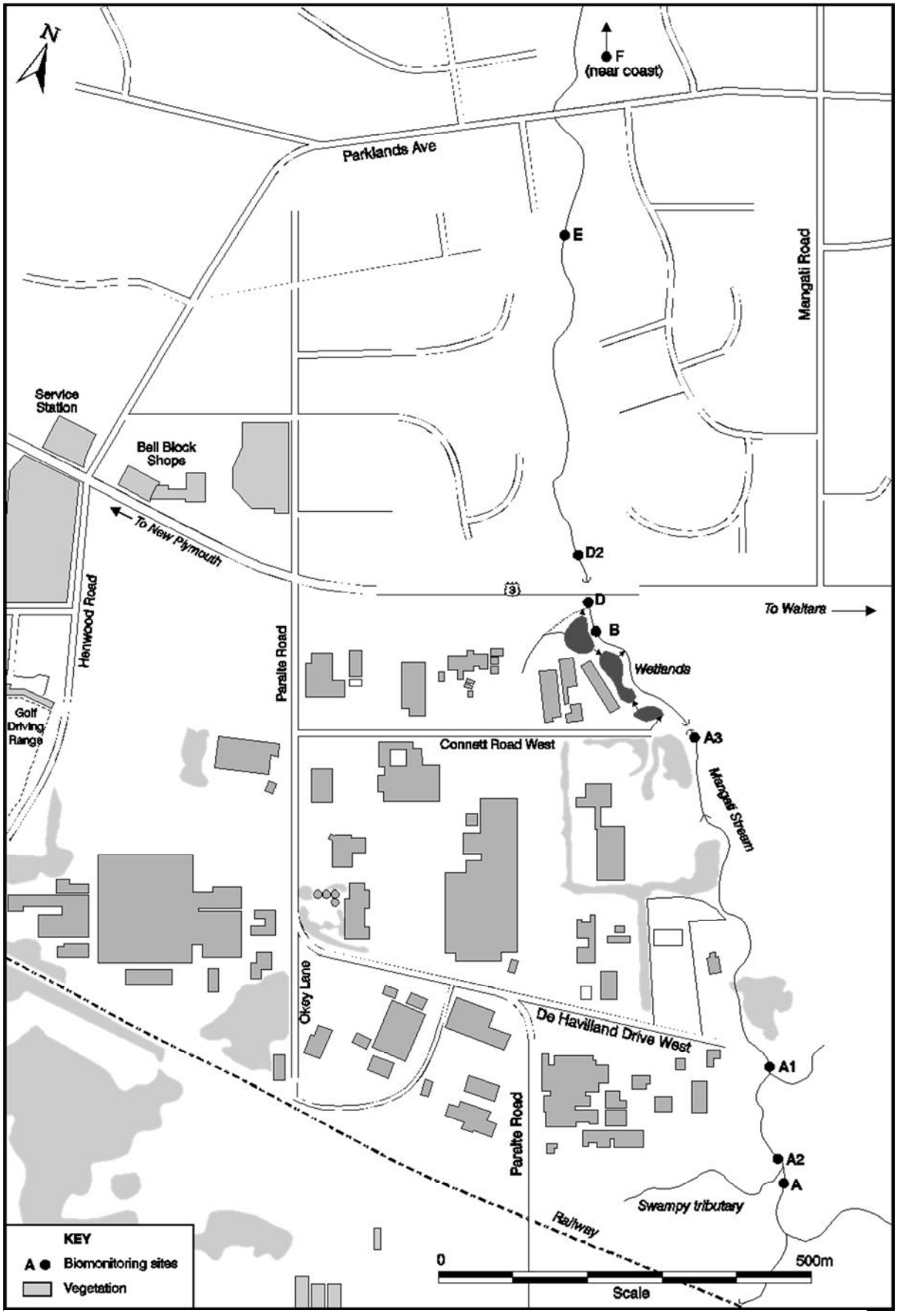


Figure 1 Sampling sites in the Mangati Stream catchment

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.

Site habitat characteristics and hydrology

This summer survey was performed under low flow conditions (approximately MALF), 23 days after a fresh in excess of both 3 times and 7 times median flow in the Mangati Stream (flow gauge at the Mangati Stream at SH3). The survey followed a period with only two significant river fresh recorded over the preceding month, one of which was far in excess of 7 times median flow and the other on 27 January was close to 3 x median flow. Two other very minor freshes were recorded which were barely above median flow. The water temperatures during the survey were in the range 19.1-22.5 °C. Water speed was either swift or steady except for sites A2 and A3 which had slow water speed. The water at all sites was grey and cloudy.

The substrate type at each site is presented in Table 5. At site F gabion baskets were the predominant substrate type but as these were not sampled they have not been included in the substrate percentages which indicate the habitat actually sampled rather than the habitat present at the site. For site A3 in the previous survey (February 2015) hard clay (75%) was the predominant substrate type and therefore significant silt deposition has occurred between the two surveys. Sites A, A2, A1 and B also had increased silt at each site compared with the previous survey (DS047).

Table 5 Substrate types at each site

Site	Silt	Sand	Fine gravel	Coarse gravel	Cobble	Boulder	Bedrock	Hard clay	Wood/ root	Concrete/ gabion
A	95								5	
A2	95								5	
A1	95				5					
A3	100									
B	55		5		5	35				
D2	20	5	30	10	5	5		25		
E	5	5	10	30	50					
F	15	5	20		40	20				

Table 6 Various material on the substrate for each site

Site	Algal mats	Algal filaments	Moss	Leaves	Wood	Aquatic plants	Iron oxide/ silt coating
A	None	None	None	None	Patchy	Bed	None
A2	None	None	None	None	None	Bed	None
A1	None	Patchy	None	None	None	Edge	None
A3	None	None	None	None	None	Edge	None
B	Patchy	Patchy	None	None	Patchy	Edge	None
D2	Patchy	Patchy	None	Patchy	None	None	None
E	Patchy	Patchy	Patchy	Patchy	Patchy	None	None
F	Patchy	None	None	Patchy	None	Edge	None

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 (Table 6), although site E is now only partially shaded, due to tree felling. Sites A, A2, A1 and A3 were overgrown by reed sweet grass growth.

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. The water was grey and cloudy during the current survey and silt was evident at all sites. 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 December 2014 survey at site B, where the bank was actively eroding at the time. This erosion was not as apparent in the current survey.

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 30 taxa (TRC 1999, updated 2015)]. 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 few high scoring, 'sensitive' taxa are suited to these conditions [e.g. median score of 79 units: range from 47 to 103 units (TRC 1999, updated 2015)]. However, the values recorded at some sites downstream of the tributary have also been unusually low even for these conditions. A summary of previous and current results are presented in Table 7.

Table 7 Numbers of taxa and MCI values recorded in previous surveys in the Mangati Stream, together with results of the February 2016 survey

Site	Number of previous surveys	Numbers of taxa			MCI values			$SQMCI_s$ values		
		Median	Range	Feb 2016	Median	Range	Feb 2016	Median	Range	Feb 2016
A	44	16	9-29	12	78	56-91	72	3.6	2.2-4.7	4.7
A2	42	16	10-29	17	75	57-92	64	3.6	1.8-4.7	2.1
A1	44	16	7-23	13	74	47-89	62	3.5	1.7-4.7	2.0
A3	42	17	8-23	14	69	52-81	59	2.6	1.6-4.6	2.5
B	50	14	3-29	21	69	50-86	61	2.5	1.1-4.5	2.5
D2	26	11	5-18	12	70	40-78	62	2.5	1.1-3.5	2.6
E	48	10	3-22	14	65	44-78	79	2.5	1.1-3.9	2.6
F	42	11	2-22	16	67	30-79	70	2.2	1.2-4.1	3.9

Numbers of taxa and MCI scores recorded by the current survey in the Mangati Stream are illustrated in Figure 2.

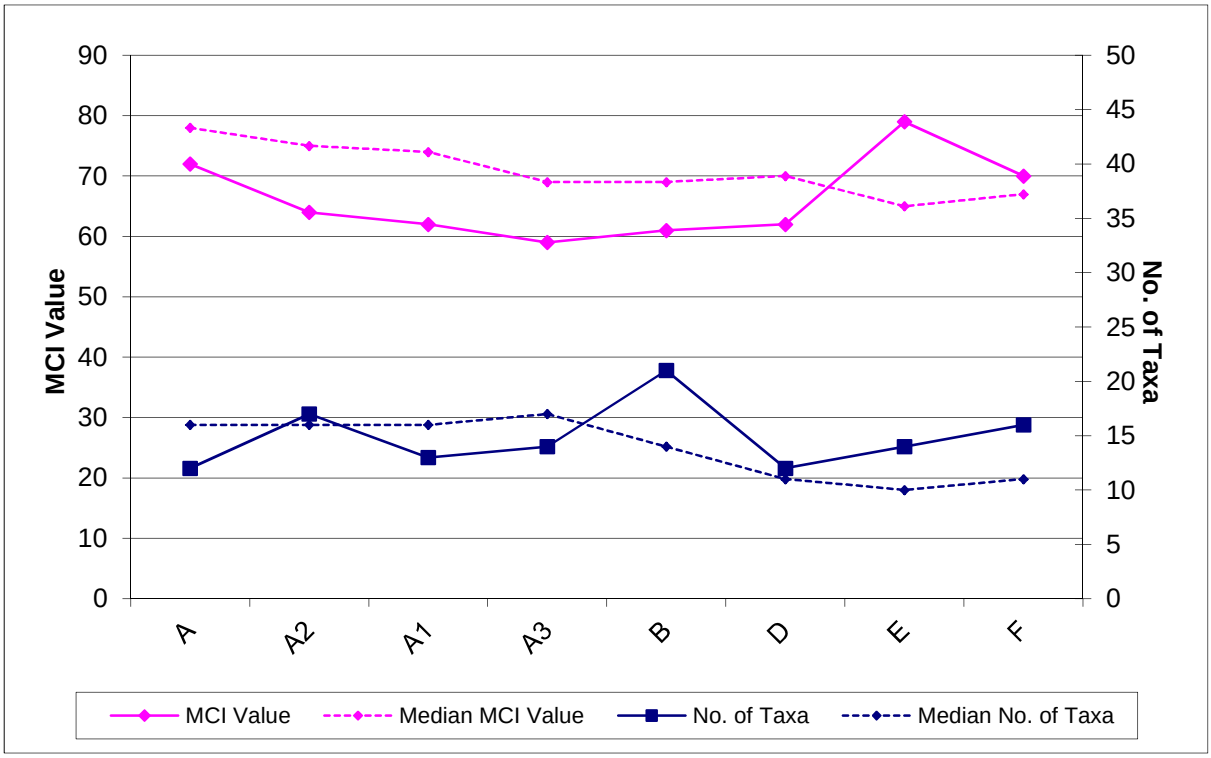


Figure 2 Numbers of taxa and MCI values recorded at sites in the Mangati Stream by the current survey

Table 8 Macroinvertebrate fauna of the Mangati Stream sampled on 10 February 2016

Taxa List	Site Number	MCI score	A	A2	A1	A3	B	D2	E	F
	Site Code MGT000___		488	490	491	497	500	512	520	550
	Sample Number FWB160__		52	53	54	55	56	57	58	59
COELENTERATA	Coelenterata	3	C	R	R	-	R	R	-	-
PLATYHELMINTHES (FLATWORMS)	*Cura*	3	-	R	R	R	C	-	-	-
NEMERTEA	Nemertea	3	R	-	-	R	C	C	-	-
NEMATODA	Nematoda	3	-	-	-	R	R	-	-	-
ANNELIDA (WORMS)	Oligochaeta	1	A	XA	XA	XA	VA	XA	XA	C
	Lumbricidae	5	-	-	R	R	-	-	-	-
HIRUDINEA (LEECHES)	Hirudinea	3	-	-	R	R	-	R	-	-
MOLLUSCA	Lymnaeidae	3	-	-	-	-	R	-	-	-
	Physa	3	C	A	R	C	C	-	-	R
	Potamopyrgus	4	A	XA	XA	XA	VA	XA	XA	XA
	Sphaeriidae	3	R	R	C	-	-	-	-	-
CRUSTACEA	Ostracoda	1	A	XA	XA	C	C	C	R	R
	Isopoda	5	R	-	-	-	C	-	-	R
	Paracalliope	5	XA	R	-	-	C	A	-	-
	Talitridae	5	-	-	-	-	-	-	R	-
	Paratya	3	-	-	-	-	-	-	-	C
EPHEMEROPTERA (MAYFLIES)	*Zephlebia group*	7	R	-	-	-	-	-	-	-
HEMIPTERA (BUGS)	*Microvelia*	3	-	-	-	R	R	-	-	-
COLEOPTERA (BEETLES)	Dytiscidae	5	-	R	-	-	R	-	-	-
	Hydrophilidae	5	-	R	-	-	-	-	-	R
	Staphylinidae	5	-	-	-	-	-	-	R	-
MEGALOPTERA (DOBSONFLIES)	*Archichauliodes*	7	-	-	-	-	-	-	R	-
TRICHOPTERA (CADDISFLIES)	*Oxyethira*	2	-	R	C	R	C	C	R	C
	Triplectides	5	-	R	R	-	-	C	A	A
DIPTERA (TRUE FLIES)	*Aphrophila*	5	-	-	-	-	-	-	R	R
	Eriopterini	5	-	-	-	-	R	-	-	-
	Limonia	6	-	-	-	-	-	-	C	-
	Zelandotipula	6	-	-	-	-	-	-	-	R
	Chironomus	1	-	C	-	-	C	-	-	-
	Orthocladiinae	2	-	A	C	R	VA	C	R	R
	Polypedilum	3	-	C	-	-	C	-	-	C
	Dolichopodidae	3	R	-	-	-	-	-	-	-
	Empididae	3	-	-	-	-	-	R	-	R
	Muscidae	3	-	R	-	-	R	-	-	-
	Psychodidae	1	-	-	-	-	R	-	-	-
	Sciomyzidae	3	-	-	-	R	-	-	-	-
	Austrosimulium	3	-	-	-	-	-	-	R	A
	Tanyderidae	4	-	-	-	-	-	-	R	-
ACARINA (MITES)	Acarina	5	A	A	A	R	C	C	R	C
		No of taxa	12	17	13	14	21	12	14	16
		MCI	72	64	62	59	61	62	79	70
		SQMCIs	4.7	2.1	2.0	2.5	2.5	2.6	2.6	3.9
		EPT (taxa)	1	1	1	0	0	1	1	1
		%EPT (taxa)	8	6	8	0	0	8	7	6

'Tolerant' taxa | 'Moderately sensitive' taxa | 'Highly sensitive' taxa

R = Rare C = Common A = Abundant VA = Very Abundant XA = Extremely Abundant

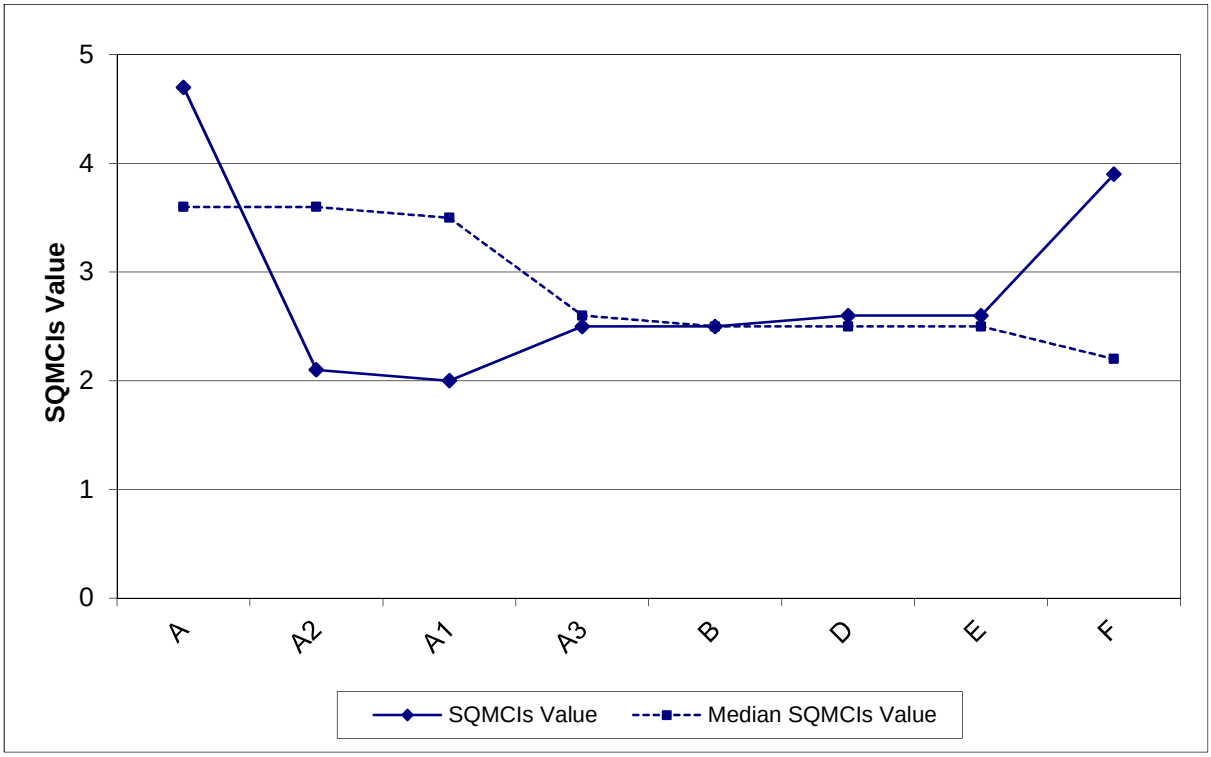


Figure 3 SQMCI$_S$ values recorded at sites in the Mangati Stream by the current survey

Site A (MGT000488)

A moderately low macroinvertebrate community richness of 12 taxa was found at site A ('control' site) at the time of the survey (Table 7). This was 4 taxa lower than the historical median for this site and to the previous survey on November 2015 (16 taxa) (Table 7, Figure 4).

The MCI score of 72 units indicated a community of 'fair' biological health which was not significantly different (Stark, 1998) to the median MCI score of 78 units. The MCI score was also not significantly different (Stark, 1998) to the preceding survey (81 units) and to similar streams (79 units, TRC, 2015).

The SQMCI$_S$ score of 4.7 units was significantly higher (Stark, 1998) than the median MCI score of 3.6 units (Stark, 1998) but not significantly different to similar streams (4.0 units, TRC, 2015). It was also equal to the highest recorded value for this site (4.7 units, Table 7).

The community was characterised by one 'extremely abundant' taxon ['moderately sensitive' amphipod (*Paracalliope*)], and four 'abundant' taxa ['tolerant' oligochaete worms, snails (*Potamopyrgus*) and seed shrimp (Ostracoda) and a 'moderately sensitive' mite (Acarina)] (Table 8).

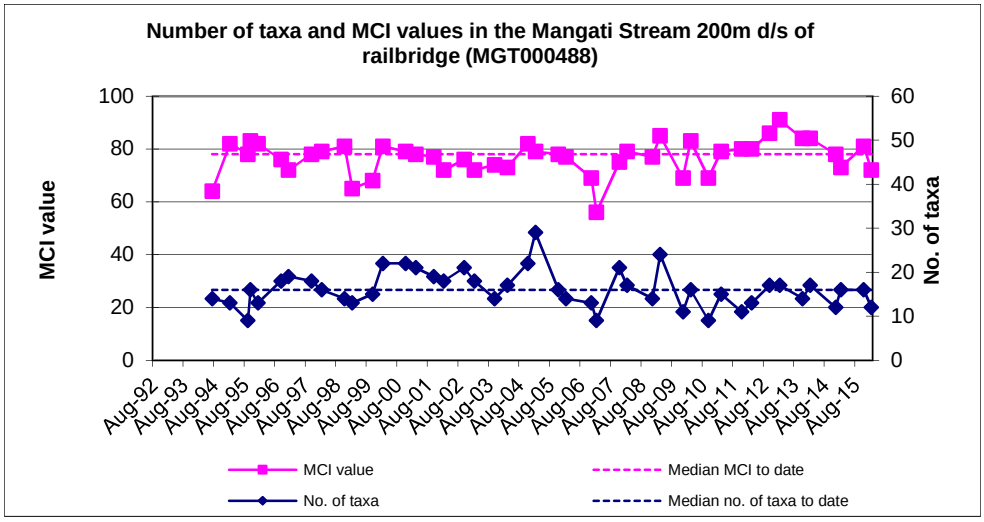


Figure 4 Numbers of taxa and MCI values recorded at site A to date

Site A2 (MGT000490)

A moderate macroinvertebrate community richness of 17 taxa was found at site A2, downstream of a discharge from Tegel Poultry (Table 7). This was slightly higher than the historical median (16 taxa) for this site and to the previous survey on February 2015 (Table 7, Figure 5).

The MCI score of 64 units indicated a community of 'poor' biological health which was significantly lower (Stark, 1998) than the median MCI score of 75 units. The MCI score was not significantly different (Stark, 1998) to the preceding survey (74 units) but significantly lower than similar streams (79 units, TRC, 2015).

The $SQMCI_S$ score of 2.1 units was significantly lower (Stark, 1998) than the median MCI score of 3.6 units (Stark, 1998) and to similar streams (4.0 units, TRC, 2015) (Table 7).

The community was characterised by three 'extremely abundant' taxa ['tolerant' oligochaete worms, snails (*Potamopyrgus*) and seed shrimp (Ostracoda)], and two 'abundant' taxa ['moderately sensitive' mayfly (*Austroclima*) and mite (Acarina)]] (Table 8). Furthermore, blood worms (*Chironmus*), a key indicator taxon for nutrient enrichment, were 'common' at this site.

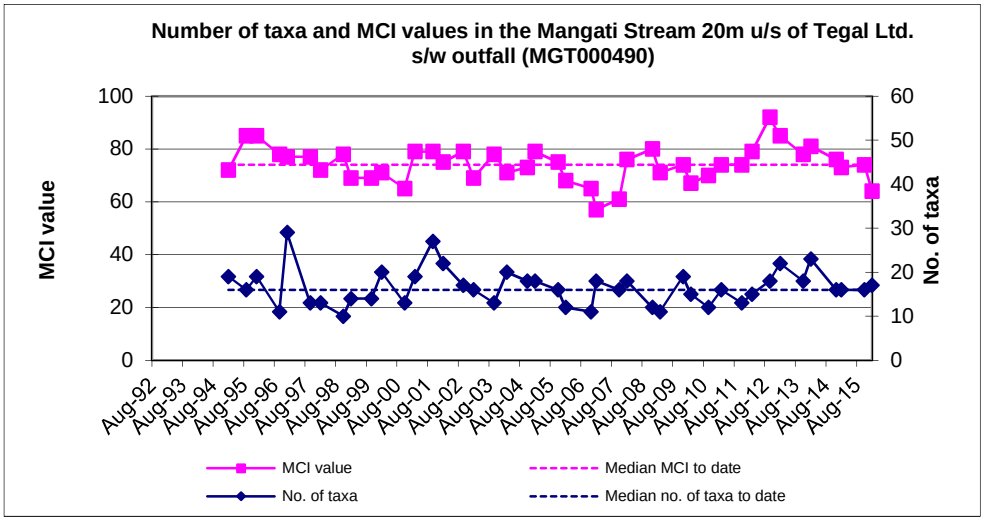


Figure 5 Numbers of taxa and MCI values recorded at site A2 to date

Site A1 (MGT000491)

A moderate macroinvertebrate community richness of 13 taxa was found at site A1 at the time of the survey (Table 7). This was slightly lower than the historical median for this site (16 taxa) and to the previous survey (17 taxa) on November 2015 (Table 7, Figure 6).

The MCI score of 62 units indicated a community of 'poor' biological health which was significantly lower (Stark, 1998) than the median MCI score of 74 units. The MCI score was also significantly lower (Stark, 1998) than the preceding survey (74 units) and to similar streams (79 units, TRC, 2015).

The SQMCIs score of 2.0 units was significantly lower (Stark, 1998) than the median MCI score of 3.5 units (Stark, 1998) and to similar streams (4.0 units, TRC, 2015) (Table 7).

The community was characterised by three 'extremely abundant' taxa ['tolerant' oligochaete worms, snails (*Potamopyrgus*) and seed shrimp (Ostracoda)] and one 'abundant' taxon ['moderately sensitive' mite (Acarina)] (Table 8).

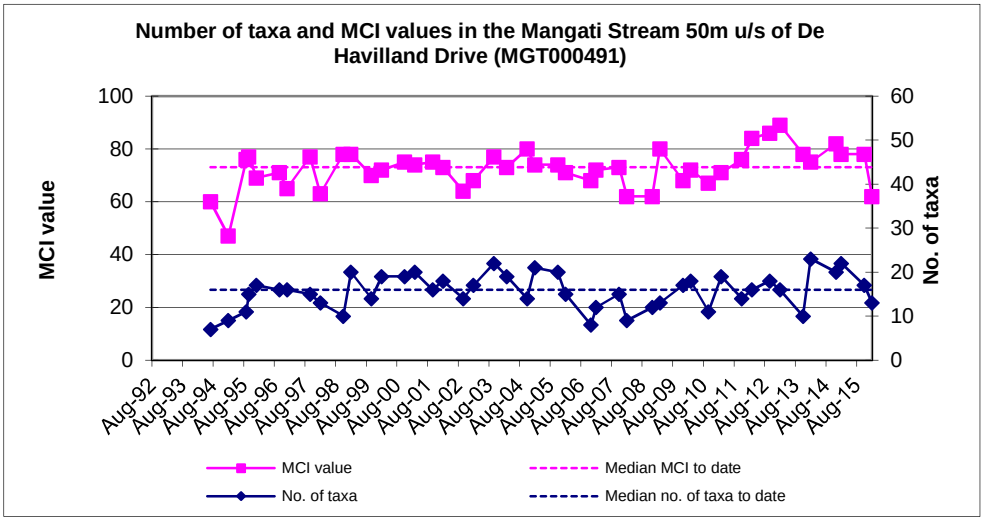


Figure 6 Numbers of taxa and MCI values recorded at site A1 to date

Site A3 (MGT000497)

A moderately low macroinvertebrate community richness of 14 taxa was found at site A3 (Table 7). This was lower than the historical median for this site (17 taxa) but higher than the previous survey (11 taxa) on February 2015 (Table 7, Figure 7).

The MCI score of 59 units indicated a community of 'very poor' biological health (the lowest category) which was not significantly different (Stark, 1998) to the median MCI score of 69 units (by only 1 unit). The MCI score was significantly lower (Stark, 1998) than the preceding survey (75 units) and to similar streams (79 units, TRC, 2015).

The SQMCIs score of 2.5 units was not significantly different (Stark, 1998) to the median MCI score of 2.6 units) but significantly lower (Stark, 1998) compared with similar streams (4.0 units, TRC, 2015) (Table 7).

The community was characterised by two 'extremely abundant' taxa ['tolerant' oligochaete worms and snails (*Potamopyrgus*)] (Table 8).

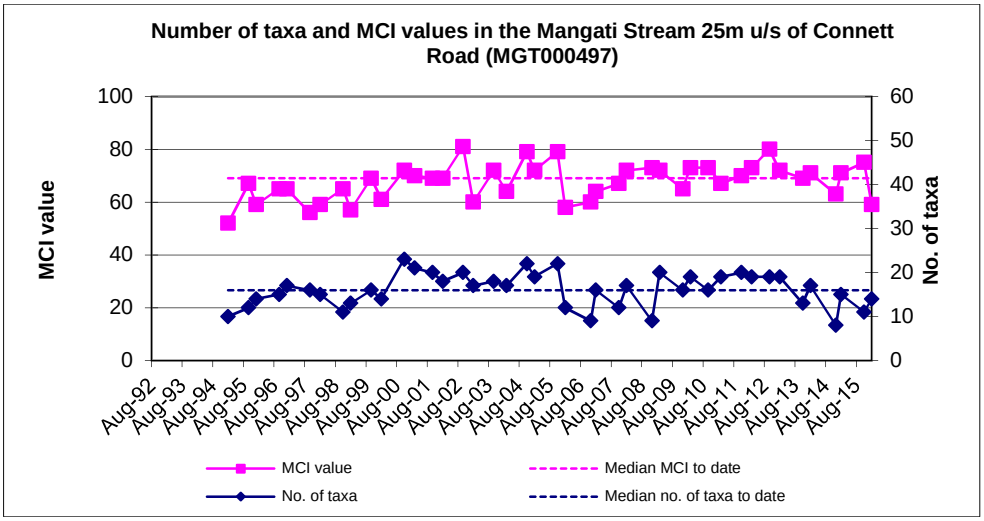


Figure 7 Numbers of taxa and MCI values recorded at site A3 to date

Site B (MGT000500)

A moderately high macroinvertebrate community richness of 21 taxa was found at site B in which the wetland that receives discharges from a large industrial area discharges to the Mangati Stream (Table 7). This was higher than the historical median for this site (14 taxa) and to the previous survey (14 taxa) (Table 7, Figure 8).

The MCI score of 61 units indicated a community of 'poor' biological health which was not significantly different (Stark, 1998) to the median MCI score of 69 units. The MCI score was significantly lower (Stark, 1998) than the preceding survey (77 units) and to similar streams (79 units, TRC, 2015).

The SQMCIs score of 2.5 units was the same as the median MCI score of 2.5 units but was significantly lower (Stark, 1998) than the score for similar streams (4.0 units, TRC, 2015) (Table 7).

The community was characterised by three 'very abundant' taxa ['tolerant' oligochaete worms, snails (*Potamopyrgus*) and orthoclad midges] (Table 8).

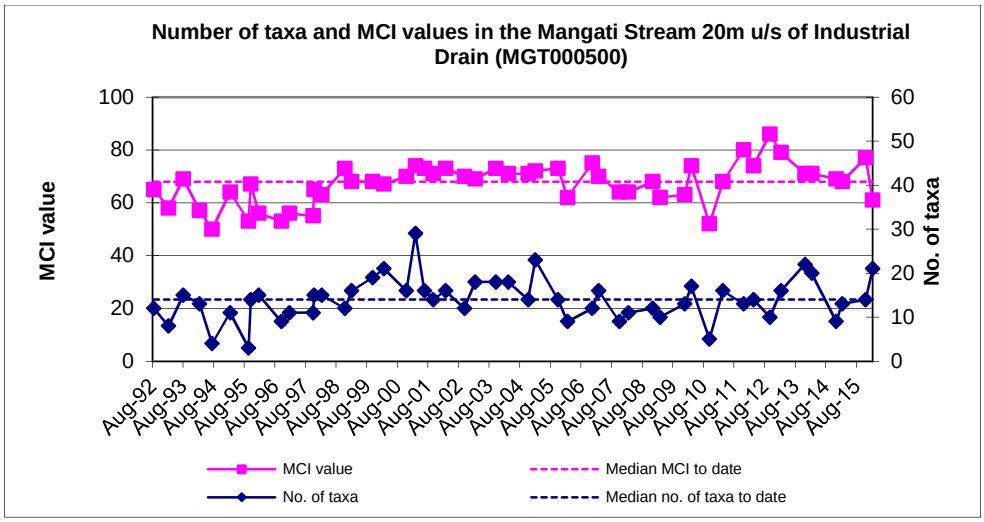


Figure 8 Numbers of taxa and MCI values recorded at site B to date

Site D2 (MGT000512)

A moderately low macroinvertebrate community richness of 12 taxa was found at site D2, below the industrial drain and wetlands high flow level outlet from pond 4 (Table 7). This was slightly higher than the historical median for this site (11 taxa) and slightly lower than the previous survey (14 taxa) (Table 7, Figure 9).

The MCI score of 62 units indicated a community of 'poor' biological health which was not significantly different (Stark, 1998) to the median MCI score of 70 units. The MCI score was significantly lower (Stark, 1998) than the preceding survey (73 units) and to similar streams (79 units, TRC, 2015).

The $SQMCI_S$ score of 2.6 units was not significantly different (Stark, 1998) to the median MCI score of 2.5 units but was significantly lower (Stark, 1998) than the score for similar streams (4.0 units, TRC, 2015) (Table 7).

The community was characterised by two 'extremely abundant' taxa ['tolerant' snails (*Potamopyrgus*) and oligochaete worms] and one 'abundant' taxa ['moderately sensitive' amphipod (*Paracalliope*)] (Table 8).

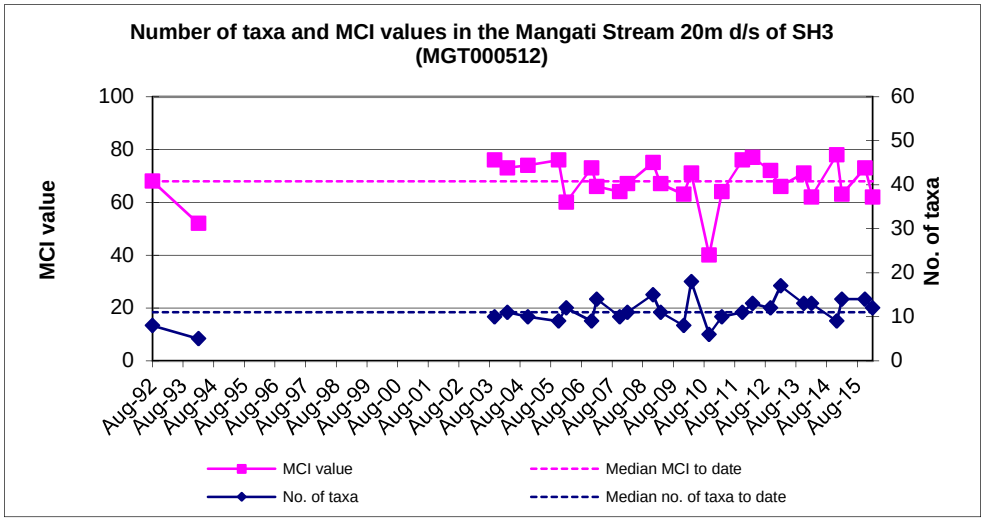


Figure 9 Numbers of taxa and MCI values recorded at site D2 to date

Site E (MGT000520)

A moderately low macroinvertebrate community richness of 14 taxa was found at site E (Table 7). This was higher than the historical median for this site (10 taxa) but substantially lower than the previous survey (21 taxa) which was close to the highest number recorded for the site (22 taxa) (Table 7, Figure 10).

The MCI score of 79 units indicated a community of 'poor' biological health which was significantly higher (Stark, 1998) than the very low median MCI score of 65 units. The MCI score was also not significantly different (Stark, 1998) to the preceding survey (76 units) and to similar streams (79 units, TRC, 2015).

The $SQMCI_S$ score of 2.6 units was not significantly higher (Stark, 1998) than the median MCI score of 2.5 units but significantly lower (Stark, 1998) than similar streams (4.0 units, TRC, 2015) (Table 7).

The community was characterised by two 'extremely abundant' taxa ['tolerant' oligochaete worms and snails (*Potamopyrgus*)] and one 'abundant' taxon ['moderately sensitive' caddisfly (*Triplectides*)] (Table 8).

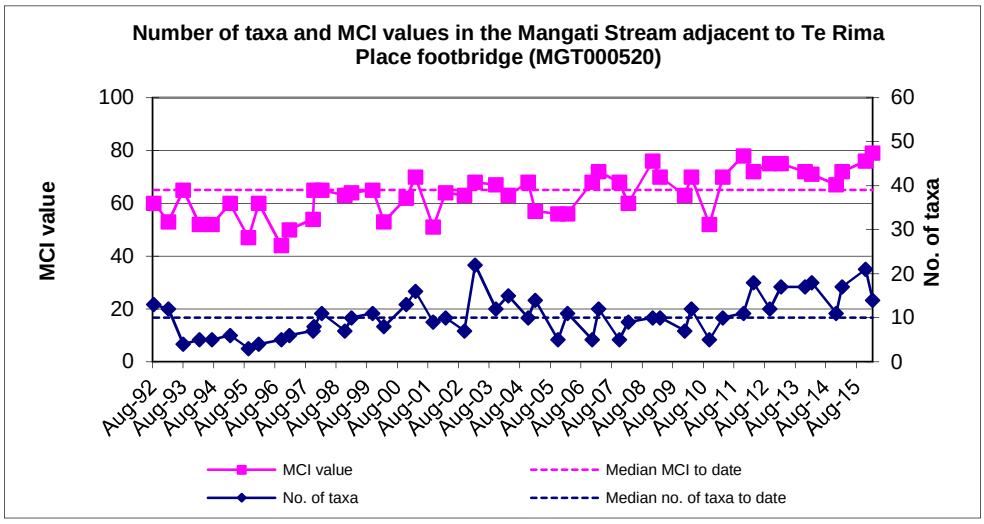


Figure 10 Numbers of taxa and MCI values recorded at site E to date

Site F (MGT000550)

A moderate macroinvertebrate community richness of 16 taxa was found at site F (Table 7). This was higher than the historical median for this site (11 taxa) and similar to the previous survey (15 taxa) (Table 7, Figure 11).

The MCI score of 70 units indicated a community of 'poor' biological health which was not significantly different to the median MCI score for this site (67 units). The MCI score was also not significantly different (Stark, 1998) to the preceding survey (67 units) and to similar streams (79 units, TRC, 2015).

The $SQMCI_S$ score of 3.9 units was significantly higher (Stark, 1998) than the median score of 2.2 units but not significantly different (Stark, 1998) to the score for similar streams (4.0 units, TRC, 2015) (Table 7).

The community was characterised by one 'extremely abundant' taxon ['tolerant' snails (*Potamopyrgus*)], one 'very abundant' taxon ['tolerant' oligochaete worms] and two 'abundant' taxa ['tolerant' sandfly (*Austrosimulium*) and 'moderately sensitive' caddisfly (*Triplectides*)]. In the previous survey 'tolerant' oligochaete worms were 'very abundant' which have since decreased to 'common'.

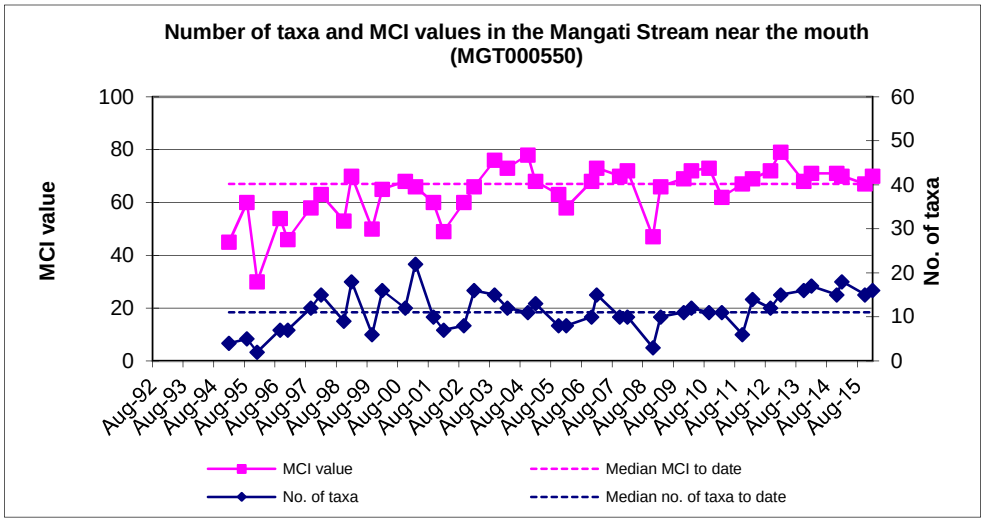


Figure 11 Numbers of taxa and MCI values recorded at site F to date

Microscopic streambed heterotrophic assessment

The microscopic heterotrophic assessments of substrate growths performed for all sites indicated an absence of any mats, plumes or dense growths of heterotrophic organisms at each of the eight sites.

Discussion and Conclusions

Macroinvertebrate richnesses among sites along the surveyed reach were generally similar to each other and generally slightly lower than the median number recorded for lowland coastal streams below 25m altitude (17 taxa). There was no obvious evidence of any toxic discharges significantly lowering or limiting taxa richness at sites along the surveyed reach. Site B had higher than usual taxa richness (7 taxa higher than the median) which was also the highest taxa richness recorded for the current survey (21 taxa). Taxa richness is not necessarily correlated with water quality and mild nutrient enrichment can cause an increase in taxa richness. The other seven sites had little variation in taxa richness (12-17 taxa) though site A, the 'control' site, did have four taxa lower than the median taxa richnesss for the site and site F had five taxa higher than the median.

During the spring survey on December 2014 site A3 recorded its lowest ever taxa number (8 taxa) and the previous survey on November 2015 recorded another low taxa number (11 taxa). It was suggested that some sort of toxic discharge may have affected taxa richness (BJ272). 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. The results from the current survey indicate that there was no evidence of any toxic discharges or disturbance at site A3 as it had one taxon higher than the upstream site (site A1) and was only slightly lower (by three taxa) than the median taxa richness for the site.

MCI scores among sites varied by 20 units (59-79) and indicated that the surveyed reach was generally in 'poor' health though site A3 was just in the 'very poor' health category. MCI scores for all but one site (Site E) were below the median value (79 units) found for similar streams (TRC, 2015) and the upper catchment sites (sites A2, A1) apart from the 'control' site had MCI scores that were significantly below (Stark, 1998) their historical median suggesting that these sites were being adversely affected by organic pollution. However, the 'control' site was also seven MCI units below the median for similar streams indicating lower than normal water quality in the reach, possibly due to summer conditions or effects above the 'control' site not related to consented discharges below site A. Site A had deteriorated by nine units since the previous survey and only sites A3 and B were significantly below the site A MCI score, though sites A1 and D2 were very close to being significantly lower (1 unit).

The $SQMCI_s$ can be more sensitive to pollution compared with the MCI. $SQMCI_s$ scores downstream of the site A at all sites apart from site F had significantly lower scores than the 'control' site. The scores from sites A2 –E all indicated 'very poor' macroinvertebrate community health (Stark and Maxted, 2007). The very low $SQMCI_s$ scores were largely typical for the sites with sites A3-E recording scores very close to historic medians but this only provides further evidence for long term degradation of the macroinvertebrate communities in the Mangati Stream. Sites A2 and A1 had $SQMCI_s$ scores below historic medians and this suggests that discharges from Tegel Poultry were adversely affecting the macroinvertebrate communities downstream of the discharge point. The previous survey in November 2015 also noted concerns about Tegel Poultry discharges (DS047).

The poor state of sites A3, B and D2 also suggest discharges below De Havilland Drive and possibly also below the wetland were having a negative affect on the macroinvertebrate stream communities present there though it is difficult to determine how far the downstream affects of discharges occur (i.e. Tegel Poultry discharges may be affecting sites below site A1). Sites A2 to D2 all have relatively similar macroinvertebrate indices with no obvious improvement or degradation apparent between the sites. The disparity between the MCI and $SQMCI_s$ scores at site E makes ascertaining the health of the macroinvertebrate difficult though there was a significant drop of $SQMCI_s$ score at the site from the previous survey but little change in MCI score.

The composition of the macroinvertebrate communities in the Mangati Stream are typical for a lowland, soft-bottom stream running through farmland, an industrial area and a residential area. The communities are usually dominated by taxa that are relatively 'tolerant' to organic pollution and prefer muddy substrates e.g. oligochaete worms and snail (*Potamopyrgus*), and those 'moderately sensitive' taxa commonly associated with macrophytes e.g. amphipod (*Paracalliope*). The results of this survey in respect to community composition are largely congruent with past results though the 'moderately sensitive' amphipod (*Paracalliope*) was largely absent below the 'control' site when it had been 'abundant' to 'extremely abundant' at sites A2-D2 in the previous survey. This indicated a degradation in water quality downstream of site A unrelated to seasonal affects as *Paracalliope* was still 'extremely abundant' at site A at the time of this summer survey. The 'tolerant' oligochaete worms and snail (*Potamopyrgus*) were still 'extremely abundant' at most sites. Site E had five 'rare' 'moderately sensitive' taxa out of a total taxa richness of 14 taxa. This indicates that the MCI score is probably not an accurate reflection of the health of the macroinvertebrate community at the site and the very low $SQMCI_s$ score of 2.6 units provides a more appropriate index which means that the site was degraded and had become more so since the previous survey.

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 December 2014 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 results of the current survey indicate that macroinvertebrate health was generally 'poor' for the surveyed sites in the Mangati Stream and that discharges from Tegel Poultry and potentially other discharges downstream of De Havilland Drive and at the wetlands were adversely affecting the health of the macroinvertebrate communities in the Mangati Stream.

Summary

On 10 February 2016 eight established sampling sites in the Mangati Stream catchment were sampled using kick samples (sites D2 and E), a combination of the 'kick sampling' and 'sweep-sample' techniques (sites A, A2, A1, B, and F), or 'sweep-sample' technique (site A3) 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 $SQMCI_s$ 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.

Upstream of De Havilland Drive (sites A, A2 and A1) MCI and $SQMCI_s$ scores for sites A2 and A1 were significantly lower than historical medians. MCI scores were non-significantly lower than the 'control' site, site A, but for the more sensitive SQMCIs, scores were significantly lower than site A. Site A equalled its highest equal recorded $SQMCI_s$ score suggesting either preceding water quality was higher than average or that habitat quality had increased at the site which would exaggerate differences with the two downstream sites. However, this would not explain the lower than normal scores at sites A2 and A1 suggesting that Tegel Poultry discharges were adversely affecting the health of the macroinvertebrate communities present in the Mangati Stream. The previous survey in November 2015 also noted concerns about Tegel Poultry discharges (DS047).

Results recorded at the next three sites (A3, B and D2) indicated that they were in a poor state suggesting discharges below De Havilland Drive and possibly also below the wetland were having a negative affect on the macroinvertebrate stream communities present there though discharges from Tegel Poultry may also have contributed to the lowered macroinvertebrate health.

At site E there was a significant drop of $SQMCI_s$ score at the site from the previous survey but little change in MCI score. It had five 'rare' 'moderately sensitive' taxa out of 14 taxa indicating that the $SQMCI_s$ score of 2.6 units is a more accurate reflection of the health of the macroinvertebrate community at the site suggesting that the site was degraded and had become so since the previous survey.

At site F macroinvertebrate indices were better than normal, especially the SQMCIs score which was significantly higher than the historical median and not significantly different to the control site score, indicating that the site was not being significantly impacted by discharges and habitat quality, which can sometimes be affected by the sea, was relatively normal.

Overall, the changes in community structures, MCI and SQMCIs score in the upper reaches of the Mangati Stream indicate that there have likely been some adverse affects on macroinvertebrate communities, possibly from discharges from Tegel Poultry but potentially from other sources as well. Downstream of De Havilland Drive, where stormwater from De Havilland Drive West, Tasman Oil and Greymouth Petroleum enter, there were also low MCI and $SQMCI_s$ scores also suggesting some adverse effects on macroinvertebrates. Downstream of Connett Road West the discharges from the wetland ponds also appear to have impacted on the macroinvertebrate community at sites B and D2 as indicated by the decreased, low, $SQMCI_s$ scores. Site E may also have been impacted by discharges while Site F showed improvement. Overall, the results of the current survey indicate that macroinvertebrate health was generally 'poor' for the surveyed sites in the Mangati Stream and discharges may have potentially adversely affected macroinvertebrate communities though poor quality habitat may have also influenced the state of macroinvertebrate communities present in the stream.

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.

Jansma, 2015: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, February 2015. TRC report BJ272.

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.

Sutherland DL, 2015: Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, November 2015. TRC report DS047.

TRC, 2015a: Some statistics from the Taranaki Regional Council database of freshwater macroinvertebrate surveys performed during the period from January 1980 to 30 September 2014. TRC Technical Report 99-17 (updated September, 2015).

TRC, 2015b: Freshwater macroinvertebrate fauna biological monitoring programme Annual SEM Report 2012-2013. Technical Report 2015-66.

Appendix III

Rule 23 of the Regional Freshwater Plan (permitted stormwater rule)

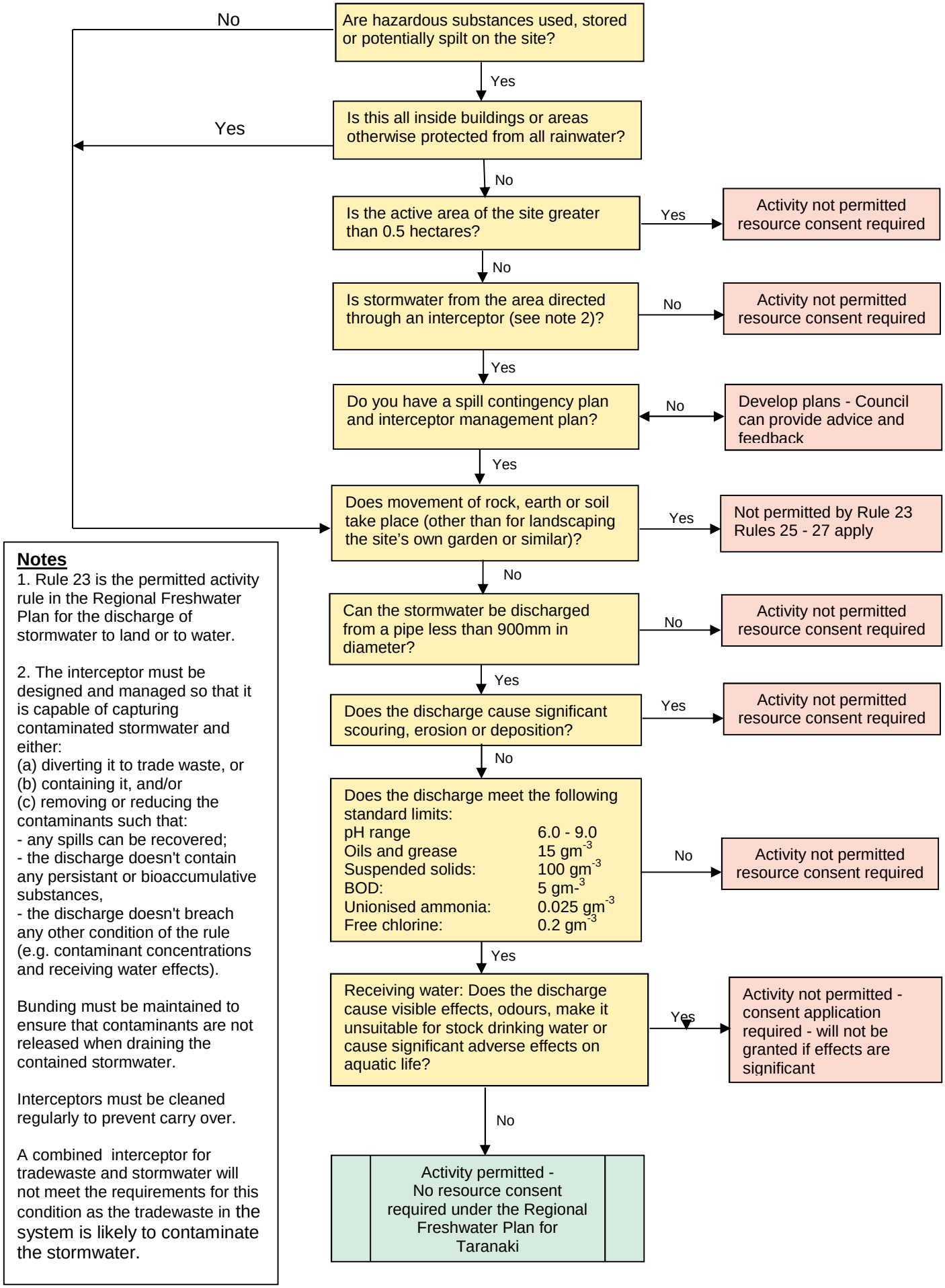
Explanation

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].



Notes

1. Rule 23 is the permitted activity rule in the Regional Freshwater Plan for the discharge of stormwater to land or to water.

2. The interceptor must be designed and managed so that it is capable of capturing contaminated stormwater and either:
(a) diverting it to trade waste, or
(b) containing it, and/or
(c) removing or reducing the contaminants such that:
- any spills can be recovered;
- the discharge doesn't contain any persistant or bioaccumulative substances,
- the discharge doesn't breach any other condition of the rule (e.g. contaminant concentrations and receiving water effects).

Bunding must be maintained to ensure that contaminants are not released when draining the contained stormwater.

Interceptors must be cleaned regularly to prevent carry over.

A combined interceptor for tradewaste and stormwater will not meet the requirements for this condition as the tradewaste in the system is likely to contaminate the stormwater.