

Mangati Catchment
Joint Monitoring Programme
Annual Report
2016-2017

Technical Report 2017-14

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Executive summary

This report is the Annual Report for the period July 2016 to June 2017 by the Taranaki Regional Council (the Council) describing the monitoring programme associated with 16 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 III) 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 2016-2017 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 20th 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 45 site inspections, discussions with site operators over site management, 82 discharge samples, 37 receiving water samples, 16 macroinvertebrate samples, several point source/ambient air particulate survey, 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 16 of the 18 results. None of the 24 instream samples taken during period under review exceeded the 0.025 g/m³ MfE unionised ammonia guideline limit for the protection of aquatic ecosystems. Noted in this period are higher than expected concentrations of biochemical oxygen demand (BOD) at the control site, however, the inputs from the industrial catchment have served to dilute BOD to acceptable levels.

Also 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) indicated some recovery.

Statistical analysis of data from this site indicates a continuing trend of improving MCI scores below the industrial area.

There were 11 substantiated unauthorised incidents recorded in the Mangati catchment during the period under review, eight 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. 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 high level of environmental performance and compliance with their resource consents and a high level of administrative performance.

During the year, Greymouth Petroleum demonstrated a good level of environmental performance and compliance with their resource consents and a high level of administrative performance. During the monitoring period the consent holder undertook a major upgrade to the stormwater treatment systems at their site and submitted an updated management plan.

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 in regard to non-compliant discharges. As a result of these incidents and numerous non-compliances over the past three monitoring periods, two infringement notices were issued as a result.

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

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

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 demonstrated a high level of environmental and administrative performance and compliance with their resource consents.

During the year, Schlumberger demonstrated and a high level of environmental performance and compliance with their resource consents, however, an improvement is required in their administrative performance. An updated contingency plan and stormwater/wastewater plan is required for the site and self sampling results were not provided.

Tasman Oil Tools 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. There was one minor non-compliance in regard to suspended solids, however the consent holder undertook works to improve sediment control at the site and subsequent results complied with consent conditions.

During the year, the Tegel Foods Ltd (feed mill) demonstrated a good level of administrative performance, however an improvement is required their environmental performance and compliance with their resource consents as defined in Section 1.1.4. During the period an infringement note was issued in regard to a non-compliant discharge and yearly reporting requirements were not met on time.

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. Minor non-compliant fugitive discharges were observed during a dry weather survey. No effects were noted in the stream as a result of these and subsequent samples have returned compliant results.

During the year, TIL Freighting Ltd's demonstrated a good 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.

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

This report includes recommendations for the 2017-2018 year.

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1. Introduction

1.1. Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1. Introduction

This report is the Annual Report for the period July 2016 to June 2017 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 20th 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. The total catchment area is approximately 6.1 km². The length of the catchment, from the headwaters between Paraita and Corbett Roads to the sea at Bell Block beach, is approximately five kilometres.

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, borders 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

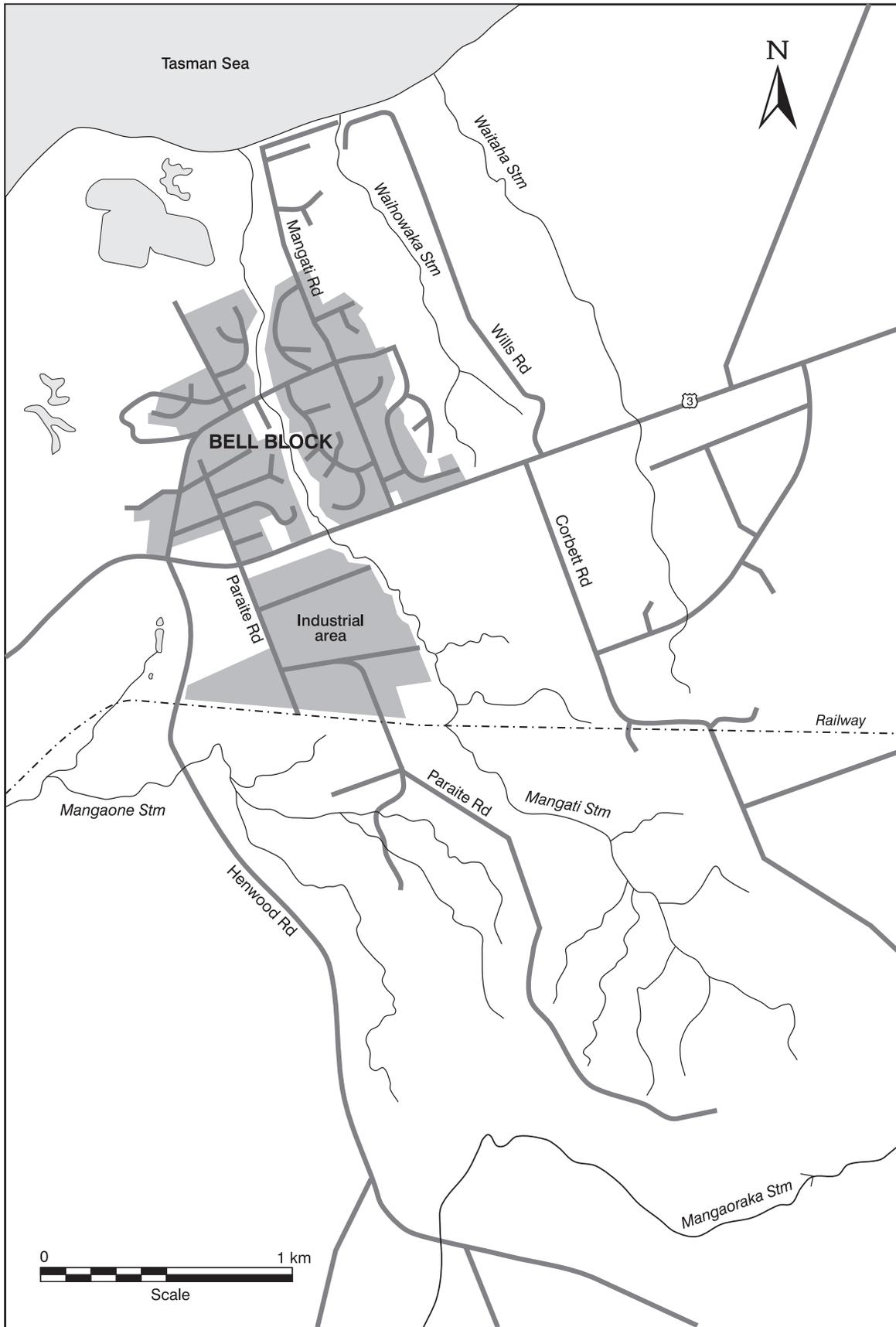


Figure 1 Mangati catchment

1.1.2. Structure of this report

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

- consent compliance monitoring under the RMA and the Council's obligations;
- the Council's approach to monitoring sites through 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 2017-2018 monitoring year.

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

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

Section 20 considers the receiving environment monitoring undertaken in the Mangati catchment.

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

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

1.1.3. The Resource Management Act (1991) and monitoring

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

1.1.5. 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.

This summary of consent conditions may not reflect the full requirements of each condition. The consent conditions in full can be found in the resource consents which are appended to this report in Appendix I.

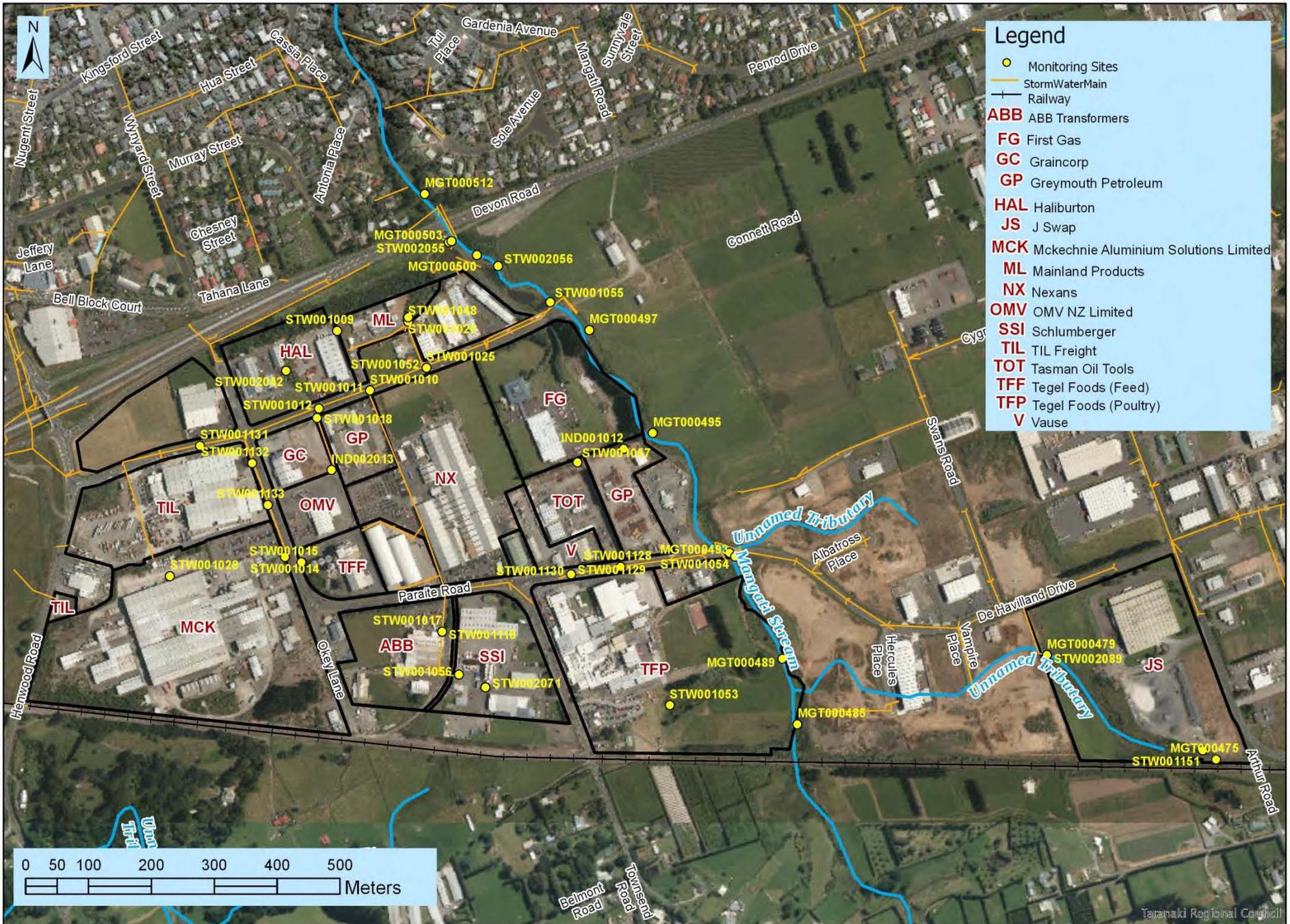
Stormwater discharge consents have standardised special conditions that:

- 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 on 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	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	3913-3	To discharge stormwater from an industrial site into an unnamed tributary of the Mangati Stream	June 2020	1 June 2032

Consent holder	Resource consent	Purpose	Next review date	Expiry date
Schlumberger New Zealand Ltd	5987-1	To discharge treated stormwater from a synthetic liquid mud plant and storage site into the Mangati Stream	-	1 June 2020
	6032-1	To discharge treated wash water and stormwater from a storage and maintenance premises for oil field exploration equipment into the Mangati Stream	-	1 June 2020
Tasman Oil Tools Ltd	4812-2	To discharge up to 112 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 2020	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 2020	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 Freightling Ltd	6952-1	To discharge stormwater from a truck depot into and onto land in the vicinity of the Mangaone Stream in the Waiwhakaihō catchment	-	1 June 2020
	7578-1	To discharge stormwater from a truck depot into the Mangati Stream	June 2020	1 June 2026
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



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 seven 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 unauthorised discharges of contaminants.

During the period under review an officer of the Council carried out inspections approximately quarterly, with a total of 45 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. Two surveys are scheduled in wet weather and one in dry weather during the summer low flow period. Following analysis of the combined discharges, follow up sampling of individual discharges may be carried out if required.

During the period under review three surveys were performed. Full wet weather runs were carried out on 6 October 2016 and 11 May 2017, while a dry weather survey was undertaken on 1 March 2017.

Overall 82 discharge samples and 37 receiving water samples were taken during the 2016-2017 period.

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.

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 1 March and 10 May 2017.

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

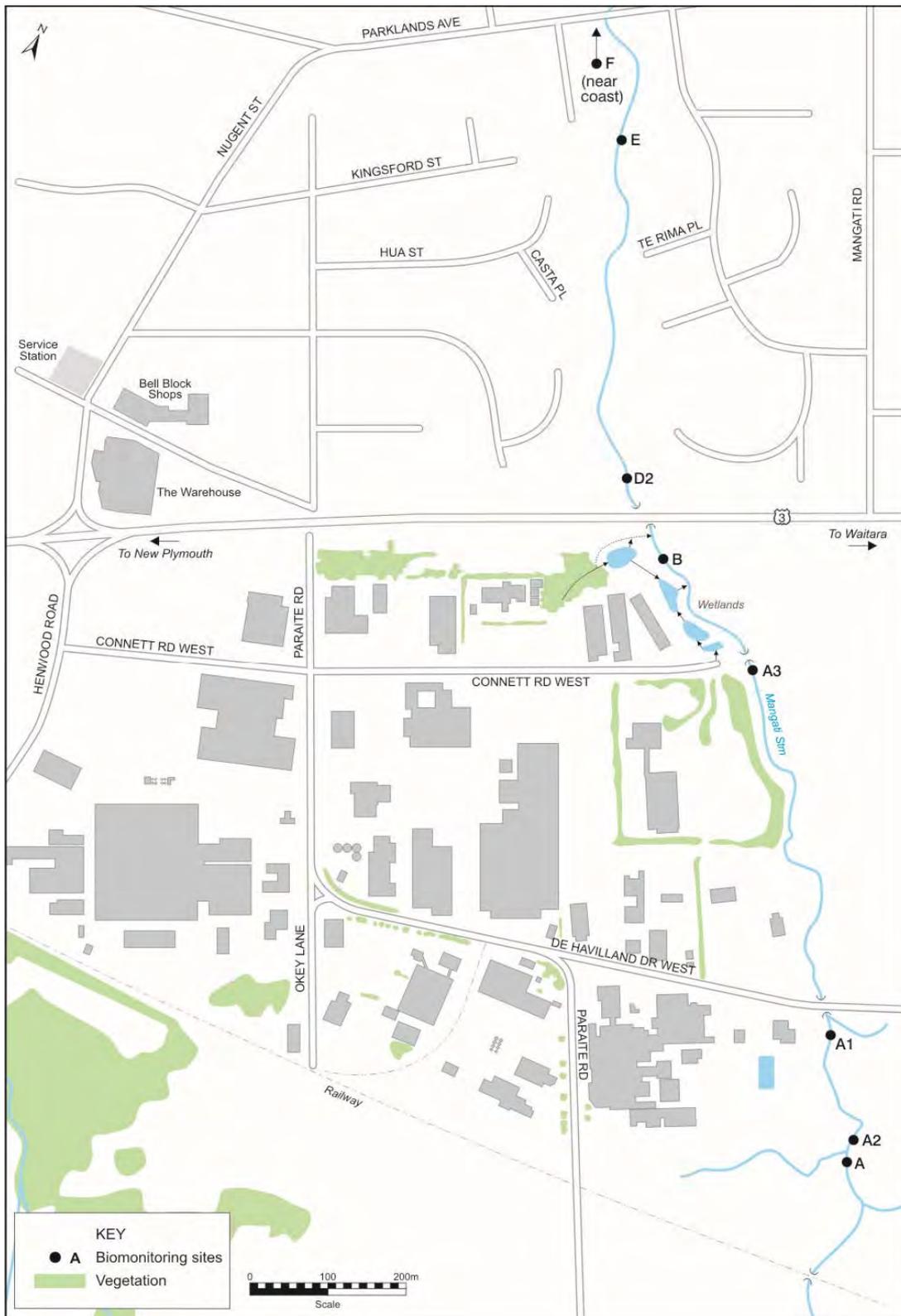


Figure 3 Location of biological monitoring sites

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.

A night-spotting survey was undertaken on 25 May 2017. These are scheduled every three years and will next be undertaken during the 2019-2020 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.

1.3.8. Hydrological and environmental telemetry.

During the 2016-2017 period the Council continued to maintain a hydrological and meteorological recording station at the bottom of the industrial catchment. During this period this site was enhanced with a multi parameter sonde that has sensors capable of the continuous monitoring of pH, conductivity, turbidity, and dissolved oxygen. The unit has two more sensor ports which may be utilised to measure other parameters such as dissolved organic matter, nitrate/ammonia or chlorophyll A.

2. ABB Ltd (Transformer Division)

2.1. Introduction

2.1.1. Process description

ABB Ltd (ABB) established the transformer plant on Paraita 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 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 an 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

2.2.1.1. Inspections

Inspections were undertaken at ABB's site on 1 July 2016, 11 August 2016, and 30 March 2017.

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.

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 along with a summary of historical data from the site.

Stormwater from the Schlumberger sites may influence the results observed at this site (see Section 12).

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	Acid soluble lead	Oil and Grease	pH	Suspended solids	Temp.	Acid soluble zinc	Dissolved zinc
Unit	mS/m@20°C	g/m ³	g/m ³	g/m ³	g/m ³	pH	g/m ³	Deg.C	g/m ³	g/m ³
Minimum	0.88	0.01	0.01	0.05	0.5	6.6	2	9.0	0.043	0.018
Maximum	131	0.4	0.06	0.28	150	10.8	290	22.2	2.57	1.4
Median	5.65	0.03	0	0.02	1.6	7.2	17	14.8	0.497	0.314
Number	54	49	34	39	34	54	51	51	49	34
06 Oct 2016 (w)	2.4	<0.01	<0.01	<0.05	a	7.0	12	13.6	0.190	0.152
01 Mar 2017 (d)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
11 May 2017	3.3	<0.01	<0.01	<0.05	a	7.2	<2	15.3	0.292	0.270
Consent limit	-	-	-	-	15	6 - 9	100	-	-	-

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

2.2.2. Air Monitoring

2.2.2.1. Inspections

Air inspections were undertaken on 1 July 2016 and 30 March 2017. This included a dust reading taken near the point of emission, which recorded a mass concentration total of 0.014 and 0.285 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 and is next due in the 2018-2019 period.

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. It is noted that ABB has indicated that the site will be decommissioned in the near future and it is expected that these consents will be surrendered at that time.

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 results 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 4 and Table 5.

Table 4 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

Purpose: To discharge stormwater from a transformer manufacturing site into the Mangati Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
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 5 Summary of performance for ABB's consent 5435-2

Purpose: To discharge emissions into the air from dry steel grit blasting processes and associated activities		
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

Purpose: To discharge emissions into the air from dry steel grit blasting processes and associated activities		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
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. Recommendation from the 2015-2016 Annual Report

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

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.

This recommendation was implemented in the 2016-2017 monitoring period.

2.3.5. Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- 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 exercising resource consents.

It is proposed that for 2017-2018 the monitoring programme remains similar to that undertaken in the 2016-2017 year with the next triennial air deposition survey to be undertaken in the 2018-2019 period. A recommendation to this effect is attached to this report.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site(s) in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2017-2018.

2.4. Recommendation

1. THAT in the first instance, monitoring programmed for the consented activities of ABB Ltd in the 2017-2018 year remains similar to that undertaken in the 2016-2017 year with the next triennial air deposition survey to be undertaken in the 2018-2019 period.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

3. First Gas Ltd

3.1. Introduction

3.1.1. Process description

First Gas Ltd (First Gas) operates 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.

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.

First Gas Ltd holds 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 2015 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.

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

3.2. Results

3.2.1. Inspections

The site was inspected twice during the period under review, on 10 August 2016 and 22 March 2017.

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

The site was found to be neat and tidy on both occasions, with no issues noted during the inspections.

3.2.2. Investigations, interventions, and incidents

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

3.3. Discussion

3.3.1. Discussion of site performance

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

3.3.2. Environmental effects of exercise of consent

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

3.3.3. Evaluation of performance

A tabular summary of First Gas' compliance record for the year under review is set out in Table 6.

Table 6 Summary of performance for First Gas' consent 4780-2

Purpose: <i>To discharge stormwater and vehicle wash water to Mangati Stream</i>		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Require best practice be adopted	Inspection and liaison	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	Inspections and liaison with staff	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, 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

3.3.4. Recommendation from the 2015-2016 Report

In the 2015-2016 Report, it was recommended:

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.

This recommendation was implemented.

3.3.5. Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- 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 exercising resource consents.

It is proposed that for 2017-2018 the monitoring programme remains at a similar level as that for the 2016-2017 period. A recommendation to this effect is attached to this report.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site(s) in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2017-2018.

3.4. Recommendation

1. THAT in the first instance, monitoring programmed for consented activities of First Gas Ltd's site in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

4. GrainCorp Feeds Ltd

4.1. Introduction

4.1.1. Process description

GrainCorp Feeds Ltd (GrainCorp) supplies liquid and dry stock feed from this 0.46 ha site at 21 Paraita 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.

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.

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/m³ beyond a mixing zone of 20 metres.

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

4.2. Results

4.2.1. Inspections

The site was visited on 9 August and 5 December 2016, and 30 March 2017.

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, during the inspections of 9 August 2016 and 20 March 2017 it was found that the drain wardens needed attention. It was noted that the consent holder was making more effort in keeping the site compliant and tidy during this period.

4.2.2. 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 three occasions during the year. During one of the visits (a dry weather survey), no discharges was occurring. Two samples of stormwater were taken from the flow exiting GrainCorp's site during two wet weather surveys in the monitoring period.

The results of the chemical monitoring for this site are given in Table 7 below, along with summary of historical data from the site.

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

Parameter	BOD	Conductivity	Oil and Grease	pH	Suspended solids	Temp.	Turbidity
Unit	g/m ³	mS/m@20°C	g/m ³	pH	g/m ³	Deg.C	NTU
Minimum	1.1	3.5	0.5	6.2	4	8.9	2.8
Maximum	220	34.8	3.0	7.7	240	20.8	130
Median	8	7.4	1.8	7.3	30	15.4	16
Number	10	11	4	11	11	11	11
12 Oct 2016 (w)	22	12.3	1.8	7.6	30	15.1	15
01 Mar 2017 (d)	nd	nd	nd	nd	nd	nd	nd
11 May 2017 (w)	1.1	4.2	a	7.4	11	15.9	3.6
Consent Limit	25	-	15	6-9	100	-	-

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

nd 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 and grease limits set out in the consent conditions.

4.2.3. 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.

4.3. Discussion

4.3.1. 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 recorded were minor and the improvement in performance from the previous monitoring year was noted.

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

4.3.2. 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 observed in the downstream receiving waters or in the treatment ponds themselves during the period under review.

4.3.3. 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	Yes
2. Limits stormwater catchment area	Inspection	Yes
3. Stormwater from loading/unloading area to be directed through a stormwater diversion system by 31 July 2011	Inspection	Yes
4. Above ground hazardous substance storage to be bunded	Inspection and discussion with consent holder	Yes
5. Limits on chemical composition of discharge	Discharge sampling	Yes
6. Discharge cannot cause specified adverse effects in Mangati Stream	Receiving water sampling and observation	Yes
7. Limit on filtered carbonaceous BOD of stream	Receiving water sampling and observation	Yes
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-update received 2016
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-update received 2016

Purpose: To discharge stormwater into the Mangati Steam		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
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		High
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 high level of environmental performance and compliance with their resource consents and a high level of administrative performance as defined in Section 1.1.4.

4.3.4. Recommendation from the 2015-2016 Annual Report

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

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.

This recommendation was implemented.

4.3.5. Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- 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 exercising resource consents.

It is proposed that for 2017-2018 that the monitoring programme remains similar to that undertaken in the 2016-2017 year. A recommendation to this effect is attached to this report.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site(s) in question. The Council reserves the right to subsequently adjust the programme

from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2017-2018.

4.4. Recommendation

1. THAT in the first instance, monitoring programmed for the consented activities of GrainCorp Feeds Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

5. Greymouth Petroleum Acquisition Company Ltd

5.1. Introduction

5.1.1. 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.

Originally the discharge of stormwater from the site entered a small open drain where it mixed with discharges from Tasman Oil Tool Ltd (TOT) and First Gas Ltd (FGL) prior to being discharged to the Mangati Stream. Works undertaken in the 2016-2017 monitoring period resulted in the discharges from FGL and TOT being piped along the bottom of the dry stream bed and Greymouth Petroleum now discharges via gravel filter bed laid over the top of the pipework. These works were undertaken to improve the quality of the discharges from the site.

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.

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.

5.2. Results

5.2.1. Inspections

Inspections of the Greymouth Petroleum site were undertaken on 9 August 2016, 3 November 2016 and 23 March 2017.

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

During the monitoring period it was noted that major works were being undertaken to address the persistent issues in regards to suspended solids concentrations in the discharge. Further site surface stabilisation had been implemented as well as the construction of a second skimmer pit and gravel beds to treat the discharge. During the inspection on 3 November 2016 it was noted that had occurred causing contaminants to enter the ring drain. The consent holder was directed to address this.

5.2.2. 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 for sampling during the period under review. On two occasions, (one of the wet weather surveys and the other a dry weather survey) no discharge was occurring and consequently no sample could be collected.

The sample 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.

Oil and grease was not detected in the discharge during the monitoring period.

Table 9 Chemical monitoring results Greymouth Petroleum stormwater-site IND001012

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@20°C	g/m ³	g/m ³	g/m ³	g/m ³	pH	g/m ³	Deg.C	g/m ³	g/m ³
06 Oct 2016 (w)	5.1	0.10	<0.01	0.14	<0.5	7.4	560	13.6	0.343	0.013
02 Nov 2016 (w)	-	-	<0.01	-	-	7.3	74	14.3	-	0.015
01 Mar 2017 (d)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
11 May 2017 (w)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
<i>Consent limit</i>	-	-	-	-	15	6-9	100	-	-	-

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

During the monitoring period, there was one non-compliant sample taken on 6 October 2016 which had a suspended solids concentration of 560 g/m³. This discharge point has previously returned non-compliant suspended solids results and as a result Greymouth Petroleum undertook site works to address the issue. It is noted that this non-compliance was found prior to completion of the works. No further samples were non-compliant during the monitoring period. Also noted is that with the installation of the second skimmer pond discharges were becoming more infrequent due to water loss via soakage from the pond.

Copper, lead and zinc are monitored at this site as it is known that, historically, greases containing copper, 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 resulted in an elevated concentration of copper, lead and zinc in the soil on site. Shortly after taking over the site, Greymouth Petroleum undertook remediation work in the vicinity of the wash pad, stormwater basin and open drain exiting the site to address this. 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 similar or 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 first sample collected during the year under review indicates that there was no wash water present in the stormwater discharge at the time of sampling.

5.2.3. Investigations, interventions, and incidents

During the period under review, the Council was required to record an incident in association with Greymouth Petroleum's conditions in their resource consent.

6 October 2016

During analysis of stormwater samples collected during wet weather on 6 October 2016, it was found that the concentration of suspended solids discharging from Greymouth Petroleum's site exceeded parameters set by a condition in their resource consent. A letter of explanation was received in which they acknowledged the breach and explained the steps they had taken to prevent a breach, and outlined further improvements planned for the site to treat stormwater effectively prior to discharge. Council accepted this response and Greymouth undertook the works to improve stormwater quality.

5.3. Discussion

5.3.1. Discussion of site performance

During the period under review Greymouth Petroleum undertook a significant stormwater system upgrade at the site to address the ongoing suspended solids issues that have occurred in previous years. It is anticipated that this will improve performance in this regard, and early preliminary results from Greymouth Petroleum's self-monitoring indicate that the upgrades have improved discharge quality.

During the monitoring period an updated stormwater management plan was submitted to include the site upgrade.

5.3.2. Environmental effects of exercise of consent

Receiving environment monitoring showed that with the exception of receiving water result taken during the non-compliant discharge (of 6 October 2016), no other increases in metals concentrations were noted in the stream as a result of Greymouth Petroleum's activities. In all receiving water samples, the level of dissolved copper found in the Mangati Stream downstream of the site was within the USEPA chronic exposure guideline of 0.005 g/m³.

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.

5.3.3. 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	Yes
2. Limit on stormwater catchment area	Inspection	Yes

Purpose: To discharge treated stormwater from a pipe yard		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
3. Stormwater to be discharged through treatment system	Observation at inspection	Yes
4. Limits on chemical composition of discharge	Discharge sampling	Suspended solids limit exceeded on one occasion
5. Discharge cannot cause specified adverse effects beyond mixing zone	Results of receiving water sampling and observation at the time of sampling	Yes
6. Activities to be conducted in accordance with Environmental Management Plan	Inspection and discussion with consent holder	Yes
7. Plan to be reviewed on request from Council or prior to changes at the site	Reviewed document supplied April 2017	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		Good
Overall assessment of administrative performance in respect of this consent		High

N/A = not applicable or not assessed

During the year, Greymouth Petroleum 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. During the monitoring period the consent holder undertook a major upgrade to the stormwater treatment systems at the site and submitted an updated management plan.

5.3.4. Recommendation from the 2015-2016 Annual Report

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

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.

This recommendation was implemented during the 2016-2017 monitoring period.

5.3.5. Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- 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 exercising resource consents.

It is proposed that for 2017-2018 the monitoring programme remains at a similar level to that carried out in 2016-2017. A recommendation to this effect is attached to this report.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site(s) in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2017-2018.

5.4. Recommendation

1. THAT in the first instance, monitoring programmed for the consented activities of Greymouth Petroleum Acquisitions Company Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

6. Halliburton New Zealand Ltd

6.1. Introduction

6.1.1. Process description

Halliburton New Zealand Ltd (Halliburton) has operated a facility off the northern end of Paraiti 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.

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.

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.

6.2. Results

6.2.1. Inspections

This site was inspected on 8 August and 25 November 2016, and 22 March and 13 June 2017.

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

During the inspections some issues were raised in regards to tracking of product, maintenance of drain wardens and interceptors, and an accumulation of leaf litter in the yard. These matters were addressed by the consent holder.

6.2.2. 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 one of the wet weather surveys, while the stormwater was not discharging during the other two visits. The results are given in Table 11, along with summary of historical data from the site.

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

Parameter	Conductivity	Oil and Grease	pH	Suspended solids	Temperature
Unit	mS/m@20°C	g/m ³	pH	g/m ³	Deg.C
Minimum	2.2	0.8	4.3	3	9.1
Maximum	60.6	64.8	9.5	140	23.2
Median	4.8	3.6	7.5	24	15
Number	29	26	29	28	30
06 Oct 2016 (w)	nd	nd	nd	nd	nd
01 Mar 2017 (d)	nd	nd	nd	nd	nd
11 May 2017(w)	35.3	53	7.2	140	15.3
<i>Consent limits</i>	-	15	6-9	100	-

Key: Results shown in bold within a table indicates that a consent limit for a particular parameter has been exceeded
 nd 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 breached in the sample collected 11 May 2017 from the top yard interceptor discharge during the year under review. As a result of this an incident was raised, and as non-compliant discharges had been an ongoing issue at the Haliburton site an infringement notice was issued.

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. 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 twice during wet weather surveys and once during a dry weather survey. A sample was collected on two occasions, while no discharge was occurring during the dry run. The results from chemical monitoring at this site are given in Table 12, along with summary of historical data from the site.

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

Parameter	BOD	Condy	Copper Dissolved	Oil and Grease	pH	Suspended solids	Temp	Un-ionised ammonia	Zinc Acid Soluble
Unit	g/m ³	mS/m@20°C	g/m ³	g/m ³	pH	g/m ³	Deg.C	g/m ³	g/m ³
Minimum	1	2.6	0.01	0.5	6.4	4	9.2	0.00006	0.086
Maximum	10	76.8	0.12	89	9.5	1530	22.7	0.02029	1.05
Median	3.2	7.2	0	1.7	7.3	130	15.1	0.00457	0.416
Number	16	41	21	35	41	41	38	14	26
06 Oct 2016 (w)	4.0	10.4	<0.01	2.8	9.1	130	15.1	0.00405	0.179
01 Mar 2017 (d)	nd	nd	nd	nd	nd	nd	nd	nd	nd
11 May 2017	2.8	7.2	<0.01	5.3	8.3	37	15.8	0.00480	0.086

Parameter	BOD	Condy	Copper Dissolved	Oil and Grease	pH	Suspended solids	Temp	Un-ionised ammonia	Zinc Acid Soluble
Unit	g/m ³	mS/m@20°C	g/m ³	g/m ³	pH	g/m ³	Deg.C	g/m ³	g/m ³
<i>Consent limit</i>	5	-	-	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
nd not discharging at time of sampling survey
(d) dry weather survey (w) wet weather survey

Limits on biochemical oxygen demand, oil and grease, and unionised ammonia were complied with in both samples collected, however there was an exceedance in suspended solids and pH in the sample taken on 6 October 2016. No effects in the receiving environment were noted at the time as a result of these non-compliances. As the preceding sample had also exceeded the suspended solids limit, an incident was raised and an infringement notice was issued.

6.2.3. Investigations, interventions, and incidents

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

6 October 2016

During analysis of stormwater samples collected during wet weather it was found that the concentration of suspended solids exceeded parameters set by a resource consent conditions. A letter of explanation was received from Halliburton's explaining that they had insufficient control over the yard surface due to lease agreements with the land owner. This explanation was not accepted and an infringement notice (fine) was issued.

11 May 2017

During analysis of samples taken during routine monitoring on 11 May 2017, it was found that the concentration of suspended solids and oil and grease exceeded parameters set by resource consent 2337. As the site has been the subject of a number of non-compliances over the past few years an infringement notice (fine) was issued.

6.3. Discussion

6.3.1. Discussion of site performance

During the monitoring period, the suspended solids limits set by Halliburton's stormwater consent were exceeded in two samples. Oil and grease and pH limits were also exceeded on one occasion each.

In the 2016-2017 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 during 2015-2016, additional improvements were needed to ensure consent compliance.

Halliburton was issued infringement notices one two occasions during the monitoring period for continued non-compliance in regard to suspended solids.

The Company have opted to relocate the business as they have been unable to reach an agreement with the landowner over stormwater control.

6.3.2. 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 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.

6.3.3. 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, pH and O&G limits breached
6. Discharge cannot cause specified adverse effects beyond mixing zone	Receiving water sampling. Visible effects in industrial drain tributary, but none in the stream itself	Yes
7. Construction and maintenance of discharge sampling points	Observation at inspection and access sampling	Yes
8. Maintenance of a contingency plan	Review of documentation submitted	Yes
9. Maintenance of stormwater management plan	Review of documentation submitted. Update now required regarding maintenance of sediment control devices	Yes, but review now required
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

Purpose: To discharge stormwater from an industrial site into the Mangati Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
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 consent and as defined in Section 1.1.4 is required. During the period under review there were on-going issues in regard to non-compliant discharges. As there have been numerous non-compliances over the past three monitoring periods, two infringement notices were issued.

6.3.4. Recommendation from the 2015-2016 Annual Report

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

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.

This recommendation was implemented in full.

6.3.5. Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- 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 exercising resource consents.

It is proposed that for 2017-2018 the monitoring programme remains similar to that undertaken in the 2016-2017 year. A recommendation to this effect is attached to this report.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site(s) in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2017-2018.

6.4. Recommendation

1. THAT in the first instance, monitoring programmed for consented activities of Halliburton New Zealand Ltd in the 2017-2018 year continues at a similar level to that programmed for 2015-2016.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

7. J Swap Contractors Ltd

7.1. Introduction

7.1.1. 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.

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.

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.

7.2. Results

7.2.1. Inspections

The site was visited on 9 August 2016, 5 December 2016 and 29 March 2017.

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

During the inspections issues around the tracking of and accumulation of product were noted, also noted was equipment that was covered in product was being stored outside. It was noted that efforts were being made in terms of yard sweeping to rectify the tracking of product, however this was not being completely successful as product was accumulating in various areas around the site. During the inspection on 5 December 2016 it was noted that a foot bridge to the scruffy dome riser had been installed as requested.

7.2.2. 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 it 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	BODC	Conductivity	Oil and Grease	pH	Suspended solids	Temp.
Units	g/m ³	mS/m@ 20°C	g/m ³		g/m ³	Deg.C
06 Oct 2016 (w)	a	a	a	a	a	a
01 Mar 2017 (d)	nd	nd	nd	nd	nd	nd
11 May 2017 (w)	nd	nd	nd	nd	nd	nd
<i>Consent Limits</i>	5	-	15	6-9	100	-

Key: a sample discarded to contamination of sample from site access issues
nd not discharging at time of sampling survey
(d) dry weather survey (w) wet weather survey
BODC carbonaceous BOD

Only one sample was obtained during the monitoring period and on this occasion the scruffy dome sampling site could not be accessed without disturbing the accumulated water and this may have affected the sample results. The consent holder was directed to provide a foot bridge access to the scruffy dome riser (as required by consent conditions) to enable the collection of undisturbed samples.

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

Parameter	BODC	Conductivity @ 20°C	DRP	Oil and Grease	pH	Suspended solids	Temp.
Unit	g/m ³	mS/m	g/m ³	g/m ³	pH	g/m ³	Deg.C
06 Oct 2016 (w)	0.7	11.0	0.104	a	6.8	4	14.1
01 Mar 2017 (d)	nd	nd	nd	nd	nd	nd	nd
11 May 2017 (w)	1.2	1.5	0.037	a	6.7	<2	15.3
<i>Consent limits</i>	5	-		15	6 - 9	100	-

Key: BODC = carbonaceous biochemical oxygen demand
DRP = dissolved reactive phosphorus
a parameter not determined, no visible hydrocarbon sheen and no odour
nd not discharging at time of sampling survey
(d) dry weather survey (w) wet weather survey

At the time of sampling, the discharges at site STW001151 complied with consent conditions for pH range, oil and grease, BOD, and suspended solids during the period under review.

7.2.3. Investigations, interventions, and incidents

In the period under review, the Council was required to record an incident, in association with J Swap's conditions in their resource consent.

6 October 2016

During analysis of stormwater samples collected during wet weather it was found that the concentration of BOD discharging from the site exceeded parameters set by their resource consent. Further investigation found that it was likely that the sample had been compromised due to sediment disturbance during the sampling process. The consent holder was informed that consent conditions required that foot access be provided to the sampling site which would prevent sediment disturbance when the site is being accessed.

This consent condition was not being complied with at the time.. J Swap have subsequently installed a footbridge to provides suitable access to the sampling point.

7.3. Discussion

7.3.1. Discussion of site performance

Control of the tracking and deposition of product around the site was noted to be an issue during the monitoring period. Also noted were that drain filters were not always maintained and that equipment covered in product was being stored outside. It was noted that efforts were being made in terms of yard sweeping and the last inspection noted that filters were being cleaned more regularly. During the inspection on 5 December 2016 it was noted that the foot bridge to the scruffy dome riser (required consent conditions) had been installed as requested.

7.3.2. Environmental effects of exercise of consent

During the year under review, no adverse effects were detected in regard to J Swap's stormwater discharges.

7.3.3. 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- equipment covered with product stored outside during one inspection
2. Limit on catchment area	Inspection	Yes
3. Stormwater to be treated	Inspection/sampling	Yes
4. Limit on discharge constituents	Sampling	Yes
5. Maintain safe access to the sampling point	Inspection/sampling	No – not installed until requested to after problems encountered during sampling
6. Limit on effects	Sampling	Yes
7. Submit final stage one stormwater plans	Documents received	Yes
8. Construction as per plans	Construction completed	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?
9. Provide as built plans for stage one	Documents received	No Only original design plan submitted
10. Provide plans for 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- issues in regard to product in the yard and drain filters noted in two inspections
13. Provide contingency plan	Documents received	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		Good

N/A = not applicable or not assessed

During the year, J Swap demonstrated a good level of environmental and administrative performance and compliance with the resource consents as defined in Section 1.1.4.

7.3.4. Recommendation from the 2015-2016 Annual Report

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

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.

The consent was not reviewed during the 2016-2017 monitoring period, however discussion with the consent holder are ongoing in resolving this matter.

7.3.5. Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and

- 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 exercising resource consents.

It is proposed that for 2017-2018 the programme remains at a similar level to that of 2016-2017.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site(s) in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2017-2018.

7.4. Recommendations

1. THAT in the first instance, monitoring programmed for consented activities of J Swap Contractors Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

8. McKechnie Aluminium Solutions Ltd

8.1. Introduction

8.1.1. 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.

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.

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 3139-3, water discharge permit 1857-6 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 consent 4034-3 to provide for the discharge of emissions into the air from extrusion and re-melting of aluminium and associated activities. The monitoring of these consents is discussed in a separate report.

8.2. Results

8.2.1. Inspections

The site was visited on 9 August 2016, 6 December 2016, and 23 March 2017.

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

During the inspection of 9 August 2016 a recent spill of caustic soda was discussed. The spill had been reported to Council and a full report was being prepared. During this inspection a container of acid etch sludge was found to be stored without bunding and staff on site undertook to rectify this. No issues were noted during the other inspections.

8.2.2. Results of discharge monitoring

McKechnie's eastern stormwater is monitored primarily where it joins the Paraiti 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 once during a dry weather survey. During the dry weather run no discharge was occurring, whilst during two wet weather surveys samples were collected. The samples 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 found at slightly higher than median values and well below the average value for the site.

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

Parameter	Unit	Min	Max	Median*	N	12 Oct 2016 (w)	01 Mar 2017 (d)	11 May 2017 (w)	Consent Limit
Acid soluble aluminium	g/m ³	0.1	13.8	0.5	39	0.96	nd	0.86	-
Conductivity @20°C	mS/m	1.3	153	8.2	58	9.2	nd	3.9	-
Acid soluble copper	g/m ³	0.01	13	0.16	52	0.17	nd	0.05	-
Dissolved copper	g/m ³	0.01	0.26	0.05	34	0.08	nd	0.02	-
Acid soluble lead	g/m ³	0.05	0.96	0.02	42	<0.05	nd	<0.05	-
Oil and Grease	g/m ³	0.5	320	5.2	34	a	nd	a	15
pH	pH	6.9	11.4	7.4	58	7.3	nd	7.0	6 - 9
Suspended solids	g/m ³	2	470	19	57	35	nd	19	100
Temperature	Deg.C	9.8	45	16.4	56	15.4	nd	15.6	-
Turbidity	NTU	1.7	36	11.5	22	23	nd	15	-
Acid soluble zinc	g/m ³	0.043	10.6	0.662	52	1.28	nd	0.531	-
Dissolved zinc	g/m ³	0.034	2.52	0.428	35	1.02	nd	0.400	-

Key: nd not discharging at time of sampling survey
a parameter not determined, no visible hydrocarbon sheen and no odour
(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 and suspended solids. The concentrations of metals were generally found to be slightly higher than the median values for the site during both wet weather surveys.

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

Parameter	Unit	Min	Max	Median	N	12 Oct 2016 (w)	01 Mar 2017 (d)	11 May 2017 (w)	Consent Limit
Acid Soluble Aluminium	g/m ³	0.06	0.76	0.1	50	0.38	nd	<0.1	-
Conductivity @ 20°C	mS/m	0.86	21	9.2	71	2.4	nd	3.0	-
Acid Soluble Copper	g/m ³	0.01	4.1	0.03	65	0.07	nd	0.02	-
Dissolved Copper	g/m ³	0.01	0.35	0.01	48	0.03	nd	<0.01	-
Oil and Grease	g/m ³	0.5	6.4	0.5	28	b	nd	b	15
pH	pH	6.7	10.2	7.6	71	6.9	nd	7.2	6-9
Suspended solids	g/m ³	2	42	3	64	12	nd	<2	100
Temperature	Deg.C	9.8	23.3	15.6	69	14.2	nd	15.7	-

Parameter	Unit	Min	Max	Median	N	12 Oct 2016 (w)	01 Mar 2017 (d)	11 May 2017 (w)	Consent Limit
Turbidity	NTU	0.17	4.8	1.75	32	3.8	nd	1.1	-
Acid Soluble Zinc	g/m ³	0.019	1.94	0.347	65	0.558	nd	0.783	-
Dissolved Zinc	g/m ³	0.006	1.12	0.33	48	0.419	nd	0.765	-

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

8.2.3. 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 McKechnie's conditions in resource consents or provisions in Regional Plans.

8.3. Discussion

8.3.1. Discussion of site performance

Inspections found that the site was generally well managed during the period under review. There was one spill which the consent holder notified the Council of, and on one occasion hazardous substances were found to be stored outside of a bunded area.

8.3.2. 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.

8.3.3. 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: <i>To discharge stormwater (including cooling water) from an industrial site</i>		
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

Purpose: To discharge stormwater (including cooling water) from an industrial site		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
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 consent as defined in Section 1.1.4.

8.3.4. Recommendation from the 2015-2016 Annual Report

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

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.

This recommendation was implemented during the 2016-2017 monitoring period.

8.3.5. Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- 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 exercising resource consents.

It is proposed that for 2017-2018 the monitoring programme remains similar to that undertaken in the 2016-2017 year. A recommendation to this effect is attached to this report.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site(s) in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2017-2018.

8.4. Recommendation

1. THAT, in the first instance, monitoring programmed for consented activities of McKechnie Aluminium Solutions Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

9. New Plymouth District Council

9.1. Introduction

9.1.1. 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 Paraita 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 4 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.

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.

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.

9.2. Results

9.2.1. 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 9 August and 5 December 2016, and 20 March and 13 June 2017.

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.

9.2.2. Results of discharge monitoring

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

Stormwater discharged to the Mangati Stream from roads running through the industrial area is monitored at two points, off De Havilland Drive West and Connett Road West (Figure 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 discussed in Section 19.2 where the combined discharges are considered.

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

The results from chemical monitoring of stormwater from De Havilland Drive are given in Table 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 1 March 2017 was found to have an elevated level of biochemical oxygen demand. This was during a dry weather run and the discharge was found to be only a trickle flow, and no effects were noted in the receiving environment.

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
Unit	g/m ³	mS/m@20°C	g/m ³ P	g/m ³	pH	g/m ³	Deg.C	g/m ³
Minimum	0.6	1.6	0.004	0.4	6	2	7.5	0
Maximum	66	35.7	4.44	45	9.1	1100	22.2	0.04622
Median	4.6	6.4	0.106	1.3	7.1	23	15.6	0.00057
Number	35	71	34	46	71	71	68	35
06 Oct 2016 (w)	3.4	11.7	0.021	a	7.0	130	14.0	0.00059
01 Mar 2017 (d)	9.3	35.7	0.966	a	6.3	7	17.2	0.00510
11 May 2017 (w)	2.5	3.8	0.104	a	7.1	22	15.3	0.00225
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

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

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 NPDC's conditions in resource consents or provisions in Regional Plans.

9.2.3.1. 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.

On 19 July 2016 a power outage at the Bell Block Sewage Pumping Station (SPS) resulted in pump failure causing wastewater overflow from the pump station. The pumps were reset once power was restored and no further action was undertaken.

A few minor sewage overflows in and around the reticulation network were also reported. These did not involve the Mangati Stream or its tributaries.

9.3. Discussion

9.3.1. 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.

9.3.2. 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 19 covering the combined discharges and Section 20 covering the Mangati Stream chemical monitoring.

9.3.3. 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.

9.3.4. Recommendation from the 2015-2016 Annual Report

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

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.

This recommendation was implemented.

9.3.5. Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;

- the record of administrative and environmental performances of the consent holder; and
- 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 exercising resource consents.

It is proposed that for 2017-2018 the programme remains unchanged from that of 2016-2017.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2017-2018.

9.4. Recommendation

1. THAT in the first instance, monitoring programmed for consented activities of New Plymouth District Council in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

10. Nexans New Zealand Ltd

10.1. Introduction

10.1.1. Process description

The electric wire and cable manufacturing plant of Nexans New Zealand Ltd (Nexans) was established on Paraitē 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 these bunds 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.

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.

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 Paraitē 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.

10.1.3. 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.

10.2. Results

10.2.1. Inspections

The site was inspected on 9 August 2016 and 20 March 2017.

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 and no issues were noted. The stormwater treatment systems were found to be well maintained and in good working order and no visible air emissions or odours were detected.

10.2.2. 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 second 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/m³, suspended solids 7 g/m³). 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@20° C	g/m ³	g/m ³	g/m ³		Deg.C	NTU	g/m ³	g/m ³
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	4.7	0.03	0.01	0.2	7.0	15.6	2.2	0.172	0.068
Number	66	59	37	30	66	66	27	60	37
06 Oct 2016 (w)	2.0	0.01	0.01	a	6.5	13.5	2.9	0.055	0.051
01 Mar 2017 (d)	nd	nd	nd	nd	nd	nd	nd	nd	nd
11 May 2017 (w)	2.3	<0.01	<0.01	a	6.4	15.7	0.73	0.054	0.052
Consent limits	-	-	-	15	6 - 9	-	-	-	-

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

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.

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 below or similar to the median and 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.

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

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/m ³ N	mS/m@20°C	g/m ³	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	7.0	15.3	14
Number	65	69	32	69	67	30
06 Oct 2016 (w)	0.030	3.3	a	6.9	13.9	7.8
01 Mar 2017 (d)	nd	nd	nd	nd	nd	nd
11 May 2017 (w)	0.112	4.1	a	7.0	15.6	14
Consent limits	-	-	15	6 - 9	-	-

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

10.2.3. 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.

10.3. Discussion

10.3.1. 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.

10.3.2. Environmental effects of exercise of consents

No adverse environmental effects were observed as a result of stormwater discharges or air emissions originating from the Nexans' site during the 2016-2017 monitoring period.

10.3.3. 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: <i>To discharge emissions to air</i>		
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.

10.3.4. Recommendation from the 2015-2016 Annual Report

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

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.

This recommendation was implemented during the 2016-2017 monitoring period.

10.3.5. Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;

- the record of administrative and environmental performances of the consent holder; and
- 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 exercising resource consents.

It is proposed that for 2017-2018 the programme remains similar to that undertaken in the 2016-2017 year. A recommendation to this effect is attached to this report.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site(s) in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2017-2018.

10.4. Recommendation

1. THAT in the first instance, monitoring programmed for consented activities of Nexans New Zealand Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

11. OMV New Zealand Ltd

11.1. Introduction

11.1.1. 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.

11.1.2. Water discharge permit

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

OMV holds water discharge permit **3913-3** to cover the discharge of stormwater from an industrial site into an unnamed tributary of the Mangati Stream. The consent was issued by the Council on 24 September 2015 under Section 87(e) of the RMA. It is due to expire on 1 June 2032.

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

11.2. Results

11.2.1. Inspections

The site was visited on 9 August 2016, 12 October 2016, and 22 March 2017.

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, however some minor issues were noted. In the inspection of 9 August 2016 it was observed that excavated earth had been left adjacent to a stormwater drain with no sediment controls in place. During the inspection of 12 October 2016 a small oil spill was found which staff cleaned up at the time.

11.2.2. 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 along with a summary of historical data from the site.

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

Parameter	BOD	Conductivity	DRP	Oil and Grease	pH	Suspended solids	Temp	Unionised ammonia
Units	g/m ³	mS/m@ 20°C	g/m ³ P	g/m ³	pH	g/m ³	Deg.C	g/m ³ N
Minimum	2	1.3	0.013	0.5	6.5	6	7.7	0.00003
Maximum	500	74.4	11.2	230	9.4	1000	22.3	2.55215
Median	7	7.29	0.23	2.1	7.2	66	14.4	0.00179
Number	54	64	61	43	64	63	62	59
12 Oct 2016 (w)	9.9	14.0	0.019	<0.5	7.0	47	14.3	0.00252
01 Mar 2017 (d)	nd	nd	nd	nd	nd	nd	nd	nd
11 May 2017 (w)	2.2	3.3	0.013	a	6.7	12	15.7	0.00018
<i>Consent Limits</i>	16	-	-	15	6 - 9	100	-	10

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

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

11.2.3. 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 OMV's conditions in resource consents or provisions in Regional Plans.

11.3. Discussion

11.3.1. Discussion of site performance

The site was well managed during the period under review, with only minor issues noted during inspections.

11.3.2. 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.

11.3.3. Evaluation of performance

A tabular summary of OMV's compliance record for the year under review is set out in Table 26.

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

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		High
Overall assessment of administrative performance in respect of this consent		High

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

11.3.4. Recommendation from the 2015-2016 Annual Report

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

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.

This recommendation was implemented during the 2016-2017 monitoring period.

11.3.5. Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;

- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- 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 exercising resource consents.

It is proposed that for 2017-2018 the monitoring programme remains similar to that undertaken in the 2016-2017 year. A recommendation to this effect is attached to this report.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2017-2018.

11.4. Recommendation

1. THAT in the first instance, monitoring programmed for consented activities of OMV New Zealand Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

12. Schlumberger New Zealand Ltd

12.1. Introduction

12.1.1. 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 m³ capacity sealed sump. The liquid collected in this sump can either be removed by a contractor for appropriate off-site disposal, or be pumped to the stormwater drainage system via an oil separator, which removes the oily waste and suspended solids from the effluent stream.

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.

12.1.2. 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 supplied 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.

12.2. Results

12.2.1. Inspections

This site was inspected on 9 August and 10 November 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 the inspections. During the inspection on 9 August 2016 it was recommended to staff that the site be swept and sumps cleaned to reduce the likelihood of sediment discharging offsite and potentially breaching resource consent conditions.

During the inspection on 10 November it was noted that hydrocarbon was leaching from machinery behind the MI Swaco building. It was also observed that a 20L chemical container on the yard was not appropriately banded. Staff were asked to ensure that the container and leaching were addressed immediately.

12.2.2. 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 28, and the results from the chemical monitoring at site STW001118 are given in Table 29. Each table has a summary of historical data for each site.

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 28 Chemical monitoring results for stormwater discharged from Schlumberger's LMP site, STW002071

Parameter	BOD	Conductivity	Oil and Grease	pH	Suspended solids	Temperature	Un-ionised ammonia
Unit	g/m ³	mS/m@20°C	g/m ³	pH	g/m ³	Deg.C	g/m ³
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	1.6	5.7	0.9	7.0	18	15.1	0.00021
Number	20	20	9	20	20	20	20
6 Oct 16 (w)	1.1	3.1	0.8	7.0	39	13.2	0.00014
1 Mar 17 (d)	nd	nd	nd	nd	nd	nd	nd
11 May 17 (w)	<0.5	2.9	a	7.0	3	15.3	0.00070
Consent limit	5	-	15	6-8	100	-	0.025

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

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

Table 29 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/m ³	mS/m@20°C	g/m ³	pH	g/m ³	Deg.C	g/m ³
Minimum	0.9	1.9	0.5	6.7	3	8.4	0.00002
Maximum	9.0	12.9	3.0	9.4	320	18.9	0.00454
Median	2.3	5.6	0.2	7.0	27	14.2	0.00030
Number	18	18	7	18	18	18	18
6 Oct 16 (w)	1.3	2.6	0.6	7.1	25	13.3	0.00006
1 Mar 17 (d)	nd	nd	nd	nd	nd	nd	nd
11 May (w)	1.0	3.1	a	7.0	3	14.9	0.00039
Consent limit	5	-	15	6-8	100	-	0.025

Key: a parameter not determined, no visible hydrocarbon sheen and no odour
 nd 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 30.

Table 30 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@20°C	g/m ³	g/m ³	g/m ³		g/m ³	Deg.C	g/m ³
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*	1.6	7.2	12	14.8	0.078
Number	44	13	13	22	44	42	42	13
6 Oct 16 (w)	2.1	<0.01	<0.05	<0.5	6.8	21	13.3	0.036
1 Mar 17 (d)	nd	nd	nd	nd	nd	nd	nd	nd
11 May 17 (w)	3.0	<0.01	<0.05	a	7.2	4	15.3	0.058
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

nd not discharging at time of sampling survey

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

* 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

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

12.2.3. 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 Schlumberger's conditions in resource consents or provisions in Regional Plans.

12.3. Discussion

12.3.1. Discussion of site performance

There were a couple of minor issues noted during inspections however, the site was found to be generally neat and tidy and well managed.

A two-yearly review of the contingency plan and stormwater management plan for the site, as required by conditions 6 and 7 of consent 5987-1, was not undertaken by the consent holder. Conditions 3 and 4 of consent 6032-1 also require maintenance of an operation, management and maintenance plan, and a stormwater management plan. These documents need to be provided to Council as soon as possible.

12.3.2. 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 site during the year under review.

12.3.3. Evaluation of performance

A tabular summary of Schlumberger's compliance record for the year under review is set out in Table 31 and Table 32.

Table 31 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	Yes
2. Limit on stormwater catchment	Observation and discussions at inspection	Yes
3. LMP discharge to be treated and managed as per stormwater management plan	Inspection and discussion with consent holder	Yes
4. Limits on chemical composition of discharge	Discharge sampling	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 plan overdue (due at two-yearly intervals)	No
7. Preparation and maintenance of stormwater management plan re measures to minimise contaminants in the stormwater	Review of plan overdue (due at two-yearly intervals)	No
8. Written notification required regarding changes to activities at the site. Notification to include assessment of environmental effects	Inspection and discussion with consent holder	Yes
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		High Improvement desired
Overall assessment of administrative performance in respect of this consent		

N/A = not applicable or not assessed

Table 32 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	Plan reviewed	No-update required
4. Maintenance of stormwater management plan	Plan reviewed	No-update required
5. Limits on chemical composition of discharge	Sampling, and review of self-monitoring data	No-results not received
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	No
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 Improvement desired
Overall assessment of administrative performance in respect of this consent		

N/A = not applicable or not assessed

During the year, Schlumberger demonstrated and a high level of environmental performance and compliance with their resource consents as defined in Section 1.1.4. However, an improvement is required in their administrative performance. An updated contingency plan and stormwater/wastewater plan is required for the site and self sampling results were not provided..

12.3.4. Recommendation from the 2015-2016 Annual Report

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

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.

This recommendation was implemented during the 2016-2017 monitoring period.

12.3.5. Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- 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 exercising resource consents.

It is proposed that for 2017-2018, the monitoring programme remains similar to that undertaken in the 2016-2017 year. A recommendation to this effect is attached to this report.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2017-2018.

12.4. Recommendation

1. THAT in the first instance, monitoring programmed for consented activities of Schlumberger New Zealand Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

13. Tasman Oil Tools Ltd

13.1. Introduction

13.1.1. 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 tradewaste. 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 settling 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 metallised 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 tradewaste 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.

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.

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 exercised 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 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.

13.2. Results

13.2.1. Inspections

Inspections were undertaken on 9 August and 3 November 2016, and 22 March 2017.

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.

The consent holder received an abatement notice for high suspended solids in a sample collected near the end of the previous monitoring period and it was noted during inspections in the current monitoring period that Tasman Oil had installed further silt controls at the site to mitigate this. Grasses were established in the ring drain, helping to filter sediment. Existing silt fences were modified and a new silt fence added at the main run-off point. Extra rocks had been added to disrupt flow at various points. Silt cloth had been added to the entry point to the three-stage interceptor, and existing silt cloth had been cleaned.

13.2.2. Results of discharge monitoring

The primary monitoring site is at the discharge point from Tasman Oil skimmer pit (site STW001057). Routine samples of the discharge were collected on two occasions during the period under review, while on one other occasion the site was visited and no discharge was occurring. An extra sample was collected on 2 November 2016 as follow up to a high suspended solid result in the sample collected on 6 October 2016. The results for the period under review are given in Table 33, along with a summary of results for previous monitoring.

Table 33 Chemical monitoring results for Tasman Oil's stormwater discharge for 2016-2017 (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@20°C	g/m ³	g/m ³	g/m ³	g/m ³		g/m ³	Deg.C	g/m ³	g/m ³
Minimum	1.7	0.01	0.01	0.05	0.5	6.4	5	7.8	0.06	0.017
Maximum	19	0.4	0.09	0.29	600	8.2	620	22.6	1.18	0.560
Median	5.1	0.08	0.01	0.06	2.0	7.1	90	14.8	0.310	0.094
Number	48	40	37	40	48	49	49	49	40	37
06 Oct 16 (w)	2.4	0.10	<0.01	0.06	1.0	7.1	110	13.7	0.274	0.069
02 Nov 2016	-	-	0.01	-	-	6.9	12	15.0	-	0.109
01 Mar 17 (d)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
11 May 17 (w)	2.4	0.03	<0.01	<0.05	1.0	7.1	22	15.0	0.102	0.052
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
- nd 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 found to be 290 g/m³ which at the time, was lower than concentration of suspended solids in the receiving environment and subsequently not likely to be causing adverse effects.

Whilst elevated suspended solids may be considered transient and therefore less than minor, particularly at times of high stream flow, the increases in suspended solids may lead to an increase in the acid soluble metals concentrations in the stream (as discussed further in Section 20).

The dissolved copper and zinc concentrations were similar to or below the historical medians, as was the acid soluble zinc. Acid soluble copper concentrations were above the median value on one occasion.

Levels of suspended solids in the follow up sample collected on 2 November 2016 were well below consent limits.

13.2.3. Investigations, interventions, and incidents

In the 2016-2017 period, the Council was required to undertake additional investigations and record incidents, in association with Tasman Oil's conditions in their resource consent.

6 October 2016

Analysis of samples collected during a wet weather survey on 6 October 2016 recorded a suspended solids concentration of 110 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 and accepted. The consent holder proposed to undertake work to rectify the consistent suspended solid exceedances found at the site and upgrades to the site were implemented as discussed in section 12.2.1 above. A follow up sample collected on 2 November 2016 had a suspended solids level of 12 g/m³, well below the 100 g/m³ consent limit.

13.3. Discussion

13.3.1. 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 tradewaste) were generally well managed.

Additional improvements and modifications to reduce silt and sediment were implemented at the site and subsequent sampling returned compliant results for all parameters.

13.3.2. Environmental effects of exercise of consent

Although high suspended solids was found in the discharge on one occasion, there were no significant adverse effects found as a result of the exercise of Tasman Oil's consent during the year under review.

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.

13.3.3. Evaluation of performance

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

Table 34 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	No washing undertaken during monitoring period	N/A
3. Council to be notified if yard washing more than 8 hours in any 7 days	No washing undertaken during monitoring period	N/A

Purpose: To discharge wash water and stormwater		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
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)	Review not required during monitoring period	N/A
10. Prohibition of wastes containing degreasers, solvents or surfactants	Inspection and discussion with consent holder. Observations at sampling	Yes
11. Maintenance of stormwater management plan	Inspection and discussion with consent holder, and review of documentation on file	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

N/A = not applicable or not assessed

Tasman Oil Tools 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. There was one minor non-compliance in regard to suspended solids, however the consent holder undertook works to improve sediment control at the site and subsequent results complied with consent conditions.

13.3.4. Recommendation from the 2015-2016 Annual Report

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

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.

This recommendation was implemented during the 2016-2017 monitoring period.

13.3.5. Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;

- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- 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 exercising resource consents.

It is proposed that for 2017-2018 the monitoring programme is unchanged from that of 2016-2017.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site(s) in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2017-2018.

13.4. Recommendation

1. THAT in the first instance, monitoring programmed for consented activities of Tasman Oil Tools Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

14. Tegel Foods Ltd – feed mill

14.1. Introduction

14.1.1. Process description

The New Plymouth feed mill of Tegel Foods Ltd (Tegel) has been in operation on their 1.6 ha site on Paraita 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.

14.1.2. Water discharge permit

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

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 wastewater is piped directly to the NPDC tradewaste 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.

14.1.3. 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/m³ normal temperature and pressure (NTP)), dust deposition rate beyond the boundary (less than 4.0 g/m²/30 days), and suspended particulate matter at or beyond the boundary (3 mg/m³). Conditions also address maintenance, operation, and control of, or alteration to the plant and processes. 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.

14.2. Results

14.2.1. Inspections

The feed mill site was inspected on 9 August and 10 November 2016, and 23 March 2017.

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. During the inspection on 9 August 2016 the issue of the cyclone discharging dust which was settling on the roof was discussed. The roof had been cleaned and works were being carried out to reduce the volume of dust generated when making poultry pellets. During the inspection on 23 March 2017 a pallet of un-banded chemical called Hemicell was observed behind shed one. The consent holder was advised that this product must be banded and this was discussed at the time of inspection.

14.2.2. 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 Parait 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 Parait 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 35.

Samples were collected in two wet weather surveys during the monitoring period. There was no discharge during the dry weather survey.

Table 35 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/m ³ N	g/m ³	g/m ³	mS/m@20°C	g/m ³	pH	g/m ³	Deg.C	g/m ³ -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	0.621	86	26.5	13.7	2.2	7.1	74	15.4	0.00274
Number	54	58	44	66	52	65	68	62	54
6 Oct 2016 (w)	0.352	31	5.0	9.2	<0.5	7.3	81	15.4	0.00238

Parameter	Ammoniacal nitrogen	Chemical Oxygen Demand	BOD	Conductivity @ 20°C	Oil and Grease	pH	Suspended solids	Temp.	Un-ionised ammonia
Unit	g/m ³ N	g/m ³	g/m ³	mS/m@20°C	g/m ³	pH	g/m ³	Deg.C	g/m ³ -N
1 Mar 2017 (d)	nd	nd	nd	nd	nd	nd	nd	nd	nd
11 May 2017 (w)	0.463	140	72	8.8	a	6.4	85	15.6	0.00040
<i>Consent limits</i>	-	-	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

nd not discharging at the time of sampling

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

The consent conditions for oil and grease, pH and suspended solids were complied with on all monitoring occasions. BOD exceeded the consent limit in the sample collected on 11 May 2017 and an infringement notice was issued to Tegel for breach of consent. This is discussed further in section 14.2.5 below.

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

14.2.3. Air 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 9 August and 10 November 2016, and 23 March 2017.

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. It was noted that during the inspection on 9 August 2016 that the cyclone was discharging dust which was settling on the roof. The roof had been cleaned and works were being carried out to reduce the volume of dust generated when making poultry pellets.

An odour complaint was investigated on 18 August 2016 and is discussed in section 14.2.5.

14.2.4. 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/m²/30 days or 0.13 g/m²/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 is carried out triennially at the sites, this was last undertaken during the 2015-2016 monitoring period and is next scheduled during the 2018-2019 period.

14.2.5. Investigations, interventions, and incidents

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

18 August 2016

A complaint was received regarding odour at the feed mill. An inspection by Council staff did not find any odours beyond the boundary of the property and no further action was taken.

11 May 2017

During the analysis of routine samples it was found that the concentration of BOD was 72g/m³, exceeding the 25g/m³ allowed by consent conditions. An infringement notice (fine) was issued to the consent holder.

14.3. Discussion

14.3.1. Discussion of site performance

During the year under review, air discharges from the site were found to be generally well managed. One complaint was made against the consent holder during the period, which was not upheld. The annual performance report required consent conditions (due 1 July 2017) was not provided on time, however one was provided upon request in January 2018. There was one noncompliant discharge sample during the monitoring period.

14.3.2. 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.

All stormwater samples were compliant with consented limits for all parameters, with the exception of BOD which exceeded the consent limit on one occasion.

14.3.3. Evaluation of performance

A tabular summary of Tegel's compliance record for the year under review is set out in Table 36 and Table 37.

Table 36 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	No. BOD exceeded
2. Limits stormwater catchment area	Inspections	Yes

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?
3. Limits on chemical composition of discharge	Sampling of discharges	No- BOD exceeded in one sample
4. Discharge cannot cause specified adverse effects beyond mixing zone	Receiving water sampling	Yes
5. Wastewater tank to be replaced with tradewaste 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	Received	No –received late
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	No changes during monitoring period	Yes
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		Improvement required
Overall assessment of administrative performance in respect of this consent		Good

N/A = not applicable or not assessed

Table 37 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.	No- dust accumulation on roof

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?
2. No alterations that might change the nature/quantity of discharge without prior consultation with Council	No changes during monitoring period	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)	Not assessed during monitoring period	N/A
5. Limit on dust deposition beyond boundary (4.0 mg/m ² /day)	Not assessed during monitoring period	N/A
6. Limit on boundary suspended particulates (3 mg/m ³)	Not assessed during monitoring period	N/A
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		Good
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, however an improvement is required their environmental performance and compliance with their resource consents as defined in Section 1.1.4. During the period an infringement note was issued in regard to a non-compliant discharge.

14.3.4. Recommendations from the 2015-2016 Annual Report

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

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.

These recommendations were implemented during the 2016-2017 monitoring period.

14.3.5. Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- 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 exercising resource consents.

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

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site(s) in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2017-2018.

14.4. Recommendation

1. THAT in the first instance, monitoring programmed for consented activities of Tegel Foods Ltd (feed mill) in the 2017-2018 year continues at a similar level to that programmed for 2016-2017, with triennial deposition gauging next due in the 2018-2019 period.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

15. Tegel Foods Ltd – poultry processing plant

15.1. Introduction

15.1.1. Process description

Tegel Foods Ltd (Tegel) operates a poultry processing plant on Paraitē 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 105,000 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 tradewaste sewer. Modifications have been made to divert runoff from the live bird reception area and yard to the tradewaste 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 m² of roofing, which covers the bird reception area, renderable waste storage area, and areas that flowed to both the stormwater and tradewaste catchments. A new chlorinated water tank has been installed within a bunded area that drains to tradewaste.

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 include a contingency plan in case of spillage, a contingency plan for burial to land, and a contingency plan for discharge to air.

15.1.2. 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.

15.1.3. 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.

15.1.4. 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 wastewater 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.

15.1.5. 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.

15.2. Results

15.2.1. 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 tradewaste and stormwater.

Inspections occurred on 10 August and 6 December 2016, and 30 March and 27 June 2017. The site was found to be generally clean and tidy and well managed, however there were a few issues noted as discussed below.

During the inspection carried out on 10 August 2016 it was noted that the discharge into the wetland was turbid and contained white organic matter. It was unclear what had caused the discharge and staff attempted to investigate at the time of inspection. It was observed that a white organic residue/matter had entered the wetland area and settled out in places. An orange/brown foam/scum was also noted on the surface within the wetland and at the point where the discharge from the wetland enters the Mangati Stream. The discharge from the wetland was odourous.



Photo 3 Turbid white discharge to wetland observed during inspection on 10 August 2016

During the inspection on 6 December 2016 it was noted that a stormwater sump outside the bin washing room was green in colour. Stormwater enters this sump from the immediate area, and also from an adjacent area. It was noted that waste product was being stored within the stormwater catchment, and had the potential to discharge nutrients. Staff advised that the sump was to be pumped out and cleaned. It was recommended that action be undertaken to prevent staff from placing waste product in the stormwater catchment, and also that an investigation be undertaken to determine the source of the discolouration observed.

During the inspection on 30 March 2017 it was noted that waste and rubbish bins were full, and that additional waste was being placed beside the bins. It was observed that the bins and the waste beside the bins were leaking liquid that was flowing toward a stormwater drain. This was addressed with staff at the time of the inspection and there was discussion about the bins being placed in a position where any discharges could flow to the sewer. The rubbish was removed and the area washed down at the time of the inspection.

15.2.2. 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 38 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, pH and suspended solids on 11 May 2017. An elevated BOD result was recorded on 6 October 2016, however at the downstream discharge point, the BOD concentration had decreased significantly and was compliant with consent conditions.

Table 38 Chemical monitoring results for Tegel's poultry processing plant lower stormwater discharge to Mangati Stream tributary, site STW001053 (pre-treatment)

Parameter	Ammoniacal nitrogen	BOD	Conductivity @ 20°C	Dissolved reactive P	Oil and Grease	pH	Suspended solids	Temp.	Un-ionised ammonia
Unit	g/m ³ N	g/m ³	mS/m@20°C	g/m ³ P	g/m ³	pH	g/m ³	Deg.C	g/m ³ -N
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	1.0	7.4	36	14.7	0.00712
Number	60	58	61	60	43	62	61	61	59
6 Oct 2016 (w)	0.254	18	3.7	0.147	a	7.4	190	12.9	0.00179
1 Mar 2017 (d)	nd	nd	nd	nd	nd	nd	nd	nd	nd
11 May 2017 (w)	0.382	3.1	3.1	0.130	a	7.1	7	15.1	0.00159

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

Three samples were taken of the discharge from the wetland to the stream, two 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 39 along with a summary of all data from the site.

Table 39 Chemical monitoring results for stormwater discharge to Mangati Stream from wetland-site MGT000489

Parameter	Ammoniacal nitrogen	BOD	Conductivity @ 20°C	Dissolved reactive P	Oil and Grease	pH	Suspended solids	Temp.	Un-ionised ammonia
Unit	g/m ³ N	g/m ³	mS/m@20°C	g/m ³ P	g/m ³	pH	g/m ³	Deg.C	g/m ³ -N
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
6 Oct 2016 (w)	0.359	6.9	15.6	0.005	a	6.6	14	14.3	0.00045
1 Mar 2017 (d)	1.13	2.3	20.6	0.014	a	6.7	4	16.4	0.00207
11 May 2017 (w)	0.221	5.9	5.8	0.066	a	6.6	100	15.2	0.00029
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
 a parameter not determined, no visible hydrocarbon sheen and no odour
 nd not discharging at time of sampling survey
 (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

Stormwater from the predominantly from the northern and eastern of the site is discharged at via three lateral connections to NPDC’s network on de Havilland Drive. These sites (STW001130, STW001129 and STW001128) were visited on three occasions for sampling (once wet dry weather a twice in wet weather). The results are given Table 40, Table 41, and Table 42. Each table also has summary of historical data from the site.

Table 40 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/m ³ N	g/m ³	mS/m@20°C	g/m ³ P	g/m ³	pH	g/m ³	Deg.C	g/m ³ -N
Minimum	0.027	2.1	1.4	0.012	<0.5	6.9	6	8	0.00011
Maximum	0.964	28	14.2	0.600	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	0.00060
Number	12	12	12	10	5	12	12	12	12
6 Oct 2016 (w)	0.478	6.5	4.7	0.316	0.6	7.3	67	14.2	0.00295
1 Mar 2017 (d)	nd	nd	nd	nd	nd	nd	nd	nd	nd
11 May 2017 (w)	0.602	3.7	4.1	0.325	a	7.2	5	15.8	0.00333
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
nd not discharging at time of sampling survey
(d) dry weather survey (w) wet weather survey

The samples collected from this monitoring location complied with the BOD, oil and grease, suspended solids and pH limits of the consent.

Table 41 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/m ³ N	g/m ³	mS/m@20°C	g/m ³ P	g/m ³	pH	g/m ³	Deg.C	g/m ³ -N
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	0.076	0.2	7.2	8	15.4	0.00106
Number	17	17	17	15	8	17	17	17	17
6 Oct 2016 (w)	0.077	3.6	4.7	0.043	a	7.3	29	14.5	0.00049
1 Mar 2017 (d)	8.38	20	12.6	0.994	a	7.5	31	20.5	0.13006
11 May 2017 (w)	0.858	4	3.0	0.176	a	7.0	7	15.8	0.00300
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

Table 42 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/m ³ N	g/m ³	mS/m@20°C	g/m ³ P	g/m ³	pH	g/m ³	Deg.C	g/m ³ -N
Minimum	0.035	1.2	1.9	0.029	<0.5	7.0	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	0.00096
Number	13	13	13	11	3	13	12	13	13
6 Oct 2016 (w)	0.031	2.1	5.6	0.075	0.5	7.3	11	14.2	0.00019
1 Mar 2017 (d)	36.0	76	58.7	4.49	a	7.7	40	20.0	0.84746
11 May 2017 (w)	0.753	4.0	4.3	0.178	a	7.4	10	15.8	0.00658
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

It is noted that (as in the previous monitoring period) there were discharges occurring during a dry weather survey (1 March 2017). On this occasion both STW001129 and 1128 had trickle discharges with elevated levels of ammonia, DRP, and BOD.

As the consent permits only stormwater discharges, these were not covered by Tegel's resource consent. At the time of sampling the flow was a trickle. The BOD limit was exceeded on this occasion and an abatement notice was issued as a result, this is discussed further in section 14.2.5.1 below.

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.

15.2.3. Air

15.2.3.1. 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 10 August and 6 December 2016, and 30 March and 27 June 2017.

During routine compliance monitoring inspections no issues were noted regarding the management of the blood, offal or feathers at the site. Localised onsite odours were noted in the vicinity of the wetland on 10 August 2016 and distinct odours were noted onsite during the inspection on 6 December 2016. These were not considered offensive and no odour was detected downwind of the site.

15.2.4. Exercise of discharge to land consent

It was confirmed that no discharges to land occurred during the 2016-2017 monitoring period.

15.2.5. 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 three occasions.

15.2.5.1. Land/water

26 July 2016

Self-notification was received that the wastewater outlet valve had blocked, allowing overflow of wastewater to the nearby Mangati Stream.

Inspection found that the discharge to the stream had been stopped by Tegel staff by diverting wastewater to the old tradewaste inlet. Remedial action was taken to repair the valve and clean up any residual liquid that had ponded on the land. No adverse environmental effects were observed in the stream.

1 March 2017

Analysis of samples collected during a dry weather survey on 1 March 2017, following 10 days of fine weather, recorded a BOD concentration of 76 g/m³ at site STW001128 and 20 g/m³ at STW001129, exceeding the consented limit of 15 g/m³. Results from 'dry weather sampling' (i.e. there should be no stormwater discharging) show that four of the last six samples had exceeded the limit for BOD. An abatement notice was issued to the consent holder requiring compliance with conditions of the resource consent.

15.2.5.2. Air

1 April 2017

A complaint was received on 1 April 2017 regarding odours from the site. An odour survey was carried out beyond the property boundary of the processing plant. An odour was detected down-wind of the plant, however this was not the distinct poultry processing plant type odour. The inspecting officer was satisfied that no objectionable/offensive odour was occurring as a result of activities at the processing plant.

15.3. Discussion

15.3.1. Discussion of site performance

At inspection, chemical storage and the wastewater pond were found to be well managed throughout the year under review. Some issues were noted in regard to onsite practices

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 in relation to fugitive wastewater discharges to the stormwater system during dry 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 was one odour complaint received by the Council, this could not be substantiated.

15.3.2. 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.

15.3.3. Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Table 43, Table 44, Table 45, Table 46 and Table 47.

Table 43 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: 3000 m 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 44 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

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?
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
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 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 45 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

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?
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
10. Maintenance of a contingency plan for action to be taken to prevent spillage	Review of documents provided. Reviewed plan received November 2016	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 46 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 wastewater pond	Inspection and discussion with consent holder	Yes

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?
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 47 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. Non-compliant fugitive discharges were observed during a dry weather survey. No effects were noted in the stream as a result of these and subsequent samples have returned compliant results.

15.3.4. Recommendations from the 2015-2016 Annual Report

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

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.

These recommendations were implemented during 2016-2017.

15.3.5. Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- 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 exercising resource consents.

It is proposed that for 2017-2018 the programme remains unchanged from that of 2016-2017.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site(s) in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2017-2018.

15.4. Recommendations

1. THAT in the first instance, monitoring programmed for consented activities of Tegel Foods Ltd (poultry processing plant) in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

16. TIL Freighting Ltd

16.1. Introduction

16.1.1. 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 tradewaste whenever it is in use (i.e. if any tap is turned on). While the truck wash is not in use, water is directed to stormwater after a certain amount of rainfall.

The truck park and container storage areas have sumps that collect stormwater, and direct it through a 300 mm pipe to the stormwater settlement pond. The pond, which is approximately 350 m² in area and 3 m deep, has an overflow outlet pipe. However, it was anticipated that the pond would be large enough for the stormwater to soak away, without overflows occurring.

The consent for this area was granted prior to the development of the site. At the time the consent was processed it was considered that, as the truck wash water is discharged to tradewaste, and stormwater is directed to the stormwater settlement pond to soak away, there should be no direct discharge to surface water and therefore no adverse environmental effects were anticipated.

The eastern area of the site (approximately 2.60 ha) is piped to NPDC's reticulated stormwater system at three points, and discharges to the Mangati Stream via the NPDC's constructed wetland.

A large proportion of this area of the site is roofed (approximately 1.26 ha) and the remainder is predominantly hard paved or metalled. Activities within the stormwater catchment include parking, loading, storage and heavy vehicle movements.

The stormwater discharges from three points, all of which contain a mixture of roof stormwater and yard stormwater. The northern catchment is predominantly leased, and contains KMC Engineering, the Coca-Cola distribution loading area and parking, and has a low traffic volume. It discharges to the NPDC system at Connett Road.

The central catchment is used for loading and storage, and has high heavy traffic volume. This area discharges to the NPDC system on Paraita 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.

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.

TIL 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.

16.1.3. 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 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.

16.2. Results

16.2.1. Inspections

The TIL site was visited on 8 August, 13 October, 29 November and 2 December 2016 and 20 March 2017.

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

During inspections it was noted that there were areas of the site that had a build-up of sediment, stones and dirt. These areas have the potential to leach into stormwater drains during periods of wet weather and potentially cause the levels of BOD and suspended solid to exceed consent limits. Areas of particular concern were the northern corner of the site, the southern access road kerbside drains and stormwater sumps, the old molasses sumps, and the kerbside drains that link the southern access road to Paraita Road. It was recommended that TIL investigate the suitability of 'drain wardens' or another similar product to capture silt/sediment that flows into stormwater drains. These products have proven to be very effective when installed and managed correctly. This may be one of a few 'best practicable options' to prevent or minimise adverse effects on the environment, as required by resource consents 7578-1 and 6952-1.

TIL had instigated a major cleaning programme to address the stormwater contamination at the site and there was evidence of this around the site during most of the inspections.

During the inspection on 2 December 2016 it was noted that there were some 200L drums at the western end of the storage sheds. The unlabelled drums were full and they were not banded. It was requested that these were banded as soon as possible to ensure there was no accidental discharges to stormwater. It was also noted that the stormwater pond at the western end of the site was in poor condition. The edges of the pond were stained with hydrocarbon and a significant amount of hydrocarbon was observed in the pond. At a minimum, special condition 1 of resource consent 6952-1 (best practicable option) was not being complied with. The consent holder was asked to remove the oil and investigate the source of the oil in order to prevent a reoccurrence.

16.2.2. 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 Paraita Road in front of Turners & Growers southern entrance (site, STW001133). The results from chemical monitoring at this location are given in Table 48. The site was visited four times during the year, twice during wet weather surveys, once during a dry weather survey, and an additional visit during wet weather as no discharge was occurring during the first wet weather survey.

The consent limits on biochemical oxygen demand, 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.

Table 48 Chemical monitoring results for TIL's stormwater discharge (outside Turners and Growers) for 2016-2017 (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		g/m ³	Deg.C	NTU
Minimum	0.8	1.3	0.011	0.5	6.8	3	8.4	2.2
Maximum	22	13.7	0.597	2.5	7.7	70	21.7	34
Median	3.8	3.0	0.061	0.5	7.2	10	15.2	4.4
Number	16	16	13	7	16	16	16	16
06 Oct 2016 (w)	nd	nd	nd	nd	nd	nd	nd	nd
12 Oct 2016 (w)	3.9	6.6	0.052	a	7.4	9	15.4	11
01 Mar 2017 (d)	nd	nd	nd	nd	nd	nd	nd	nd
11 May 2017 (w)	0.8	2.8	0.026	a	7.3	3	16.0	3.0
<i>Consent limits</i>	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

nd not discharging at time of sampling survey

(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 Paraita Road in front of the loading canopy (site STW001132). This site was visited four times during the year, twice during wet weather surveys, once during a dry weather survey, and an additional visit during wet weather as no discharge was occurring during the first wet weather survey. The results from chemical monitoring at this location are given in Table 49.

Table 49 Chemical monitoring results for TIL's loading canopy stormwater discharge for 2016-2017 (site 45), site STW001132

Parameter	BOD	Conductivity	Dissolved reactive P	Oil and Grease	pH	Suspended solids	Temp	Turbidity
Unit	g/m ³	mS/m@	g/m ³ P	g/m ³		g/m ³	Deg.C	NTU
Minimum	0.9	1.7	0.003	0.5	6.7	9	8.5	6.5
Maximum	65	37.3	2.88	5	7.6	150	20.9	80
Median	7.9	5.6	0.449	0.8	7.2	34	15.5	21
Number	16	16	13	8	16	16	16	16
06 Oct 2016 (w)	nd	nd	nd	nd	nd	nd	nd	nd
12 Oct 2016 (w)	24	10.8	0.449	a	7.4	34	15.0	35
1 Mar 2017 (d)	nd	nd	nd	nd	nd	nd	nd	nd
11 May 2017 (w)	0.9	16.7	<0.003	a	7.1	9	15.9	8.2
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
nd not discharging at time of sampling survey
(d) dry weather survey (w) wet weather survey

Compliance was achieved with the consent limits for pH, suspended solids and oil and grease in all samples collected during the period under review, however, the biochemical oxygen demand limit was exceeded in the sample collected on 12 October 2016. This was recorded as an incident and is discussed in section 15.2.3 below.

16.2.3. Investigations, interventions, and incidents

In the period under review, the Council was required to record an incident in association with TIL's conditions in resource consents or provisions in Regional Plans.

Analysis of samples taken during a sampling survey on 12 October 2016 found that resource consent conditions were not being complied with. A letter requesting an explanation was issued, and a letter of explanation was received and accepted. The Company have spent a significant amount of time and money on avoiding further non-compliance through the implementation of a cleaning programme for the yard and roof and re-stabilisation of unsealed areas.

16.3. Discussion

16.3.1. Discussion of site performance

TIL has instigated a major cleaning programme to remove contamination sources from the site. The programme includes the roof and yard being cleaned and a programme of regular inspections and sweeping to maintain the site. It was recommended by Council that further measures, such as the installation of drain wardens, were implemented to further reduce sediment discharging from the site.

There was one instance during an inspection where containers were noted on site without appropriate bunding.

16.3.2. 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.

16.3.3. Evaluation of performance

A tabular summary of TIL's compliance record for the year under review is set out in Table 50 and Table 50.

Table 50 Summary of performance for TIL's consent 6952-1

Purpose: To discharge stormwater from a truck depot into and onto land in the vicinity of the Mangaone Stream 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	No– further improvements could be implemented
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- but overdue for update
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	No – one instance of no bunding
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	No further provision for review prior to expiry	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 51 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	No – further improvements could be implemented
4. Limits on chemical composition of discharge	Sampling	One exceedance 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 overdue 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 overdue 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 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		Good

N/A = not applicable or not assessed

During the year, TIL Freighting Ltd demonstrated a good 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.

16.3.4. Recommendation from the 2015-2016 Annual Report

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

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.

This recommendation was implemented during the 2016-2017 monitoring period.

16.3.5. Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- 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 exercising resource consents.

It is proposed that for 2017-2018 the monitoring programme remains similar to that undertaken in the 2016-2017 year. A recommendation to this effect is attached to this report.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site(s) in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2017-2018.

16.4. Recommendation

1. THAT in the first instance, monitoring programmed for consented activities of TIL Freighting Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

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 the permit 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 15 December 2016 and 31 March, and 21 June 2017.

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 during 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 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 offsite 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. Summary of performance for Abraham's Consent 7147-2

17.3.3. Evaluation of performance

A tabular summary of Abraham's compliance record for the year under review is set out in Table 52.

Table 52 Summary of performance for Abraham's consent 7147-2

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
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

Purpose: To discharge emissions to air from a crematorium		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
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
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 2015-2016 Annual Report

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

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.

This recommendation was implemented during the 2016-2017 monitoring period.

17.3.5. Alterations to monitoring programmes for 2017-2018

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- 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 exercising resource consents.

It is proposed that for 2017-2018 the monitoring programme remains similar to that undertaken in the 2016-2017 year. A recommendation to this effect is attached to this report.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site(s) in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2017-2018.

17.4. Recommendation

1. THAT in the first instance, monitoring programmed for consented activities of W Abraham Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

18. Investigations, interventions, and incidents

The monitoring programme for the period under review was based on what was considered to be an appropriate level of monitoring, review of data, and liaison with the consent holders. During the year matters may arise which require additional activity by the Council, for example provision of advice and information, or investigation of potential or actual causes of non-compliance or failure to maintain good practices. A pro-active approach that in the first instance avoids issues occurring is favoured.

The Council operates and maintains a register of all complaints or reported and discovered excursions from acceptable limits and practices, including non-compliance with consents, which may damage the environment. The incident register 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 16 unauthorised incidents recorded on the Council's database in the Mangati catchment during the 2016-2017 period.

A summary of the responsible parties, and whether or not the incident could be substantiated, is provided in Table 53.

The activities of industries monitored routinely under the Mangati Catchment Monitoring Programme accounted for ten 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 six incidents are discussed further below.

Table 53 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
Graincorp Foods Ltd	0	0
Greymouth Petroleum Acquisitions Company Ltd	1	0
Halliburton New Zealand Ltd	2 (water)	0
J Swap Contracting Ltd	1 (water)	0
TIL Freighting	1 (water)	0
McKechie Aluminium Solutions Ltd	0	0
First Gas Ltd	0	0
New Plymouth District Council	0	0
Nexans New Zealand	0	0

Company	Number of substantiated incidents/complaints	Number of unsubstantiated incidents/complaints
OMV New Zealand Ltd	0	0
Schlumberger New Zealand Ltd	0	0
Tasman Oil Tools Ltd	1 (water)	0
Tegel Foods Ltd – feed mill	1 (water)	1 (odour)
Tegel Foods Ltd – poultry processing plant	2 (water)	1 (odour)
W Abrahams Ltd	0	0
Permitted activities		
By Pass Developments	2 (water)	0
Taranaki Building Removers	1 (air)	0
Natural event	0	1 (iron oxide)
Un sourced	0	2 (odour, water)
Total	11	5

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

[Un sourced, 10 August 2016](#)

During the analysis of samples collected from the upper reaches of the Mangati Stream during routine monitoring it was found that levels of unionised ammonia and BOD in the Mangati Stream were elevated. The results were inconclusive and further investigation would be undertaken if further routine monitoring continued to find elevated levels.

[By Pass Developments, 6 October 2016](#)

During unrelated monitoring it was found that a site was discharging sediment into the Mangati Stream causing discolouration. An inspection of the site found that clear stormwater was discharging from the site into the Mangati Stream, however it was evident that significant tracking of sediment had occurred earlier in the day. Samples were collected and it was found that there was a significant increase in suspended solids downstream of the site. An onsite meeting resulted in further silt controls being installed and current silt controls being upgraded. An abatement notice was issued requiring the contravention of Rule 26 of the Regional Fresh Water Plan for Taranaki to cease. Re-inspection found the abatement notice was being complied with.

[Taranaki Building Removers, 22 February 2017](#)

During routine compliance monitoring within the Bell Block industrial area it was found that open air burning activities were being carried out on an industrial premise on Devon Road. Investigation found that waste material generated from the building removal process was being burnt on site in contravention of the Regional Air Quality Plan for Taranaki. The activity was found to be causing adverse effects off-site. An infringement notice was issued to Taranaki Building Removers.

Un sourced, 9 March 2017

A complaint was received regarding an odour at Murray Street in Bell Block. An inspection carried out by Council staff found no evidence of any odour and no further action was taken.

Natural event, 21 April 2017

A complaint was received regarding a discoloured drain discharging into the Mangati Stream. Inspection along the Mangati Walkway above Connett Road found three drains running into the stream. There was very little or no flow from these drains and the Mangati Stream was running clear at time of the inspection. Iron oxide precipitate was observed in the drains, this is a natural occurrence. No further action was required.

By Pass Developments, 24 May 2017

During routine monitoring it was found that silt and sediment controls had been installed but were inadequate and not being maintained at a subdivision development site, De Havilland Drive. An abatement notice was issued requiring works to be undertaken to ensure compliance with consent conditions.

19. Chemical monitoring of combined discharges

19.1. Drain between De Havilland Drive West and Connett Road West

Discharges from Tasman Oil and Greymouth Petroleum sites, along with part of the First Gas 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 54 Chemical monitoring results for the combined stormwater discharge downstream of De Havilland Drive-site MGT000495

Parameter	Condy @ 20°C	Acid soluble copper	Dissolved copper	Acid soluble lead	Oil and grease	pH	Suspended solids	Temp.	Acid soluble zinc	Dissolved zinc
Unit	mS/m	g/m ³	g/m ³	g/m ³	g/m ³	pH	g/m ³	Deg. C	g/m ³	g/m ³
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
6 Oct 2016 (w)	4.6	0.08	<0.01	0.09	a	7.0	290	13.6	0.258	0.041
1 Mar 2017 (d)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
11 May 2017 (w)	4.2	0.02	<0.01	<0.05	a	6.7	5	15.1	0.078	0.054
<i>Greymouth Consent Limit</i>	-	-	-	-	15	6-9	100	-	-	-
<i>Tasman Tools Consent Limit</i>			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

nd not discharging

This site was visited three times during the year under review, twice 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 occasion.

During the period under review acid soluble and dissolved metal levels were found to be generally similar to or less than the median values recorded for this site, at the discharge point to the stream. On one occasion elevated suspended solids were found in the discharge, however no increases in turbidity or suspended solids were note in the downstream receiving environment.

19.2. 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 processes 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 and Figure 4).

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 into 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 and Figure 4)

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 and Figure 4).

The drainage system is generally monitored at up to six points in order to help differentiate the effects of inflows from a large number of sources. The monitoring points are at the Mangati confluence, at the exit of the underground system to both ponds 1 and 4 and at three points where the main underground stormwater pipe runs under Connett Road. Other points may be monitored when tracing unauthorised discharges.

19.2.1. Connett Road pond one inlet (STW001055)

The Connett Road inlet to Pond 1 is the combined discharges from industrial sites and roading serviced by the Paraita 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 55.

Table 55 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	6 Oct 2016 (w)	1 Mar 2017 (d)	11 May 2017 (w)	<i>RFWP</i> <i>guideline</i>
Ammoniacal nitrogen	g/m ³ N	<0.003	9.37	0.096	29	0.030	0.007	0.097	-
BOD	g/m ³	<0.5	2900	6.9	23	3.9	1.1	9.0	5
Conductivity @ 20°C	mS/m	1.0	335	20.5	254	5.0	14.9	3.9	-
Acid soluble copper	g/m ³	<0.01	0.06	0.01	18	0.03	<0.01	<0.01	-
Dissolved copper	g/m ³	<0.01	0.06	<0.01	17	0.02	<0.01	<0.01	-
DRP	g/m ³ P	<0.004	5.33	0.035	18	0.017	0.018	0.020	-
Oil and Grease	g/m ³	<0.5	29	0.2	45	a	a	a	15

Parameter	Unit	Min	Max	Med	N	6 Oct 2016 (w)	1 Mar 2017 (d)	11 May 2017 (w)	<i>RFWP guideline</i>
pH	pH	4.1	10.1	7.6	254	6.6	7.0	6.7	6-9
Temperature	Deg.C	10.1	25.2	15.7	84	13.8	17.6	15.8	-
Turbidity	NTU	0.63	240	7.8	40	15	5.6	48	-
Un-ionised ammonia	g/m ³	0.00003	1.05729	0.0004	18	0.00004	0.00003	0.00017	0.025
Acid soluble zinc	g/m ³	0.014	0.310	0.129	19	0.166	0.036	0.14	-
Dissolved zinc	g/m ³	0.024	0.262	0.107	17	0.135	0.013	0.14	-

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

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, pH and un-ionised ammonia limits on all occasions.

An elevated BOD was recorded on 11 May 2017, however it is worth noting that this discharge point is to the NPDC pond system for further treatment and not directly to the Mangati Stream.

19.2.2. Industrial drain outlet (STW001026) and discharge (MGT000503)

The industrial drain outlet was sampled on three occasions. The results are given in Table 56 along with a summary of all data from the site.

Table 56 Chemical monitoring results for industrial drain outlet, site STW001026

Parameter	Unit	Min	Max	Med	N	6 Oct 2016 (w)	1 Mar 2017 (d)	11 May 2017 (w)	<i>RFWP guideline</i>
Ammoniacal nitrogen	g/m ³ N	0.003	13.3	0.156	79	0.120	0.407	0.103	-
BOD	g/m ³	0.7	330	4.5	37	1.6	2.4	4.7	5
Conductivity @ 20°C	mS/m	1.2	79.7	14.8	168	9.7	18.4	3.2	-
Acid soluble copper	g/m ³	<0.01	0.62	0.04	82	0.01	<0.01	0.01	-
Dissolved copper	g/m ³	0.006	0.107	0.015	58	<0.01	<0.01	<0.01	-
DRP	g/m ³ P	<0.003	2.86	0.036	38	0.016	0.006	0.036	-
Oil and Grease	g/m ³	<0.5	62	1.2	60	a	a	a	15
pH	pH	6.5	9.4	7.3	170	6.8	7.2	7.0	6-9
Temperature	Deg.C	9.6	27.1	16.1	86	14.8	17.2	16.0	-
Turbidity	NTU	1.1	110	15	40	15	11	10	-
Un-ionised ammonia	g/m ³	0.00001	6.12525	0.00111	77	0.00025	0.00250	0.00037	0.025
Acid soluble zinc	g/m ³	0.042	2.24	0.371	82	0.170	0.036	0.251	-
Dissolved zinc	g/m ³	0.025	1.18	0.190	57	0.136	0.016	0.198	-

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

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

BOD, oil and grease, pH and un-ionised ammonia were all below the RFWP permitted activity limits.

Generally all other parameters were either similar to or less than the median values of all results for this site.

The monitoring results for discharge from the industrial drain into the Mangati Stream are recorded in Table 57. This site was visited three times during the year, twice during wet weather surveys and once during a dry weather survey. Samples were taken during the wet weather surveys, while no discharge was occurring during the dry weather visit.

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 57 Chemical monitoring results for the industrial drain discharge to Mangati Stream, site MGT000503

Parameter	Unit	Min	Max	Med	N	6 Oct 2016 (w)	1 Mar 2017 (d)	11 May 2017 (w)	RFWP guideline
Aluminium acid soluble	g/m ³	<0.1	9.1	0.72	51	0.85	nd	4.09	
Ammoniacal nitrogen	g/m ³ N	0.017	6.7	0.148	66	0.040	nd	0.047	-
BOD	g/m ³	<0.5	76	3.5	60	1.8	nd	1.3	5
Conductivity @ 20°C	mS/m	1.3	80.4	19.4	172	6.5	nd	7.2	-
Acid soluble copper	g/m ³	0.003	1.63	0.04	79	0.016	nd	0.010	-
Dissolved copper	g/m ³	0.001	0.15	0.006	148	0.008	nd	0.002	-
Dissolved oxygen	g/m ³	2.5	10.7	8.4	55	8.8	nd	7.3	
Oxygen saturation	%	28	102	85	53	86	nd	73	
DRP	g/m ³ P	<0.003	0.293	0.024	60	0.015	nd	0.008	-
Acid soluble lead	g/m ³	0.02	0.2	0.02	53	<0.05	nd	<0.05	
Oil and Grease	g/m ³	<0.5	590	1.2	50	a	nd	a	15
pH	pH	4.3	8.9	6.9	163	6.4	nd	6.3	6-9
Suspended solids	g/m ³	2	190	14	75	20	nd	4	
Temperature	Deg.C	9.7	21.7	16.4	89	13.7	nd	15.3	-
Turbidity	NTU	2	37	15	22	20	nd	4.8	-
Un-ionised ammonia	g/m ³	0.00001	0.03291	0.00045	62	0.00003	nd	0.00003	0.025
Acid soluble zinc	g/m ³	0.025	4.84	0.23	92	0.155	nd	0.064	-
Dissolved zinc	g/m ³	<0.005	2.5	0.103	153	0.128	nd	0.029	-

Key: a parameter not determined, no visible hydrocarbon sheen and no odour
 (d) dry weather survey (w) wet weather survey
 nd not discharging

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.

Noted this period is an unusually elevated acid soluble aluminium result on 11 May 2017, the source of this was not determined and a subsequent sample found that acid soluble aluminium was below the detection limit

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

19.2.3. Pond 3 and 4 discharges

The results for the treated discharge from pond 3 to the stream are given in Table 58.

Table 58 Chemical monitoring results for pond 3 discharge to the Mangati Stream, site STW002056

Parameter	Unit	Min	Max	Med	N	6 Oct 2016 (w)	1 Mar 2017 (d)	11 May 2017 (w)	RFWP guideline
Aluminium acid soluble	g/m ³	<0.01	0.8	0.2	43	0.33	<0.1	0.18	
Ammoniacal nitrogen	g/m ³ N	0.007	1.48	0.172	45	0.060	0.097	0.347	-
BOD	g/m ³	0.9	150	5.4	47	3.8	5.5	2.1	5
COD	g/m ³	<5	280	18	43	16	20	9	
Conductivity @ 20°C	mS/m	3.8	43.5	14.2	51	6.8	19.6	6.5	-
Acid soluble copper	g/m ³	0.001	0.04	0.012	45	0.011	0.001	0.006	-
Dissolved copper	g/m ³	0.001	0.026	0.006	48	0.005	0.001	0.005	-
DRP	g/m ³ P	<0.003	1.16	0.012	47	0.013	0.010	0.010	-
Acid soluble lead	g/m ³	<0.05	<0.05	<0.05	42	<0.05	<0.05	<0.05	
Oil and Grease	g/m ³	<0.5	49	0.2	18	a	a	a	15
pH	pH	4.8	7.5	6.9	51	6.5	6.8	6.6	6-9
Suspended solids	g/m ³	3	110	14	48	20	14	3	
Temperature	Deg.C	9.5	24.2	17.3	49	14.4	20.1	15.3	-
Turbidity	NTU	2.9	41	10	43	12	10	8.8	-
Un-ionised ammonia	g/m ³	0.000	0.00452	0.0006	45	0.00006	0.00029	0.00047	0.025
Acid soluble zinc	g/m ³	0.01	0.348	0.15	46	0.127	0.024	0.121	-
Dissolved zinc	g/m ³	0.007	0.335	0.122	47	0.092	0.014	0.116	-

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 one occasion it was found that the BOD concentration was above median and exceeded the desired 5.0 g/m³ limit. Copper, zinc and lead concentrations were found to be within acceptable limits and below historical medians in all samples. Ammoniacal nitrogen was found to above the median on one occasion while unionised ammonia was well below the desired 0.025 g/m³ value.

The result of discharge monitoring from pond 4 is present in Table 59.

Table 59 Chemical monitoring results for pond 4 discharge to the Mangati Stream, site STW002055 (site 37)

Parameter	Unit	Min	Max	Med	N	6 Oct 2016 (w)	1 Mar 2017 (d)	11 May 2017 (w)	RFWP guideline
Aluminium acid soluble	g/m ³	0.1	1.6	0.46	24	0.84	nd	0.26	
Ammoniacal nitrogen	g/m ³ N	0.021	0.854	0.261	22	0.133	nd	0.450	-
BOD	g/m ³	2.6	98	5.0	23	4.5	nd	3.6	5
COD	g/m ³	6	100	16	24	18	nd	12	
Conductivity @ 20°C	mS/m	4.0	39.6	10.5	26	8.2	nd	7.1	-
Acid soluble copper	g/m ³	0.002	0.045	0.015	25	0.018	nd	0.010	-
Dissolved copper	g/m ³	<0.001	0.023	0.008	26	0.006	nd	0.004	-
DRP	g/m ³ P	0.003	0.595	0.013	25	0.008	nd	0.013	-
Acid soluble lead	g/m ³	<0.05	<0.05	<0.05	22	<0.05	nd	<0.05	
Oil and Grease	g/m ³	<0.5	5.2	0.6	8	a	nd	a	15
pH	pH	5.5	8.8	6.7	26	6.8	nd	6.8	6-9
Suspended solids	g/m ³	7	53	17	25	30	nd	7	
Temperature	Deg.C	11.4	21.8	16.0	25	14.4	nd	15.3	-
Turbidity	NTU	5.4	34	13.0	22	20	nd	10	-
Un-ionised ammonia	g/m ³	0.0000	0.00206	0.0004	22	0.00026	nd	0.00096	0.025
Acid soluble zinc	g/m ³	0.018	0.349	0.213	25	0.220	nd	0.208	-
Dissolved zinc	g/m ³	0.006	0.304	0.200	25	0.149	nd	0.178	-

Key: a parameter not determined, no visible hydrocarbon sheen and no odour
(d) dry weather survey (w) wet weather survey nd not discharging

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

The ammoniacal nitrogen concentration was above the median on one occasion, however the concentration of unionised ammonia at the time was well below the 0.025 g/m³ RFWP permitted activity limit.

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

20. Receiving environment monitoring in the Mangati Stream

20.1. Mangati Stream water quality 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 the stream three times per year; twice under wet conditions and once 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 three surveys were performed. The wet weather surveys were conducted on 6 October 2016 and 11 May 2017. One dry weather survey was also undertaken on 1 March 2017.

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 60.

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 61.

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 60 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 61 Results from chemical surveys of the Mangati Stream for 2016-2017

Parameter		Mangati Stream					
		MGT000485 Railway	MGT000493 Above DeHav. Drive	MGT000497 Above Connett Road	MGT000500 Below pond 3	MGT000512 Below pond 4	MGT000550 At Coast
6 Oct 2016 – wet run							
BOD	g/m ³	2.9	4.1	3.2	6.6	7.2	3.7
BODCF	g/m ³	<0.5	<0.5	0.6	-	1.4	0.8
Conductivity @	mS/m	18	10.1	12.8	11.8	11.2	14.3
Acid soluble	g/m ³	0.002	0.044	0.027	0.024	0.022	0.01
Dissolved copper	g/m ³	0.002	<0.001	0.002	0.002	0.003	0.002
Dissolved oxygen	g/m ³	1.03	9.01	8.3	7.9	8.2	8.9
DRP	g/m ³ P	0.031	0.006	0.008	0.013	0.024	0.016
Un-ionised	g/m ³	0.00122	0.00037	0.00036	0.00037	0.00046	0.0007
Ammoniacal	g/m ³ N	0.296	0.181	0.186	0.19	0.228	0.167
Nitrate/nitrite	g/m ³	1.33	-	-	-	-	0.99
pH	pH	7.1	6.8	6.8	6.8	6.8	7.1
Suspended solids	g/m ³	12	690	220	180	140	57
Temperature	Deg.C	14.9	14.6	14.2	14.2	14.5	15.2
Turbidity	NTU	7.2	430	120	120	83	35
Acid soluble zinc	g/m ³	0.005	0.062	0.085	0.265	0.447	0.079
Dissolved zinc	g/m ³	<0.005	<0.005	0.012	0.022	0.045	0.021

Parameter		Mangati Stream					
		MGT000485 Railway	MGT000493 Above DeHav. Drive	MGT000497 Above Connett Road	MGT000500 Below pond 3	MGT000512 Below pond 4	MGT000550 At Coast
1 Mar 2017 – dry run							
BOD	g/m ³	2.5	3	1.8	3	1.9	1.2
BODCF	g/m ³	0.7	0.6	<0.5	<0.5	<0.5	
Conductivity @	mS/m	19	19.3	20.5	20.3	20.3	19.3
Acid soluble	g/m ³	0.002	0.007	0.003	<0.001	<0.01	<0.001
Dissolved copper	g/m ³	0.001	0.002	<0.001	<0.001	<0.001	<0.001
Dissolved oxygen	g/m ³	6.96	6.76	6.52	6.59	7.45	9.13
DRP	g/m ³ P	0.032	0.024	0.026	0.026	0.02	0.018
E.Coli	/100ml	2400	2600	1700	1200	1100	520
Enterococci	/100ml	2200	2200	2200	1700	1800	770
Fecal coliforms	/100ml	2400	2700	1800	1200	1100	520
Un-ionised	g/m ³	0.00049	0.0007	0.00058	0.00049	0.00057	0.00062
Ammoniacal	g/m ³ N	0.138	0.195	0.194	0.167	0.155	0.06
Nitrate/nitrite	g/m ³	0.99	-	-	-	-	1.06
pH	pH	7	7	6.9	6.9	7	7.4
Suspended solids	g/m ³	8	24	14	12	8	4
Temperature	Deg.C	16	16.1	16.7	16.6	16.6	18
Turbidity	NTU	6.4	12	8.7	8.9	6.3	3.4
Acid soluble zinc	g/m ³	0.006	0.009	0.007	0.006	0.005	0.008
Dissolved zinc	g/m ³	<0.005	<0.005	<0.005	0.006	<0.005	<0.005
11 May 2017- wet run							
BOD	g/m ³	11	8.2	9	7	6.6	5.1
BODCF		1.8	2.2	2	1.7	1.8	1.8
Conductivity @	g/m ³	17.6	15.9	15.6	13.9	12.2	11.3
Acid soluble	g/m ³	0.011	0.007	0.009	0.008	0.008	0.009
Dissolved copper	mS/m	<0.001	0.006	0.001	0.002	0.002	0.002
Dissolved oxygen	g/m ³	8.2	8.18	7.83	7.72	8.36	9.29
DRP	g/m ³ P	0.061	0.047	0.027	0.022	0.02	0.014

Parameter		Mangati Stream					
		MGT000485 Railway	MGT000493 Above DeHav. Drive	MGT000497 Above Connett Road	MGT000500 Below pond 3	MGT000512 Below pond 4	MGT000550 At Coast
Un-ionised	g/m ³	0.00055	0.0005	0.00043	0.0004	0.00064	0.00048
Ammoniacal	g/m ³ N	0.167	0.19	0.163	0.19	0.238	0.138
Nitrate/nitrite	g/m ³	1.17	-	-	-	-	0.75
pH	pH	7	6.9	6.9	6.8	6.9	7
Suspended solids	g/m ³	200	180	110	84	82	65
Temperature	Deg.C	15	15	15.2	15.2	15.3	15.6
Turbidity	NTU	130	130	72	65	45	35
Acid soluble zinc	g/m ³	0.043	0.172	0.045	0.055	0.084	0.052
Dissolved zinc	g/m ³	0.008	0.17	0.012	0.018	0.062	0.04

Results shown in bold are outside the desirable range of Regional Freshwater Plan Rule 23

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

b no flow

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

20.1.1. Nutrients

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. This was the case with two of the surveys undertaken this period. However, during one survey (11 May 2017) high levels of BOD were noted at the upper site (MGT000485) with a reduction of BOD levels noted as the stream passes through the industrial area. An investigation was undertaken to ascertain the source of the elevated BOD found in this survey, however this was inconclusive. As there is little or no industrial activity above this site, it may be that the contamination was result of rural activity higher up in the catchment. During this event the levels of filtered carbonaceous BOD did not rise to levels that are thought to cause heterotrophic growths such as sewage fungus.

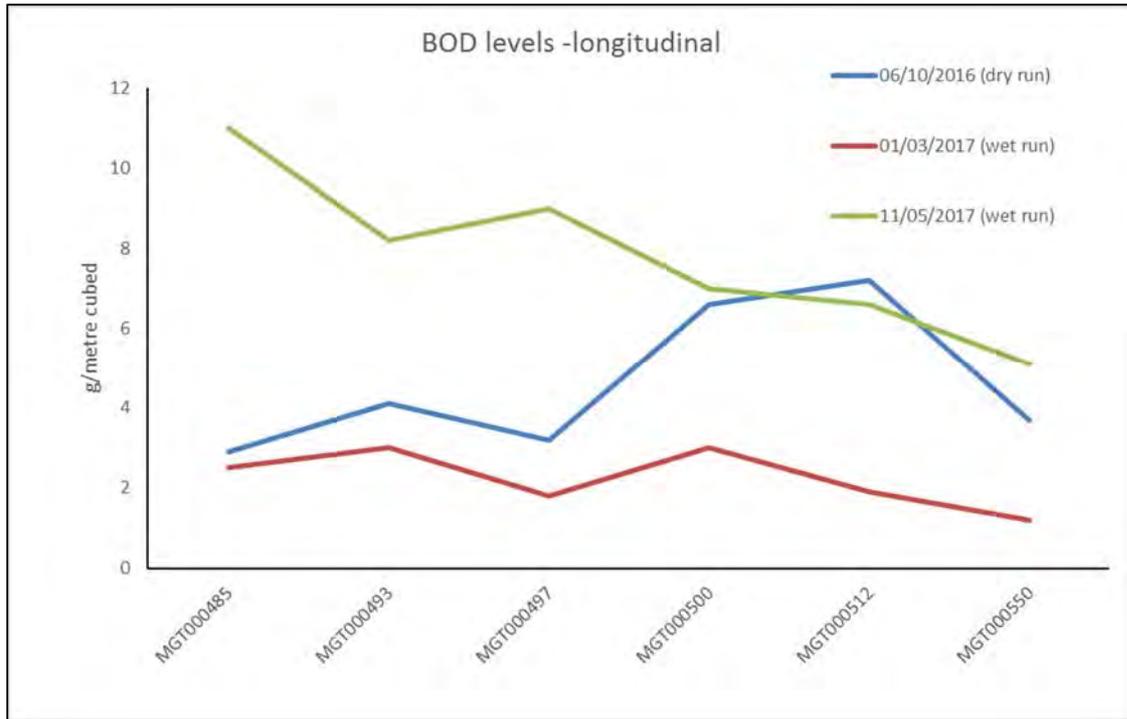


Figure 5 BOD levels in the Mangati Stream

Ammonia levels were not found to be especially elevated in any of the surveys and none of the 24 instream samples taken during period under review exceeded the 0.025 g/m³ MfE unionised ammonia guideline limit for the protection of aquatic ecosystems.

As with previous monitoring, phosphorus concentrations were found to decrease as one moves down the catchment indicating that rural activity is likely the biggest source.

20.1.2. 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 62 and Table 63.

Table 62 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 (MGT000500)		Below pond 4 and wetland bypass drain (MGT000512)		Mangati at Coast (MGT000550)	
	ZnAs g/m ³	ZnD g/m ³	ZnAs g/m ³	ZnD g/m ³	ZnAs g/m ³	ZnD g/m ³	ZnAs g/m ³	ZnD g/m ³	ZnAs g/m ³	ZnD g/m ³	ZnAs g/m ³	ZnD g/m ³
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	0.17	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	0.050	0.013	0.044	0.026
Number	86	83	28	27	64	59	66	85	110	188	79	80
06/10/2016 (w)	<0.005	<0.005	0.062	<0.005	0.085	0.012	0.265	0.022	0.447	0.045	0.079	0.021

Date	Above industrial area (MGT000485)		Above DeHavilland Drive (MGT000493)		Above Connett Road (MGT000497)		Below pond 3 Discharge (MGT000500)		Below pond 4 and wetland bypass drain (MGT000512)		Mangati at Coast (MGT000550)	
	ZnAs g/m ³	ZnD g/m ³	ZnAs g/m ³	ZnD g/m ³	ZnAs g/m ³	ZnD g/m ³	ZnAs g/m ³	ZnD g/m ³	ZnAs g/m ³	ZnD g/m ³	ZnAs g/m ³	ZnD g/m ³
01/03/2017 (d)	0.006	<0.005	0.009	<0.005	0.007	<0.005	0.006	0.006	0.005	<0.005	0.008	<0.005
11/05/2017(w)	0.043	0.008	0.172	0.17	0.045	0.012	0.055	0.018	0.084	0.062	0.052	0.04

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

Table 63 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 (MGT000500)		Below pond 4 and wetland bypass drain (MGT000512)		Mangati at Coast (MGT000550)	
	CuAs, g/m ³	CuD, g/m ³	CuAs, g/m ³	CuD, g/m ³	CuAs, g/m ³	CuD, g/m ³	CuAs, g/m ³	CuD, g/m ³	CuAs, g/m ³	CuD, g/m ³	CuAs, g/m ³	CuD, g/m ³
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	0.044	<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	-	0.005	0.002	0.005	0.003	0.01	0.003	0.01	0.005
Number	86	88	27	27	63	65	78	92	101	196	80	84
06/10/2016 (w)	0.002	0.002	0.044	<0.001	0.027	0.002	0.024	0.002	0.022	0.003	0.01	0.002
01/03/2017 (d)	0.002	0.001	0.007	0.002	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
11/05/2017 (w)	0.011	<0.001	0.007	0.006	0.009	0.001	0.008	0.002	0.008	0.002	0.009	0.002

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/m³ CaCO₃, are 0.005 g/m³ for Cu and 0.058 g/m³ 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/m³ for Cu and 0.064 g/m³ 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.

Overall 16 of the 18 instream samples taken were found to be within the USEPA chronic limit for dissolved zinc.

All 24 samples taken during both wet weather and dry surveys were below the 0.005 g/m³ USEPA chronic exposure limit for dissolved copper.

20.2. Mangati Stream biological surveys

Biological surveys produce a measure of time-integrated effects of discharges on water quality of a waterway, as opposed to the “snapshot” measure of a chemical survey.

20.2.1. Macroinvertebrate surveys

The routine surveys for the period under review were carried out on 1 March 2017 and 10 May 2017. These were the 43rd and 44th surveys for this programme. The reports on the two surveys are attached as Appendix II. 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 II. 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 64 and the summary and conclusions of the macroinvertebrate survey reports are given below.

Table 64 Biomonitoring sites in the Mangati Stream catchment

Site No	Site code	Grid reference	Location
A	MGT000488	E1700095 N5678043	Mangati Stream, 20 m upstream of swampy tributary
A2	MGT000490	E1700062 N5678084	Mangati Stream, 100 m downstream of swampy tributary
A1	MGT000491	E1700018 N5678166	Mangati Stream, 50 m upstream of De Havilland Drive
A3	MGT000497	E1699775 N5678573	Mangati Stream, 10 m above Connett Road
B	MGT000500	E1699596 N5678691	Mangati Stream above the industrial tributary, below wetland

Site No	Site code	Grid reference	Location
D2	MGT000512	E1699513 N5678787	Mangati Stream, 20 m downstream SH3
E	MGT000520	E1699385 N5679103	Mangati Stream, 400 m below Devon Road
F	MGT000550	E1699215 N5680409	Mangati Stream, 50 m above Bell Block beach

1 March 2017

On 1 March 2017 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) SQMCI_s scores for sites A2 and A1 were significantly lower than historical medians. This was the same result as the preceding survey. MCI scores were non-significantly lower than the 'control' site, site A, but for the more sensitive SQMCI_s scores were significantly lower than site A. The lower than normal scores at sites A2 and A1 suggest that Tegel Poultry discharges were adversely affecting the health of the macroinvertebrate communities present in the Mangati Stream. Previous recent surveys have also noted concerns about Tegel Poultry discharges (DS047 and DS048).

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 also having a negative affect on the macroinvertebrate stream communities present there. However, discharges from Tegel Poultry may also have contributed to the lowered macroinvertebrate health.

At site E there was a significant increase in MCI score from the closest upstream site suggesting water quality had improved by the time it reached site E. MCI and SQMCI_s scores were not significantly different from median scores though the MCI score was seven units higher than the median.

At site F there was a non-significant decrease in the MCI score from site E but the SQMCI_s score was the highest recorded in the current survey. Furthermore, the SQMCI_s score was significant higher than the closest upstream site and also significantly higher than the historic median suggesting a further improvement in water quality.

Overall, the changes in community structures, MCI and SQMCI_s score in the upper reaches of the Mangati Stream indicate that there have likely been some adverse effects 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 appears to have largely recovered from the impact of discharges having macroinvertebrate indices non-significantly different from the 'control' site while Site F also showed some improvement. Overall, the results of the current survey indicate that macroinvertebrate health was '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.

Table 65 Numbers of taxa and MCI values recorded in previous surveys in the Mangati Stream, together with the March 2017 survey

Site No.	N	No of taxa			MCI value			SQMCI _s value		
		Median	Range	Current survey	Median	Range	Current survey	Median	Range	Current survey
A	45	16	9-29	17	78	56-91	73	3.6	2.2-4.7	3.2
A2	43	16	10-29	22	74	57-92	75	3.6	1.8-4.7	1.6
A1	45	16	7-23	14	73	47-89	63	3.5	1.7-4.7	1.5
A3	43	16	8-23	15	69	52-81	64	2.6	1.6-4.6	1.6
B	51	14	3-29	17	68	50-86	62	2.5	1.1-4.5	1.9
D2	27	11	5-18	14	68	40-78	61	2.5	1.1-3.5	2.6
E	49	10	3-22	13	65	44-79	72	2.5	1.1-3.9	2.5
F	43	11	2-22	14	67	30-79	64	2.4	1.2-4.1	3.7

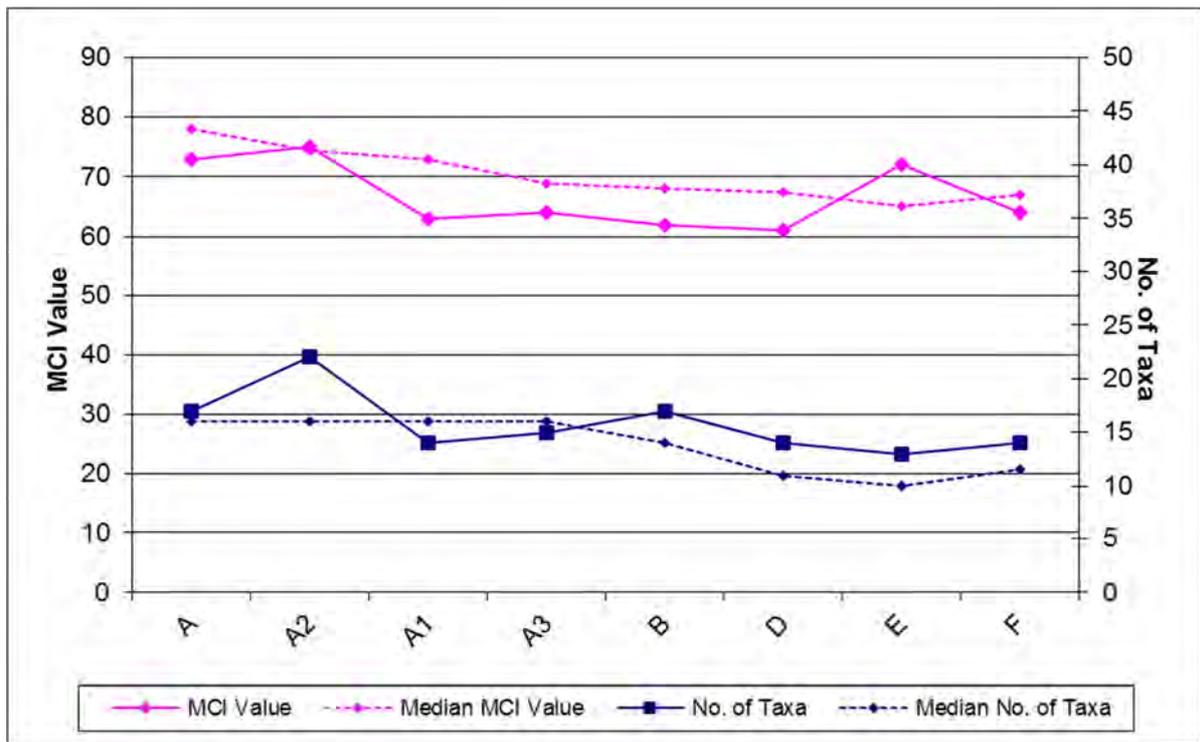


Figure 6 Numbers of taxa and MCI values recorded at sites in the Mangati Stream in the March 2017 survey

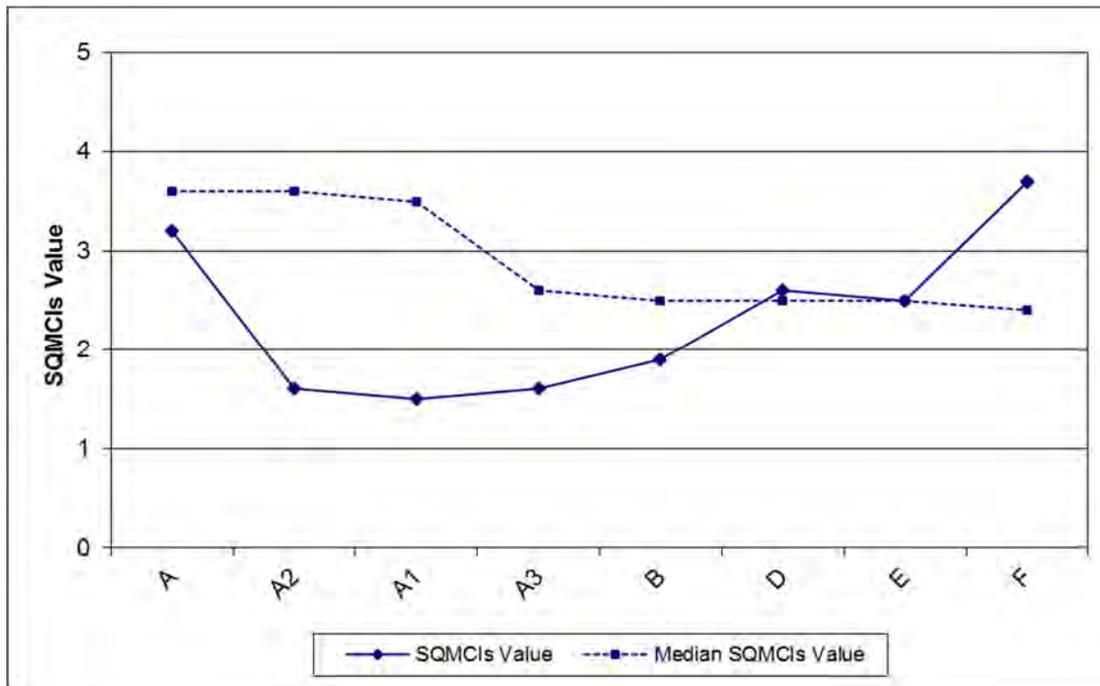


Figure 7 SQMCI_s values recorded at sites in the Mangati Stream in the March 2017 survey
10 May 2017

On 10 May 2017 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 the two 'impact' sites, sites A2 and A1, were similar to historical medians and generally show an improvement on recent preceding surveys which have indicated that discharges have been significantly negatively affecting macroinvertebrate communities there.

Results recorded at the next three sites (A3, B and D2) indicated that they were in a poor state consistent with what was found in the preceding survey suggesting discharges below De Havilland Drive and possibly also below the wetland were also having a negative affect on the macroinvertebrate stream communities present there.

At site E macroinvertebrate health was consistent with historic medians but unlike recent surveys there was no improvement in health from the site immediately upstream of it (site D2). Furthermore, taxa abundances were quite low. A notable hydrocarbon smell was evident when the sample was processed and therefore a discharge of hydrocarbons (e.g. oil) likely had a negative affect on the macroinvertebrates present at the site.

At site F there was a non-significant increase in the MCI score from site E but the SQMCI_s score was significantly higher than the historic median and to the site immediately upstream of it (site E). This suggests continuing improvement in water quality at the site.

Overall, the changes in community structures, MCI and SQMCI_s score in the upper reaches of the Mangati Stream indicate that there have likely been some adverse effects on macroinvertebrate communities from a source upstream of the 'control' site. Downstream of De Havilland Drive, where stormwater from De Havilland Drive West, Tasman Oil and Greymouth Petroleum enter, there were 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 appears to have been affected by a hydrocarbon spill that affected taxa abundances while Site F showed some improvement. In conclusion, macroinvertebrate health was 'poor' for the surveyed sites in the Mangati Stream and discharges upstream of the 'control' site, other discharges downstream of De Havilland Drive and at the wetlands, as well as a hydrocarbon spill, were adversely affecting the health of the macroinvertebrate communities in the Mangati Stream.

Table 66 Numbers of taxa and MCI values recorded in previous surveys in the Mangati Stream, together with results of the 10 May 2017 survey

Site No.	N	No of taxa			MCI value			SQMCI _s value		
		Median	Range	Current survey	Median	Range	Current survey	Median	Range	Current survey
A	45	16	9-29	12	78	56-91	67	3.6	2.2-4.7	4.7
A2	43	16	10-29	13	75	57-92	72	3.5	1.6-4.7	3.2
A1	45	16	7-23	14	73	47-89	71	3.5	1.5-4.7	3.7
A3	43	16	8-23	14	69	52-81	63	2.6	1.6-4.6	1.7
B	51	14	3-29	9	68	50-86	60	2.5	1.1-4.5	2.5
D2	27	11	5-18	18	68	40-78	73	2.5	1.1-3.5	1.6
E	49	10	3-22	11	65	44-79	64	2.5	1.1-3.9	2.1
F	43	12	2-22	14	67	30-79	71	2.5	1.2-4.1	3.6

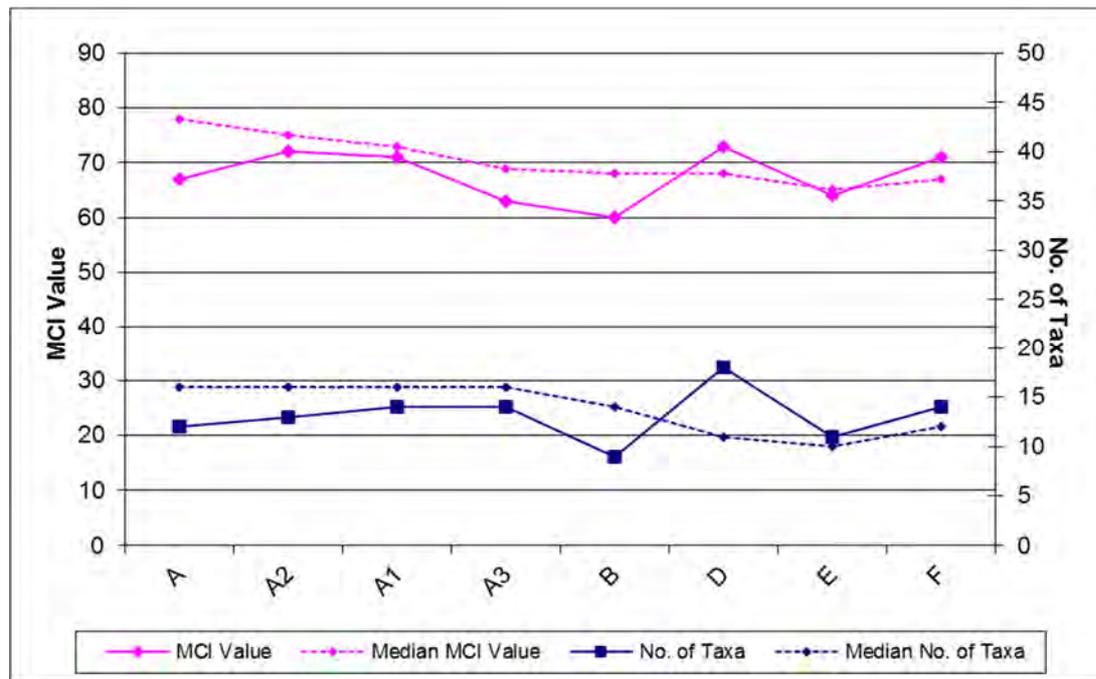


Figure 8 Numbers of taxa and MCI values recorded at sites in the Mangati Stream in the May 2017 survey

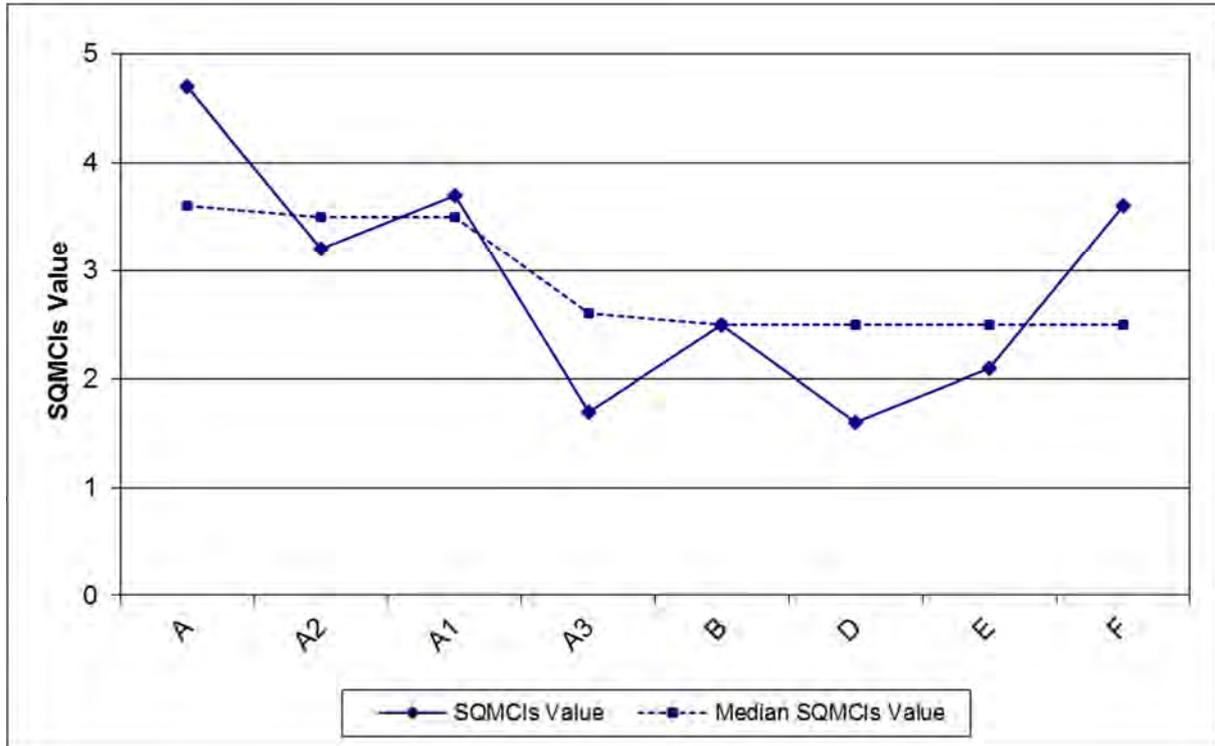


Figure 9 SQMCI values recorded at sites in the Mangati Stream in the May 2017 survey

20.2.2. Statistical analysis of macroinvertebrate results

In the 2016-2017 period a 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 2016-2017 Technical Report 2017-88*.

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 ($p < 0.01$) 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."

Updated trend graphs are given below in Figure 10 and Figure 11 for the two sites used in the statistical analysis.

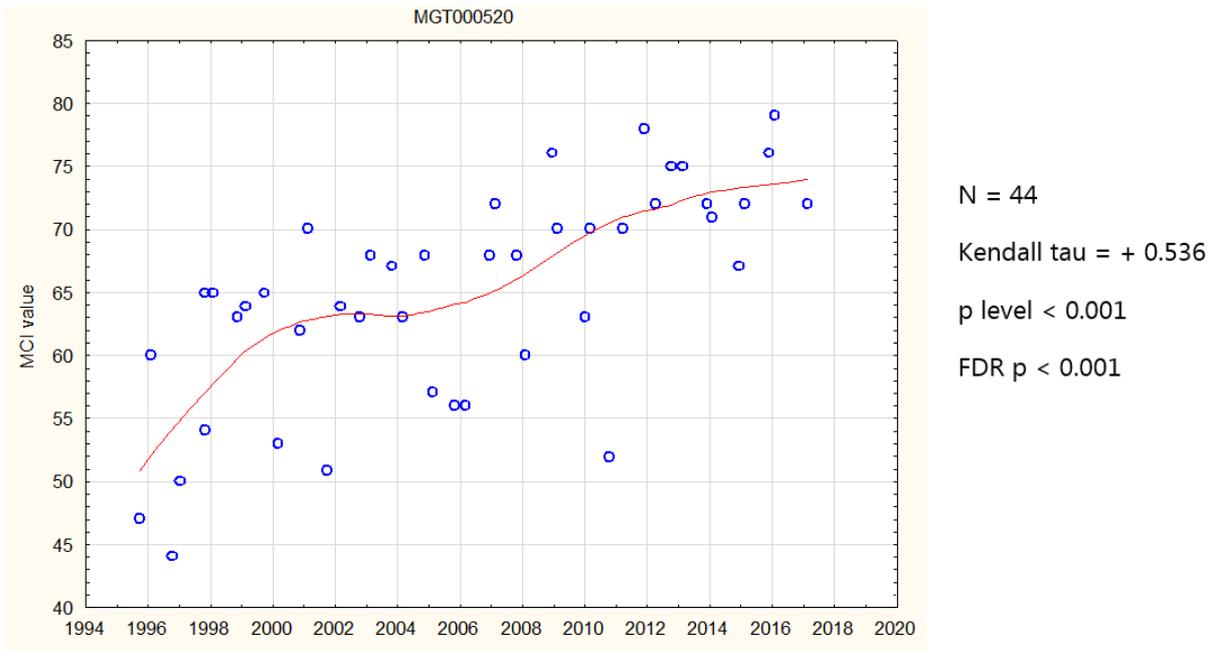


Figure 10 LOWESS trend plot at the Te Rima Place, Bell Block Site E (d/s of industrial area)

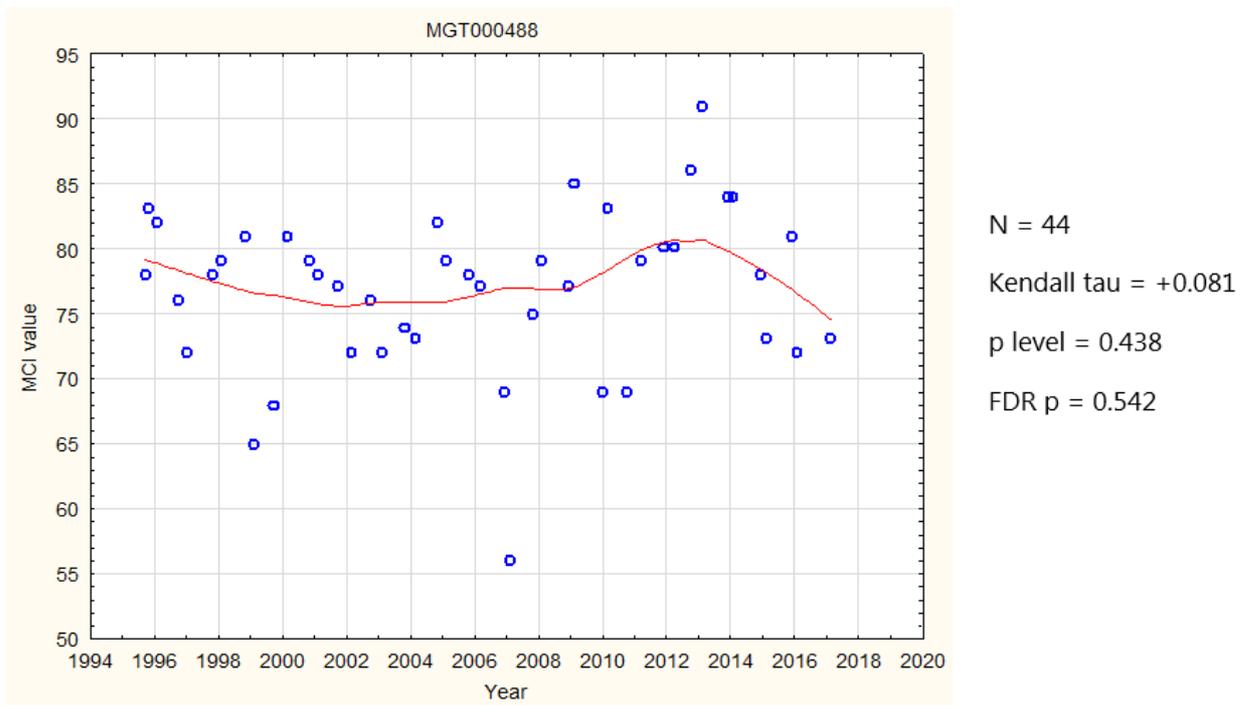


Figure 11 LOWESS trend plot of MCI data at Site A (u/s industrial area)

20.2.3. Fish survey

A three-site survey spotlighting survey was completed in the Mangati Stream on 25 May 2017. This survey recorded a total of five fish species, of which redfin bully were most abundant. Sites 1 and 2 recorded similar fish abundance, while site 3 had higher fish abundance, due largely to the higher abundance of redfin bully at this site. Galaxiids were recorded at all three sites, including two giant kokopu, one each at

sites 2 and 3. Although fish abundance was low compared to a survey completed in 2011, it was similar to that recorded in 2013. This variation in fish abundance is likely due to the water temperatures at the time, as the 2011 survey was completed in March, when water temperatures were higher, and fish more active. Furthermore, water clarity was not ideal during the current survey, and consequently it is considered likely that the fish abundance recorded in the reported survey was an underrepresentation of the actual fish abundance.

Most of the fish found in New Zealand streams are migratory and all the fish recorded in the Mangati Stream in this survey were migratory. Access to the stream from the sea is an important determinant of fish communities in New Zealand. Due to the frequent presence of a large gravel bar at the mouth of the Mangati Stream, access from the sea appears to be limited to times of high tide and floods. In addition, approximately 120 metres upstream of the mouth, there is a natural cascade, which may impede the passage of fish. It is apparent that all species recorded in the current survey have negotiated this natural cascade. This is not unusual, as these species are known to be good climbers that can penetrate significant distances inland. The results of the current survey do not indicate the presence of a barrier to fish passage, including at the SH3 culvert.

With regards to water quality, it was clear that water quality was sufficient to support a relatively diverse and abundant population of native fish. Historically, this catchment has experienced toxic discharges that have resulted in significant fish kills. No such discharge has been recorded in over 14 years, although previous survey results suggests that such a discharge may have occurred approximately nine years ago. This is a speculative explanation, as water quality sampling and inspections have not indicated that such a discharge took place.

Changes in land use in the area have the potential to threaten habitat within this catchment. A significant amount of pasture has been converted to industrial subdivision land, and there is the potential for habitat changes in the main stem. This is because small tributaries have been redirected into underground pipes, resulting in reduced water storage in the catchment, and lower flows in summer. Furthermore, with an increase in the area of hard surface within the catchment, if there is insufficient stormwater retention, floods will peak much quicker. This has the potential to disturb or destroy instream habitat. How these changes will affect the fish communities is unknown. Therefore, it is recommended that fish surveys of the Mangati Stream continue as at present.

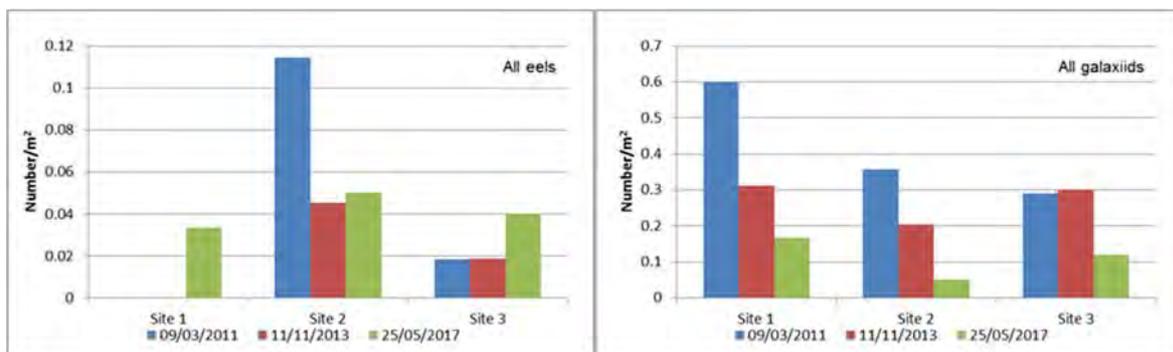


Figure 12 Summary graphs of fish survey findings

21. Summary of recommendations

1. THAT in the first instance, monitoring programmed for the consented activities of ABB Ltd in the 2017-2018 year remains similar to that undertaken in the 2016-2017 year with the next triennial air deposition survey to be undertaken in the 2018-2019 period.
2. THAT in the first instance, monitoring programmed for the consented activities of GrainCorp Feeds Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
3. THAT in the first instance, monitoring programmed for the consented activities of Greymouth Petroleum Acquisitions Company Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
4. THAT in the first instance, monitoring programmed for consented activities of Halliburton New Zealand Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
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.
6. THAT, in the first instance, monitoring programmed for consented activities of McKechnie Aluminium Solutions Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
7. THAT in the first instance, monitoring programmed for consented activities of New Plymouth District Council in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
8. THAT in the first instance, monitoring programmed for consented activities of Nexans New Zealand Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
9. THAT in the first instance, monitoring programmed for consented activities of OMV New Zealand Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
10. THAT in the first instance, monitoring programmed for consented activities of Schlumberger New Zealand Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
11. THAT in the first instance, monitoring programmed for consented activities of Tasman Oil Tools Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
12. THAT in the first instance, monitoring programmed for consented activities of Tegel Foods Ltd (feed mill) in the 2017-2018 year continues at a similar level to that programmed for 2016-2017, with triennial deposition gauging next due in the 2018-2019 period.
13. THAT in the first instance, monitoring programmed for consented activities of Tegel Foods Ltd (poultry processing plant) in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
14. THAT in the first instance, monitoring programmed for consented activities of TIL Freightling Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
15. THAT in the first instance, monitoring programmed for consented activities of First Gas Ltd's site in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.
16. THAT in the first instance, monitoring programmed for consented activities of W Abraham Ltd in the 2017-2018 year continues at a similar level to that programmed for 2016-2017.

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
<i>E.coli</i>	<i>escherichia coli</i> , 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.

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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 19 June 2008
Date:

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 Paraita 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.

Consent 2336-3

6. That after allowing for a mixing zone of 20 metres extending downstream of the discharge, the discharge shall not give rise to any of the following effects in the receiving waters of the Mangati Stream:
 - a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - b) any conspicuous change in the colour or visual clarity;
 - c) any emission of objectionable odour;
 - d) the rendering of fresh water unsuitable for consumption by farm animals; any significant adverse effects on aquatic life.
7. The consent holder shall maintain a contingency plan. The contingency plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, detail measures and procedures to be undertaken to prevent spillage or accidental discharge of contaminants not authorised by this consent and measures to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.
8. The consent holder shall maintain a stormwater management plan. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:
 - a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor system.
9. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the chemicals used or stored on site, which could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable if the consent holder does not have access to email.
10. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

Consent 2336-3

11. In accordance with section 128 and 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:
- a) during the month of June 2014 and/or June 2020; and/or
 - b) within 3 months of receiving a notification under special condition 9 above;

for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 19 June 2008

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: ABB Limited
 PO Box 7050
 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: 1 June 2032

Review Date(s): June 2020, June 2026

Site Location: 60 Paraiti Road, Bell Block

Grid Reference (NZTM) 1699481E-5678027N

Catchment: Mangati

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

General condition

- a. The consent holder shall pay to the Taranaki Regional Council all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act 1991.

Special conditions

1. All abrasive blasting shall be carried out in an enclosed booth or shed.
2. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent, including by:
 - all abrasive blasting being conducted taking into account wind direction and wind strength, such that off-site emissions are kept to a practicable minimum; and
 - all work areas and surrounding areas being cleared of accumulations of blasting material at the end of each blasting session and by the end of each working day.
3. The exercise of this consent shall not give rise to any offensive, objectionable or toxic levels of dust or odour at or beyond the boundary of the property on which the abrasive blasting or associated activity is occurring.
4. Blasting media used for dry abrasive blasting shall contain less than 2% by dry weight dust able to pass through a 0.15 mm sieve, and sand used for dry abrasive blasting shall contain less than 5% by dry weight free silica.
5. All emissions from abrasive blasting, surface preparation or surface coating operations and all other associated emissions from abrasive blasting shall be contained and treated prior to discharge from any operations enclosure.
6. All gas ventilated or otherwise emitted from an enclosure shall be treated so that the concentration of total particulate matter is less than 125 mg/m³ (natural temperature and pressure) corrected to dry gas basis, at any time.
7. The dust deposition rate beyond the property boundary of the site, arising from the discharge, shall be less than 0.13 g/m²/day.
8. The final discharge shall not contain:
 - lead (Pb) or Pb compounds at a concentration greater than 0.7 milligrams per cubic metre as Pb;
 - chromium (Cr) or Cr compounds at a concentration greater than 1.5 milligrams per cubic metre as Cr; and
 - zinc (Zn) or Zn compounds at a concentration greater than 15 milligrams per cubic metre as Zn (discharge corrected to 0 degrees Celsius and dry gas).

Consent 5435-2.0

9. Within three months of the granting of this consent, the site shall be operated in accordance with an Operation, Management and Maintenance Plan prepared by the consent holder and approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity. The Plan shall detail how the site will be managed to achieve compliance with the conditions of this consent and shall include as a minimum:
 - a) staff training;
 - b) general housekeeping and yard maintenance;
 - c) blasting operations;
 - d) handling of toxic substances;
 - e) monitoring and maintenance of the blasting buildings and air discharge treatment systems;
 - f) the recording of training, monitoring and maintenance undertaken;
 - g) the recording of complaints made directly to the consent holder, and
 - h) the frequency of review of the plan.
10. Any records kept in accordance with the Operation, Management and Maintenance Plan shall be made available to the Chief Executive, Taranaki Regional Council upon request.
11. This consent shall on lapse on 31 March 2020, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
12. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2020 and/or June 2026, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 28 October 2016

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.

Consent 4780-2.0

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

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 Paraitē Road, Bell Block

Legal Description: Lot 2 DP 15627 (Discharge source & site)

Grid Reference (NZTM) 1699288E-5678418N

Catchment: Mangati

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

General condition

- a. The consent holder shall pay to the Taranaki Regional Council all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act 1991.

Special conditions

1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
2. The stormwater discharged shall be from a catchment area not exceeding 0.464 ha.
3. By 31 July 2011 all stormwater from the loading/unloading areas shall be directed through the stormwater diversion system.
4. Any significant volumes of hazardous substances [e.g. bulk fuel, liquid stock feeds] on site shall be:
 - a) contained in a double skinned tank, or
 - b) stored in a dedicated bunded area with drainage to sumps, or to other appropriate recovery systems, and not directly to the site stormwater system.
5. Constituents of the discharge shall meet the standards shown in the following table.

<u>Constituent</u>	<u>Standard</u>
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.

Consent 7707-1

8. By 31 July 2011 the consent holder shall provide, and thereafter maintain, a satisfactory contingency plan. The contingency plan shall be adhered to in the event of a spill or emergency and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, detail measures and procedures to be undertaken to prevent spillage or accidental discharge of contaminants not authorised by this consent and measures to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.
9. By 31 July 2011 the consent holder shall provide, and thereafter maintain, a satisfactory stormwater management plan. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:
 - a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor systems.

A Stormwater Management Plan template is available in the Environment section of the Taranaki Regional Council's web site www.trc.govt.nz.

10. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the chemicals used or stored on site, that could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to worknotification@trc.govt.nz.
11. This consent shall lapse on 30 June 2016, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
12. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:
 - a) during the month of June 2014 and/or June 2020; and/or
 - b) within 3 months of receiving a notification under special condition 10 above;for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 2 July 2015

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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

Name of
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

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.

<u>Constituent</u>	<u>Standard</u>
pH	Within the range 6.0 to 9.0
suspended solids	Concentration not greater than 100 gm ⁻³
oil 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.

Consent 4664-3

7. The consent holder shall review the GMP Environmental Limited Pipeyard Environmental Management Plan prior to making any changes to the processes or operations undertaken at the site and/or on receiving written notice from the Taranaki Regional Council of:
- the requirement to review the Plan;
 - the matters which shall be addressed within the plan review; and
 - the reasons or anticipated results of the matters requiring review.

The reviewed Plan shall document all operations, maintenance activities and contingency measures and shall be submitted for approval to the Chief Executive, Taranaki Regional Council, acting in a certification capacity, at least two weeks prior to making any changes to the operations on site and/or within one month of receiving written notice of the requirement to review the Plan.

8. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2014 and/or June 2020, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 1 June 2010

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
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 receiving a notification under special condition 10

Site Location: Paraita 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.

<u>Constituent</u>	<u>Standard</u>
pH	Within the range 6.0 to 9.0
Suspended solids	Concentration not greater than 100 gm ⁻³
Oil 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.

Consent 2337-3

6. After allowing for a mixing zone of 20 metres extending downstream of the discharge, the discharge shall not give rise to any of the following effects in the receiving waters of the Mangati Stream:
 - a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - b) any conspicuous change in the colour or visual clarity;
 - c) any emission of objectionable odour;
 - d) the rendering of fresh water unsuitable for consumption by farm animals;
 - e) any significant adverse effects on aquatic life.
7. The consent holder shall construct and maintain an adequate discharge sampling point, within three months of the granting of this consent, to the satisfaction of the Chief Executive, Taranaki Regional Council.
8. The consent holder shall maintain a contingency plan. The contingency plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, detail measures and procedures to be undertaken to prevent spillage or accidental discharge of contaminants not authorised by this consent and measures to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.
9. The consent holders shall maintain an operational and management plan. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:
 - a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor system.
10. The consent holder shall notify the Chief executive, Taranaki Regional Council, prior to making any changes in the processes undertaken at the site, or the chemicals used or stored on site, which could alter the nature of the discharge. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environment effects of any changes, and to be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable if the consent holder does not have access to email.
11. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

Consent 2337-3

12. In accordance with section 128 and 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:
- a) during the month of June 2014 and/or June 2020; and/or
 - b) within 3 months of receiving a notification under special condition 10 above;

for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 1 October 2012

For and on behalf of
Taranaki Regional Council

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.

<u>Constituent</u>	<u>Standard</u>
pH	Within the range 6.0 to 9.0
suspended solids	Concentration not greater than 100 gm ⁻³
oil 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 than 0.025 g/m³.

Consent 10085-1.0

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.

Consent 10085-1.0

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

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: Paraita Road, Bell Block, New Plymouth

Legal Description: Lot 1 DP 9212, Lot 1 DP 10008 & Lot 2 DP 330342

Catchment: Mangati

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of application 5010. In the case of any contradiction between the documentation submitted in support of application 5010 and the conditions of this consent, the conditions of this consent shall prevail.
3. The stormwater discharge shall be from a catchment not exceeding 5 hectares.
4. After allowing for a mixing zone of 10 metres, the discharge shall not give rise to any of the following effects in the receiving waters of the Mangati Stream:
 - (a) the production of any conspicuous oil or grease films, scums or foams or floatable or suspended matter;
 - (b) any conspicuous change in the colour or visual clarity;
 - (c) any emission of objectionable odour;
 - (d) the rendering of fresh water unsuitable for consumption by farm animals;
 - (e) any significant adverse effect on aquatic life;
 - (f) the temperature of water shall not exceed 25°C.
5. Components of the discharge shall not exceed the following concentrations:

pH (range)	6.0-9.0
oil and grease	15 g/m ³
suspended solids	100 g/m ³
6. The consent holder shall maintain a contingency plan that details action to be taken in the event of accidental discharge or spillage of contaminants to ensure that the effects are minimised.

Consent 3139-3

7. The consent holder shall maintain a stormwater management plan detailing the management and discharge of stormwater and cooling water to ensure that any effects on the Mangati Stream are minimised. This shall include any capital works planned to be undertaken.
8. The consent holder shall comply with the procedures, requirements, obligations and all other matters specified in the management plan except with the specific agreement of the Chief Executive, Taranaki Regional Council. In the case of any contradiction between the management plan and the conditions of this consent, the conditions of this resource consent shall prevail.
9. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
10. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2014 and/or June 2020, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 4 March 2010

For and on behalf of
Taranaki Regional Council

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: New Plymouth District Council
Private Bag 2025
NEW PLYMOUTH

Consent Granted 11 September 2002
Date:

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/Paraita Roads, Bell Block, New Plymouth

Legal Description: Lot 1 DP 10763 Blk II Pariututu SD

Catchment: Mangati

Consent 4302-2

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council (hereinafter the Chief Executive), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. This consent shall be exercised generally in accordance with the information submitted in support of application 1663 and to ensure the conditions of this consent are maintained.
2. The consent holder shall adopt the best practicable option to prevent or minimise any actual or likely adverse effect on the environment associated with the discharge.
3. Within 6 months of the granting of this consent a general outline of the methods, specifications, operating guidelines or other measures which represent the best practicable option will be supplied by the consent holder to the satisfaction of the Chief Executive, Taranaki Regional Council. This is also to include details of the proposed construction and timing of the third wetland pond and thereafter will be attached to this consent as Schedule A.
4. The consent holder shall be responsible for preventing, where possible, and mitigating any erosion which occurs as a result of the exercise of this consent.
5. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review within three months of receipt of the report specified in special condition 3 and/or during the month of June 2004 and/or June 2008 and/or June 2014, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 11 September 2002

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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.

Consent 4497-3

6. The consent holder shall maintain a contingency plan. The contingency plan shall be adhered to at all time and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, detail measures and procedures to be undertaken to prevent spillage or accidental discharge of contaminants not authorised by this consent and measures to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.
7. The consent holder shall maintain stormwater and management plan. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:
 - a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor system.
8. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the chemicals used or stored on site, which could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and to be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable if the consent holder does not have access to email.
9. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
10. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:
 - a) during the month of June 2014 and/or June 2020; and/or
 - b) within 3 months of receiving a notification under special condition 10 above;for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 21 May 2015

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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

Name of
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 Paraitē 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 (PM₁₀) and sulphur dioxide to the atmosphere from the site, in order that the maximum ground level concentration of any of these contaminants arising from the exercise of this consent measured under ambient conditions does not exceed the relevant ambient air quality standard as set out in the Resource Management (National Environmental Standards for Air Quality Regulations, 2004) at or beyond the boundary of the property on which the site is located.
4. That the consent holder shall control all emissions to the atmosphere from the site of contaminants other than carbon dioxide, carbon monoxide, and nitrogen oxides, in order that the maximum ground level concentration for any particular contaminant arising from the exercise of this consent, measured at or beyond the boundary of the site is not increased above background levels:
 - a. by more than 1/30th of the relevant Workplace Exposure Standard-Time Weighted Average (exposure averaged over a duration as specified for the Workplace Exposure Standard-Time Weighted Average), or by more than 1/10th of the Workplace Exposure Standard-Short Term Exposure Limit over any short period of time (all terms as defined in Workplace Exposure Standards, 2010, Department of Labour); or
 - b. if no Short Term Exposure Limit is set, by more than the General Excursion Limit at any time (all terms as defined in Workplace Exposure Standards, 2010, Department of Labour).
5. Prior to undertaking any alterations to the plant, processes or operations, which may significantly change the nature or quantity of contaminants emitted to air from the site, the consent holder shall first consult with the Chief Executive, Taranaki Regional Council, and shall obtain any necessary approvals under the Resource Management Act 1991.

Consent 5417-2.0

6. The consent holder shall maintain a permanent record of any complaints received alleging adverse effects from or related to the exercise of this consent. This record shall include the following, where practicable:
- a) the name and address of the complainant, if supplied;
 - b) date, time and details of the alleged event;
 - c) weather conditions at the time of the alleged event (as far as practicable);
 - d) investigations undertaken by the consent holder in relating to the complaint and any measures adopted to remedy the effects of the incident/complaint; and
 - e) measures put in place to prevent occurrence of a similar incident.

The consent holder shall make the complaints record available to officers of Taranaki Regional Council, on request.

7. The consent holder shall provide to the Taranaki Regional Council during November of each year, for the duration of this consent, a report reviewing any technological advances in the reduction or mitigation of emissions, how these might be applicable and/or implemented at the plant, and the costs and benefits of these advances;
8. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:
- a) during the month of June 2020 and/or June 2026; and/or
 - b) within 3 months of any consultation under special condition 5 above;

for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 21 May 2015

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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

Name of
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 Paraitē 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.

Consent 3913-3.0

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 Paraita 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 *Paraitē 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.

Consent 5987-1

7. The consent holder shall maintain a stormwater management plan, which shall be reviewed at not more than 2 yearly intervals. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:

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

A Stormwater Management Plan template is available in the Environment section of the Taranaki Regional Council's web site www.trc.govt.nz.

8. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the chemicals used or stored on site that could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to worknotification@trc.govt.nz.
9. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:
- a) during the month of June 2008 and/or June 2014; and/or
 - b) within 3 months of receiving a notification under special condition 8 above;

for the purpose of ensuring that the conditions are adequate to deal with any actual or potential adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 10 December 2014

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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 27 August 2008 (Granted Date: 4 July 2002)
(Review):

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 condition 2

Site Location: 94 Paraiti 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:
- the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - any conspicuous change in the colour or visual clarity;
 - any emission of objectionable odour;
 - the rendering of fresh water unsuitable for consumption by farm animals;
 - 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:
- during the month of June 2014; and/or
 - within 3 months of receiving a notification under special condition 2 above;

for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Consent 6032-1

Condition 9 [new]

9. There shall be no discharge of wastes containing surfactants, solvents, or any other degreasing agents.

Transferred at Stratford on 10 December 2014

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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 05 August 2014 (Granted Date: 26 November 2001)
(Review):

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.

Consent 4812-2.1

7. After allowing for a 20 metre mixing zone extending downstream of the discharge point the discharge shall not give rise to any of the following effects in the receiving waters of the Mangati Stream:
 - a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - b) any conspicuous change in the colour or visual clarity;
 - c) any emission of objectionable odour;
 - d) the rendering of fresh water unsuitable for consumption by farm animals;
 - e) any significant adverse effects on aquatic life.
8. The consent holder shall prepare and maintain a contingency plan to the satisfaction of the Chief Executive, Taranaki Regional Council, outlining measures and procedures undertaken to prevent spillage or accidental discharge of contaminants, and procedures to be carried out should such a spillage or discharge occur.
9. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:
 - a. during the month of June 2014; and/or
 - b. within 3 months of receiving a notification under special condition 4 above;

for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.
10. There shall be no discharge of wastes containing surfactants, solvents, or any other degreasing agents.
11. Before 30 November 2008 the consent holder shall prepare and thereafter maintain a stormwater management plan. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:
 - 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

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 Paraita 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.

Consent 2335-4.0

7. A copy of the performance report required by condition 6 shall be provided to the Taranaki Regional Council by 1 July each year.
8. The consent holder shall maintain a contingency plan that details measures and procedures to be undertaken to prevent spillage or any discharge of contaminants not authorised by this consent. The contingency plan shall be followed in the event of a spill or unauthorised discharge and shall be certified by the Chief Executive, Taranaki Regional Council as being adequate to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.
9. Within three months of the granting of this consent, the consent holder shall prepare and maintain a stormwater management plan that documents how the site is to be managed to minimise the contaminants that become entrained in the stormwater. This plan shall be followed at all times, shall be certified by the Chief Executive, Taranaki Regional Council, and shall include but not necessarily be limited to:
 - a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor system.

A Stormwater Management Plan template is available in the Environment section of the Taranaki Regional Council's web site www.trc.govt.nz.
10. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the materials used or stored on site that could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to consents@trc.govt.nz.
11. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:
 - a) during the month of June 2017 and/or June 2020 and/or June 2023; and
 - b) within 3 months of receiving a notification under special condition 10 above.

for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 12 February 2014

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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 Paraita Road, Bell Block, New Plymouth

Legal Description: Lots 3 & 4 DP 11072 Blk II Paritutu SD

Consent 4038-6

General conditions

- a) That on receipt of a requirement from the Chief Executive, Taranaki Regional Council (hereinafter the Chief Executive), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) That the consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment.
2. No alteration shall be made to plant equipment or processes which may substantially alter the nature, quantity or likelihood of discharges to atmosphere without prior consultation with the Chief Executive, Taranaki Regional Council.
3. Within three months of the granting of this consent the consent holder shall prepare and maintain to the satisfaction of the Chief Executive, Taranaki Regional Council a management plan addressing the measures adopted to prevent an accumulation of dust within the stormwater catchment as a result of normal operations and emission incidents.
4. The discharge concentration of dust from any point source shall be less than 125 mg/m³ normal temperature and pressure (NTP).
5. The dust deposition rate beyond the property boundary arising from the discharge shall be less than 4.0 g/m²/30 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/m³ (measured under ambient conditions) beyond the boundary of the site.
7. The consent holder shall keep, and make available to the Chief Executive, Taranaki Regional Council, upon request, a record of the time, duration and cause of all dust or smoke emissions incidents having actual or potential off-site impacts.
8. As far as is practicable yard areas of the site shall be cleared of accumulations of dust.

Consent 4038-6

9. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2008 and/or June 2014, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 23 November 2001

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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 Paraita 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.

Consent 3470-4.0

5. Before 28 February 2014, the consent holder shall prepare and submit to the Council an accurate stormwater network analysis for the site. The analysis shall be prepared by a suitably qualified person. The stormwater network analysis shall include but not necessarily be limited to:
 - a) confirmation of the flow paths for the stormwater from the various stormwater ingress points, to the outlet points, under the different potential rainfall intensities;
 - b) the potential for deposition of solids within the stormwater system given the competing flow paths; and
 - c) the effect this may have on the preferential stormwater flow paths and stormwater quality.
6. The consent holder shall maintain a contingency plan that details measures and procedures to be undertaken to prevent spillage or any discharge of contaminants not authorised by this consent. The contingency plan shall be followed in the event of a spill or unauthorised discharge and shall be certified by the Chief Executive, Taranaki Regional Council as being adequate to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.
7. The consent holder shall maintain a stormwater management plan that documents how the site is to be managed to minimise the contaminants that become entrained in the stormwater. This plan shall be followed at all times, shall be certified by the Chief Executive, Taranaki Regional Council, and shall include but not necessarily be limited to:
 - a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor system.

A Stormwater Management Plan template is available in the Environment section of the Taranaki Regional Council's web site www.trc.govt.nz.

8. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the materials used or stored on site that could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to consents@trc.govt.nz.

Consent 3470-4.0

9. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:
- a) during the month of June 2017 and/or June 2020 and/or June 2023;
 - b) within 3 months of providing the information required by special condition 5 above; and
 - c) within 3 months of receiving a notification under special condition 8 above.

for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 23 December 2013

For and on behalf of
Taranaki Regional Council

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 Paraitē 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;

Consent 4026-3.0

- g. A description of monitoring and maintenance procedures for managing the odour mitigation measures including record keeping of control parameters and maintenance checks; and
 - h. Details of staff training proposed to enable staff to appropriately manage the odour mitigation measures.
7. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2020 and/or June 2026, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 16 June 2014

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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 Paraita 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.

Consent 5494-2.0

7. The consent holder shall maintain and regularly update a 'Burial Management Plan' that has been approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity. The plan shall detail how the burial will be managed to achieve compliance with the conditions of this consent and shall include as a minimum:
 - a. Circumstances when the consent may be exercised,
 - b. Procedure for advising the CETRC to determine compliance with condition 1,
 - c. What information will be provided to the CETRC in order for him/her to determine compliance with condition 1,
 - d. The identification of key personnel responsible for managing and implementing the emergency burial;
 - e. The design of the burial pits; and
 - f. The area in which the burial pits can be located.
 - g. The location of pits in which material has been disposed of.
 - h. On-going management of the burial areas.

Any changes to the plan shall not take effect until they have been approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity.

8. This consent shall lapse on 01 June 2032, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
9. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2020 and/or June 2026, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 24 October 2014

For and on behalf of
Taranaki Regional Council



A D McLay
Director - Resource Management

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 Paraita 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*

Consent 6357-1.2

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. The exercise of this consent shall be undertaken in general accordance with the documentation submitted in support of application 2939 and shall ensure the efficient and effective use of water. In the case of any contradiction between the documentation submitted in support of application 2939 and the conditions of this consent, the conditions of this consent shall prevail.
2. The volume of groundwater abstracted shall not exceed 3000 cubic metres per day at a rate not exceeding 35 litres per second.
3. The abstraction shall be managed so that the water level in the bore does not fall below 35 metres below ground level at any time.
4. The consent holder shall maintain a record of the abstraction including date, pumping hours and daily volume abstracted and make these records available to the Chief Executive, Taranaki Regional Council, no later than 31 July of each year, or earlier upon request.
5. The consent holder shall install and maintain a water meter and on the pump system, approved by the Chief Executive, Taranaki Regional Council, for the purposes of recording the abstraction.
6. This consent shall be subject to monitoring by the Taranaki Regional Council and the consent holder shall meet all reasonable costs associated with the monitoring.
7. This consent shall lapse on 20 May 2020, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

Consent 6357-1.2

8. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2008 and/or June 2014 and/or June 2020 and/or June 2026 and/or June 2032, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 17 April 2015

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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 30 July 2012
(Review):

Review Completed 30 July 2012 (Granted: 30 March 2009)
Date:

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 Paraitē 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 m², for discharge in accordance with the special conditions of this permit. The consent holder shall regularly inspect and maintain the wetland to ensure that it provide the necessary stormwater treatment at all times.
4. Any above ground hazardous substances storage areas shall be bunded with drainage to sumps, or other appropriate recovery systems, and not directly to the stormwater catchment.
5. Constituents of the discharge from the wetland shall meet the standards shown in the following table.

<u>Constituent</u>	<u>Standard</u>
Unionised ammonia	Concentration not greater than 0.025 gm ⁻³
BOD	Concentration not greater than 15gm ⁻³
Oil and grease	Concentration not greater than 15 gm ⁻³
pH range	Within the range 6-9
Suspended solids	Concentration not greater than 100 gm ⁻³

This condition shall apply at the point at which the discharge exits the wetland, at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

6. The discharge, from the point at which the flow from the wetland enters the Mangati Stream, shall not, either by itself or in combination with other discharges, give rise to any or all of the following effects in the receiving water:
 - a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - b) any conspicuous change in the colour or visual clarity;
 - c) any emission of objectionable odour;
 - d) the rendering of fresh water unsuitable for consumption by farm animals;
 - e) any significant adverse effects on aquatic life.
7. The discharge, either by itself or in combination with other discharges shall not cause the concentration of filtered carbonaceous 5 day BOD to exceed 2 gm^{-3} in the Mangati Stream.
8. The wetland shall be maintained to a standard that ensures maximum effluent treatment, to the satisfaction of the Chief Executive, Taranaki Regional Council.
9. The consent holder shall complete all fencing and riparian planting in accordance with Riparian Management Plan [RMP450] before 31 December 2010.
10. The consent holder shall maintain a contingency plan. The contingency plan shall be adhered to in the event of a spill or emergency and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council, detail measures and procedures to be undertaken to prevent spillage or accidental discharge of contaminants not authorised by this consent and measures to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.
11. The consent holder shall maintain a stormwater management plan. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:
 - a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor system.
12. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the chemicals used or stored on site, which could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable if the consent holder does not have access to email.

Consent 7389-1

13. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:
- a) during the month of June 2012 and/or June 2014 and/or June 2020; and/or
 - b) within 3 months of receiving a notification under special condition 12 above;

for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 30 July 2012

For and on behalf of
Taranaki Regional Council

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 Freight 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 Paraita 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.

Consent 6952-1

8. The discharge shall not give rise to any of the following effects in the receiving waters:
 - a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - b) any conspicuous change in the colour or visual clarity;
 - c) any emission of objectionable odour;
 - d) any significant adverse effects on aquatic life.
9. The discharge onto and into land shall occur a minimum of 30 metres from any surface water body. Discharge shall be onto and into land and there shall be no direct discharge to surface water.
10. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
11. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2008 and/or June 2014, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 11 December 2014

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: TIL Freight 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 Paraita 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.

Consent 7578-1

7. The consent holder shall maintain a stormwater management plan, which shall be reviewed at not more than 2 yearly intervals. This plan shall be adhered to at all times and shall, to the satisfaction of the Chief Executive, Taranaki Regional Council document how the site is to be managed in order to minimise the contaminants that become entrained in the stormwater. The plan shall include but not necessarily be limited to:
- a) the loading and unloading of materials;
 - b) maintenance of conveyance systems;
 - c) general housekeeping; and
 - d) management of the interceptor system.

A Stormwater Management Plan template is available in the Environment section of the Taranaki Regional Council's web site www.trc.govt.nz.

8. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the chemicals used or stored on site, that could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable if the consent holder does not have access to email.
9. This consent shall lapse on 30 June 2015, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
10. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:
- a) during the month of June 2012 and/or June 2014 and/or June 2020; and/or
 - b) within 3 months of receiving a notification under special condition 8 above;

for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 11 December 2014

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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*

Consent 7147-2.0

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.

Consent 7147-2.0

10. The cremator shall be interlocked so as to prevent the introduction of a coffin to the primary chamber unless the temperature in the secondary combustion zone exceeds 750°C.
11. The minimum stack height for the discharge of exhaust emissions from the cremator shall be eight metres above ground level.
12. The cremator shall be operated so that the temperature within or at the outlet from the secondary chamber exceeds 750°C at all times that a cremation is taking place (i.e. from the moment of introduction of a casket into the primary chamber). If the temperature within or at the outlet from the secondary chamber falls below 750°C while a cremation is taking place, the operator shall take all practicable steps or the controls shall be automatically set so as to return and maintain the temperature to or above 750°C.
13. The cremator shall maintain both a primary combustion and a secondary combustion zone. The secondary chamber shall be sized so as to have a minimum residence time of 1.57 seconds at 750°C. The consent holder shall provide certified 'as-built' drawings and calculations demonstrating compliance with this condition to the Chief Executive, Taranaki Regional Council, prior to exercise of the consent.
14. In any one cremation cycle not more than two one-minute averages of the opacity readings shall exceed 20% obscuration or Ringelmann Scale 1.
15. The concentration of carbon monoxide at the outlet from the secondary combustion chamber shall not exceed 100 mg/m³ (expressed at reference conditions 0°C and 101.3 kPa).
16. The consent holder shall continuously record the opacity in the exhaust gases at the outlet of the secondary chamber or exhaust ducting.
17. The consent holder shall continuously record the temperature of gases within or at the outlet of the secondary chamber.
18. The consent holder shall maintain the schedule of maintenance and calibration of the cremator including but not limited to its controlling, recording, and monitoring equipment and systems.
19. The consent holder shall control all emissions of carbon monoxide, nitrogen dioxide, fine particles (PM10) and sulphur dioxide to the atmosphere from the site, in order that the maximum ground level concentration of any of these contaminants arising from the exercise of this consent measured under ambient conditions does not exceed the relevant ambient air quality standard as set out in the Resource Management (National Environmental Standards for Air Quality Regulations, 2004) at or beyond the boundary of the property.
20. The consent holder shall control all emissions to the atmosphere from the site of contaminants other than those expressly provided for under special condition 19, in order that they do not individually or in combination with other contaminants cause a hazardous, noxious, dangerous, offensive or objectionable effect at or beyond the boundary of the property.

Consent 7147-2.0

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.

Consent 7147-2.0

25. The Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 2020 and/or June 2026 for the purpose of:
- a) adding, amending or deleting any limit on discharge or ambient concentrations of any contaminant or contaminants; and/or
 - 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 DS066
Doc No 1891869
Date 6 July 2017

Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, March 2017

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 1 March 2017 survey was undertaken as the first of two surveys scheduled for the 2016-2017 monitoring year. Usually a spring and summer survey are completed but due to persistent wet weather a spring survey was not able to be undertaken and therefore an autumn survey (April-May 2017) will be scheduled instead. 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 1 March 2017. '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 No	Site code	Grid reference	Location
A	MGT000488	E1700095 N5678043	Mangati Stream, 20 m upstream of swampy tributary
A2	MGT000490	E1700062 N5678084	Mangati Stream, 100 m downstream of swampy tributary
A1	MGT000491	E1700018 N5678166	Mangati Stream, 50 m upstream of De Havilland Drive
A3	MGT000497	E1699775 N5678573	Mangati Stream, 10 m above Connett Road
B	MGT000500	E1699596 N5678691	Mangati Stream above the industrial tributary, below wetland
D2	MGT000512	E1699513 N5678787	Mangati Stream, 20 m downstream SH3
E	MGT000520	E1699385 N5679103	Mangati Stream, 400 m below Devon Road
F	MGT000550	E1699215 N5680409	Mangati Stream, 50 m above Bell Block beach

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, 2015) from Stark's classification (Stark, 1985, Boothroyd and Stark, 2000, and Stark and Maxted, 2007)

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.

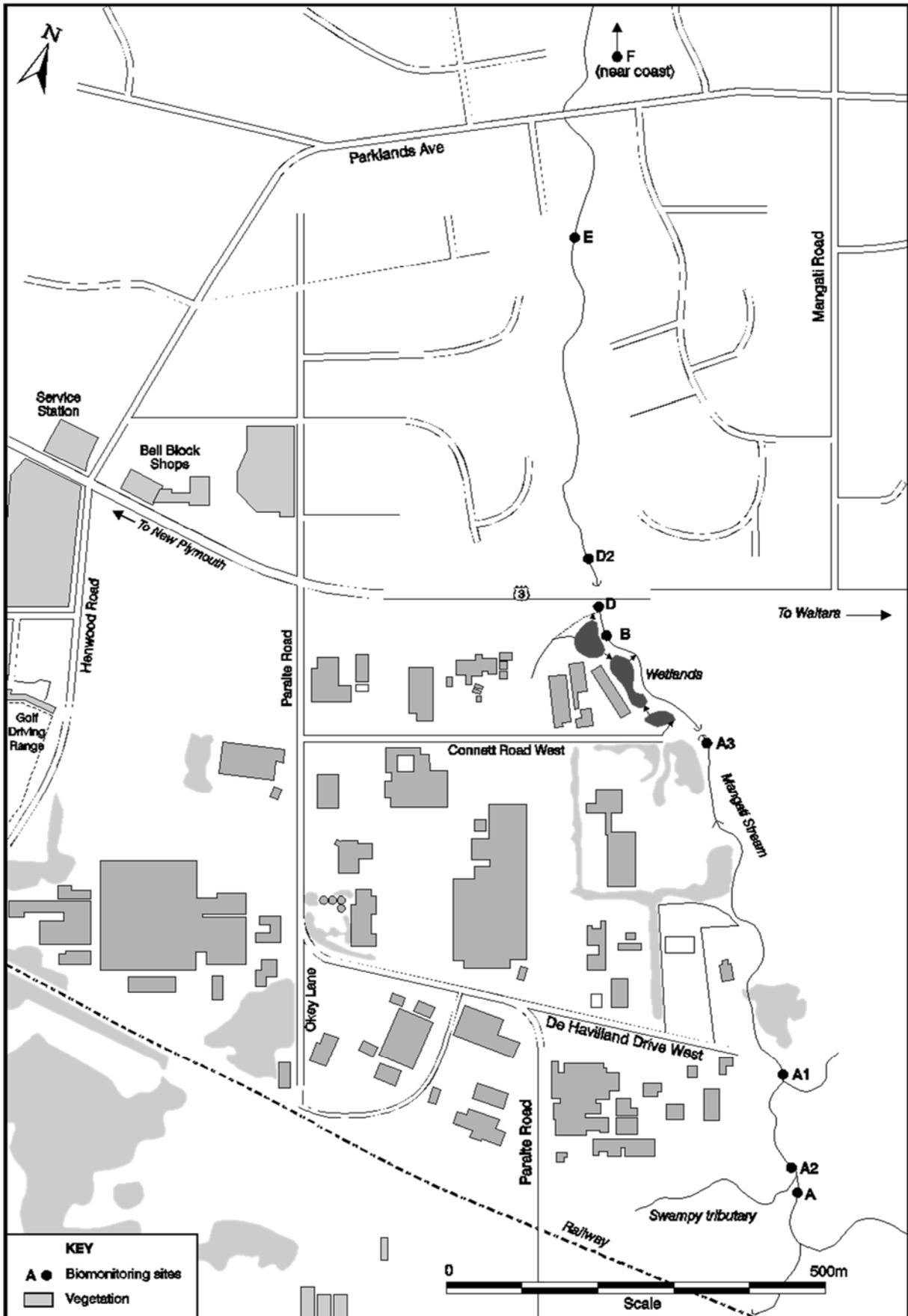


Figure 1 Sampling sites in the Mangati Stream catchment

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 half median flow), ten days after a fresh in excess of 3 times median flow and 28 days after a fresh in excess of 7 times median flow (flow gauge at Mangaoraka Stream at Corbett Rd). The survey followed a period with only two significant river freshes recorded over the preceding month. The water temperatures during the survey were in the range 16.0-17.2 °C which was approximately four degrees (°C) colder than the preceding summer survey. Water speed was slow for the upper sites (site A-B), steady for sites D2-E and swift for site F. The water was uncoloured and clear for the upper control site (A), brown and cloudy below the Tegel discharge point (sites A2 and A1), uncoloured and cloudy for site A3 and B, grey and cloudy below the stormwater discharge (D2), uncoloured and cloudy at site E and grey and cloudy for site F.

The substrate type at each site is presented in Table 5. For site B in the previous survey (February 2016) boulder was a dominant substrate type but in the current survey the substrate was recorded as 100% silt, which indicates significant silt deposition has occurred between the two surveys. Significant silt deposition was also noted in the previous survey with large increases of silt at several sites (DS048).

Table 5 Substrate types at each site

Site	Silt	Sand	Fine gravel	Coarse gravel	Cobble	Boulder	Bedrock	Hard clay	Wood/ root	Concrete/ gabion
A	100									
A2	100									
A1	100									
A3	100									
B	100									
D2	10	25	50	5	10					
E	10	5	15	30	40					
F	5	5	10	5	35					40

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	None	Bed	None
A2	None	None	None	None	None	Edge	None
A1	None	Patchy	None	None	None	Edge	None
A3	None	None	None	None	None	Edge	None
B	Patchy	Patchy	None	None	None	Edge	None
D2	Slippery	Patchy	None	Patchy	None	None	None
E	Patchy	Patchy	None	None	None	None	Yes
F	Slippery	Patchy	None	None	None	Bed	Yes

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 cloudy during the current survey except for the control site and silt was evident at all sites. As noted above, siltation appears to be increasing. 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, urban 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 2016)]. 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, urban or industrial 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 2016)]. 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 1 March 2017 survey

Site No.	N	No of taxa			MCI value			SQMCI _s value		
		Median	Range	Current survey	Median	Range	Current survey	Median	Range	Current survey
A	45	16	9-29	17	78	56-91	73	3.6	2.2-4.7	3.2
A2	43	16	10-29	22	74	57-92	75	3.6	1.8-4.7	1.6
A1	45	16	7-23	14	73	47-89	63	3.5	1.7-4.7	1.5
A3	43	16	8-23	15	69	52-81	64	2.6	1.6-4.6	1.6
B	51	14	3-29	17	68	50-86	62	2.5	1.1-4.5	1.9
D2	27	11	5-18	14	68	40-78	61	2.5	1.1-3.5	2.6
E	49	10	3-22	13	65	44-79	72	2.5	1.1-3.9	2.5
F	43	11	2-22	14	67	30-79	64	2.4	1.2-4.1	3.7

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

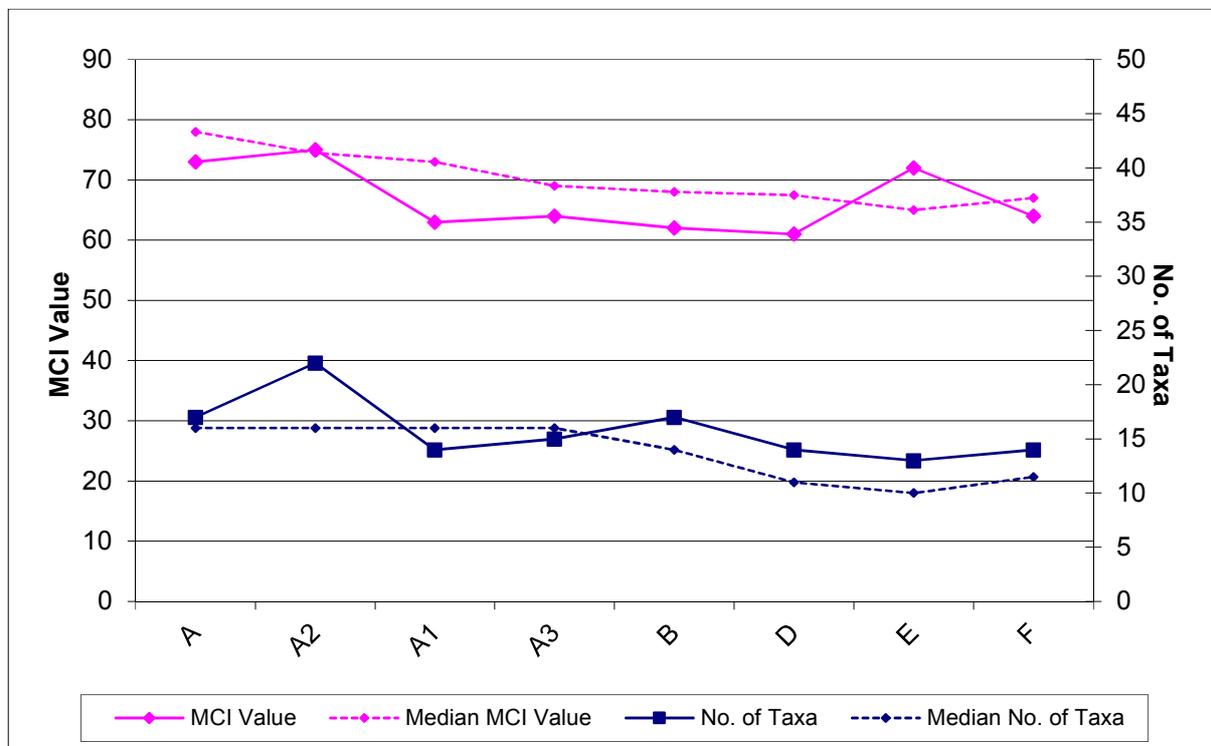


Figure 2 Numbers of taxa and MCI values recorded at sites in the Mangati Stream by the current survey

Table 8 Macroinvertebrate fauna of the Mangati Stream sampled on 1 March 2017

Taxa List	Site Number Site Code Sample Number	MCI score	A	A2	A1	A3	B	D2	E	F
			MGT000488	MGT000490	MGT000491	MGT000497	MGT000500	MGT000512	MGT000520	MGT000550
			FWB17144	FWB17145	FWB17146	FWB17147	FWB17148	FWB17149	FWB17150	FWB17151
COELENTERATA	Coelenterata	3	-	-	-	-	R	C	R	-
PLATYHELMINTHES (FLATWORMS)	<i>Cura</i>	3	-	-	R	R	R	-	-	-
NEMERTEA	Nemertea	3	C	C	C	C	C	A	C	-
NEMATODA	Nematoda	3	-	R	-	-	-	-	-	-
ANNELIDA (WORMS)	Oligochaeta	1	VA	XA	VA	XA	VA	VA	XA	A
	Lumbricidae	5	-	R	-	-	-	-	C	-
HIRUDINEA (LEECHES)	Hirudinea	3	R	R	R	R	R	R	-	-
MOLLUSCA	<i>Physa</i>	3	R	C	-	R	R	-	-	R
	<i>Potamopyrgus</i>	4	XA	VA	A	VA	A	VA	XA	XA
	Sphaeriidae	3	R	R	R	R	R	-	-	-
CRUSTACEA	Ostracoda	1	XA	VA	VA	A	A	C	-	C
	Isopoda	5	R	-	-	R	C	-	-	R
	<i>Paracalliope</i>	5	XA	A	R	-	-	R	-	-
	Talitridae	5	R	-	-	R	R	-	-	-
	<i>Paratya</i>	3	-	-	-	-	-	-	-	A
EPHEMEROPTERA (MAYFLIES)	<i>Austroclima</i>	7	C	R	-	-	-	-	-	-
ODONATA (DRAGONFLIES)	<i>Xanthocnemis</i>	4	-	R	-	-	-	-	-	-
COLEOPTERA (BEETLES)	Dytiscidae	5	-	-	-	-	R	-	-	-
TRICHOPTERA (CADDISFLIES)	<i>Hydrobiosis</i>	5	-	R	-	-	-	-	-	-
	<i>Psilochorema</i>	6	-	R	-	-	-	-	-	-
	<i>Oxyethira</i>	2	-	-	-	-	-	R	C	C
	<i>Tripletides</i>	5	R	R	R	-	-	R	C	A
DIPTERA (TRUE FLIES)	<i>Aphrophila</i>	5	-	-	-	-	-	-	R	C
	Eriopterini	5	-	R	-	-	-	-	-	-
	<i>Limonia</i>	6	-	-	-	-	-	-	R	-
	<i>Zelandotipula</i>	6	-	R	-	-	-	-	-	-
	<i>Chironomus</i>	1	-	C	-	-	R	-	-	-
	<i>Corynoneura</i>	3	-	-	R	-	-	-	-	-
	Orthoclaadiinae	2	A	C	A	A	C	A	A	C
	<i>Polypedilum</i>	3	VA	C	C	C	C	R	-	R
	<i>Paradixa</i>	4	R	-	-	R	-	-	-	-
	Empididae	3	-	-	-	-	-	C	C	R
	<i>Austrosimulium</i>	3	A	C	C	A	A	A	C	VA
ACARINA (MITES)	Acarina	5	C	R	C	C	R	R	R	C
	No of taxa		17	22	14	15	17	14	13	14
	MCI		73	75	63	64	62	61	72	64
	SQMCI		3.2	1.6	1.5	1.6	1.9	2.6	2.5	3.7
	EPT (taxa)		2	4	1	0	0	1	1	1
	%EPT (taxa)		12	18	7	0	0	7	8	7
'Tolerant' taxa	'Moderately sensitive' taxa	'Highly sensitive' taxa								

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

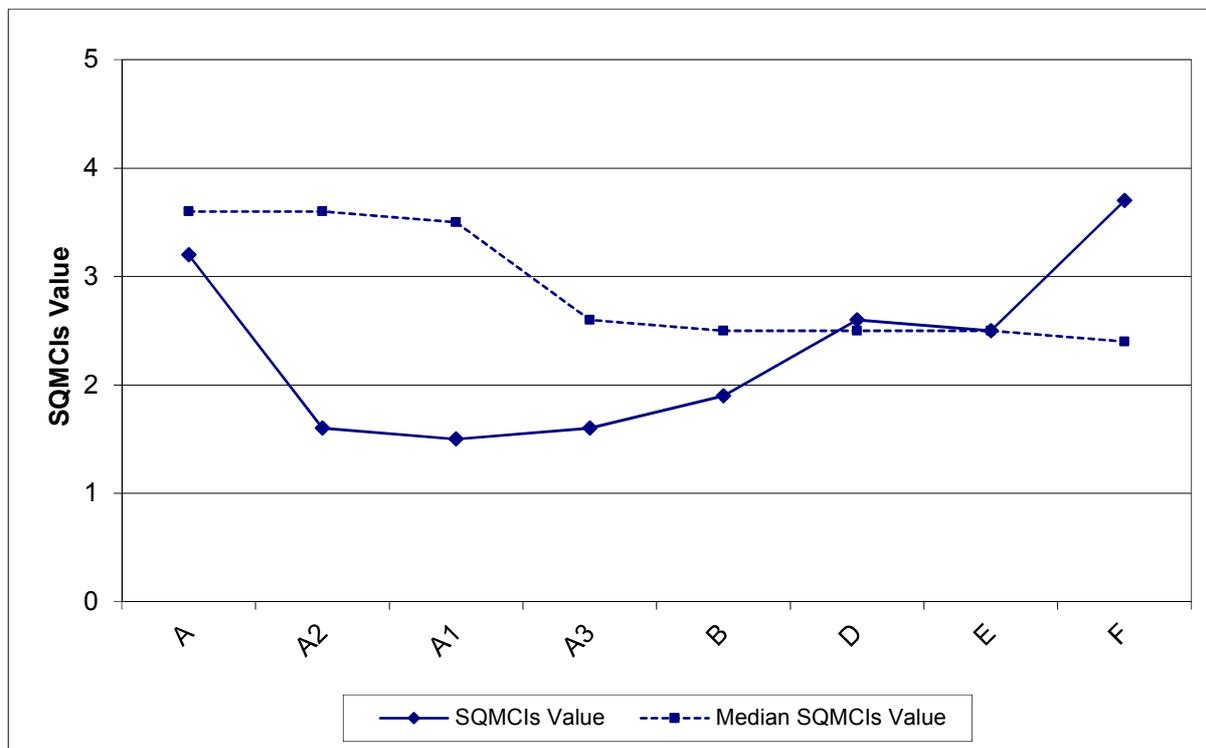


Figure 3 SQMCI₅ values recorded at sites in the Mangati Stream by the current survey

Site A (MGT000488)

A moderate macroinvertebrate community richness of 17 taxa was found at site A ('control' site) at the time of the survey (Table 7). This was one taxon higher than the historical median for this site and five taxa higher than the previous survey on February 2016 (12 taxa) (Table 7, Figure 4).

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 78 units. The MCI score was also not significantly different (Stark, 1998) to the preceding survey (72 units).

The SQMCI₅ score of 3.2 units was not significantly different (Stark, 1998) to the median SQMCI₅ score of 3.6 units (Stark, 1998) but was significantly lower than the previous survey (4.7 units) which was equal to the highest recorded value for this site (Table 7).

The community was characterised by six 'tolerant' taxa [oligochaete worms, snails (*Potamopyrgus*), seed shrimp (Ostracoda), midges (Orthoclaadiinae and *Polypedilum*) and sandflies (*Autrosimulium*)], and a 'moderately sensitive' taxon [amphipod (*Paracalliope*)] (Table 8).

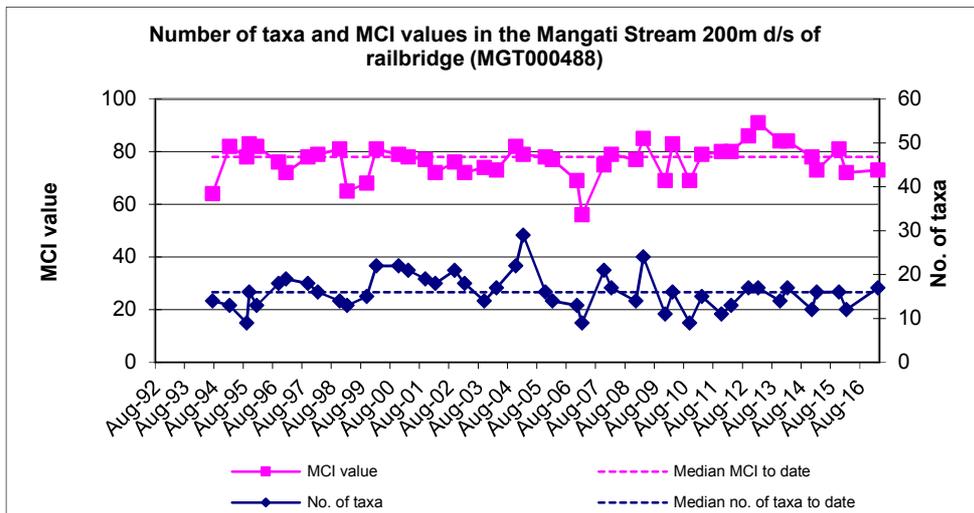


Figure 4 Numbers of taxa and MCI values recorded at site A to date

Site A2 (MGT000490)

A moderate macroinvertebrate community richness of 22 taxa was found at site A2, downstream of a discharge from Tegal Poultry (Table 7). This was higher than the historical median (16 taxa) for this site and to the previous survey (17 taxa) (Table 7, Figure 5).

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 74 units. The MCI score was significantly higher (Stark, 1998) than the preceding survey (64 units).

The SQMCI_s score of 1.6 units was significantly lower (Stark, 1998) than the median MCI score of 3.6 units (Stark, 1998) but not significantly different to the previous survey (2.1 units) (Table 7).

The community was characterised by three 'tolerant' taxa [oligochaete worms, snails (*Potamopyrgus*), seed shrimp (Ostracoda)] and a 'moderately sensitive' taxon [amphipod (*Paracalliope*)] (Table 8).

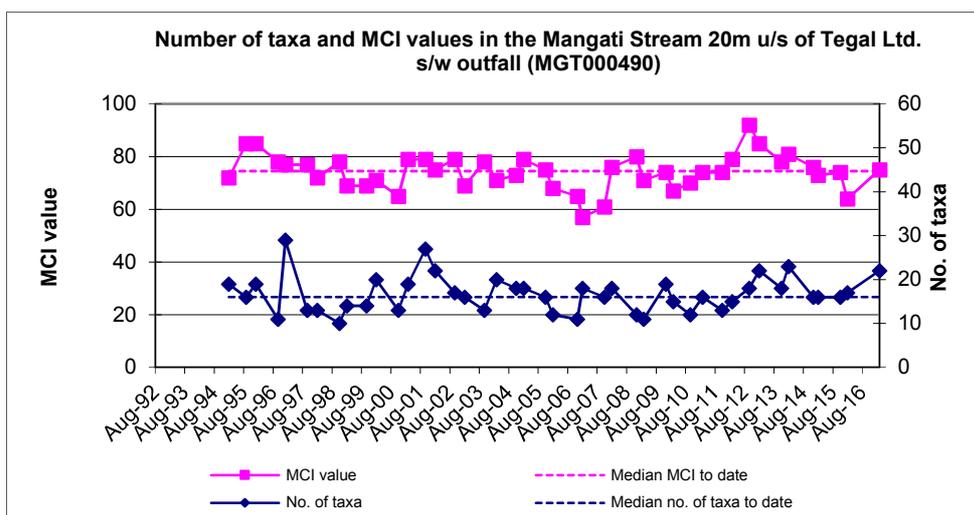


Figure 5 Numbers of taxa and MCI values recorded at site A2 to date

Site A1 (MGT000491)

A moderate macroinvertebrate community richness of 14 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 very similar to the previous survey (13 taxa) (Table 7, Figure 6).

The MCI score of 63 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 not significantly higher (Stark, 1998) than the preceding survey (62 units).

The SQMCI_s score of 1.6 units was significantly lower (Stark, 1998) than the median MCI score of 3.5 units (Stark, 1998) but not significantly different to the previous survey (2.0 units) (Table 7).

The community was characterised by four 'tolerant' taxa [oligochaete worms, snails (*Potamopyrgus*), seed shrimp (Ostracoda) and midge (Orthocladiinae)] (Table 8).

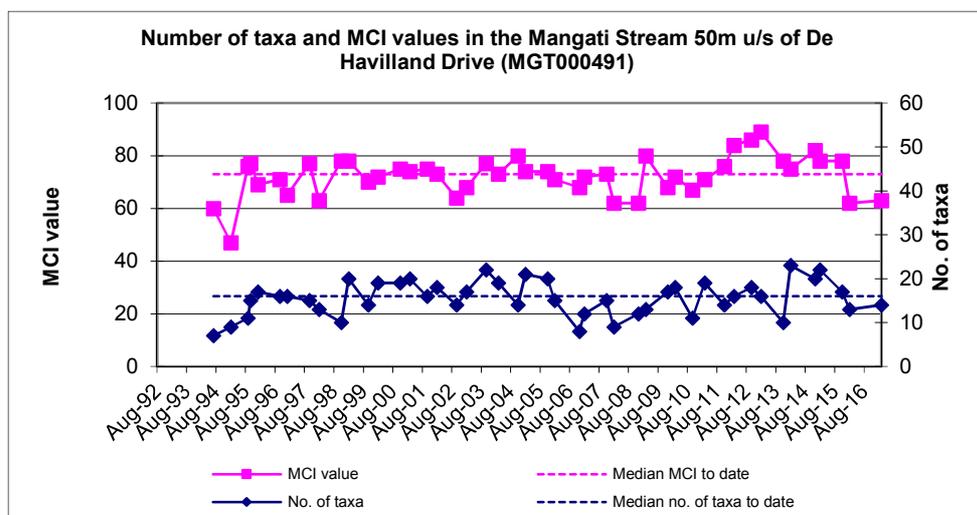


Figure 6 Numbers of taxa and MCI values recorded at site A1 to date

Site A3 (MGT000497)

A moderate macroinvertebrate community richness of 15 taxa was found at site A3 (Table 7). This was lower than the historical median for this site (17 taxa) but slightly higher than the previous survey (14 taxa) (Table 7, Figure 7).

The MCI score of 64 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 (59 units).

The SQMCI_s score of 1.6 units was significantly lower (Stark, 1998) than the median MCI score of 2.6 units) and to the preceding survey (2.5 units) (Table 7).

The community was characterised by five 'tolerant' taxa [oligochaete worms, snails (*Potamopyrgus*), seed shrimp (Ostracoda), midge (Orthocladiinae) and sandflies (*Austrosimulium*)] (Table 8).

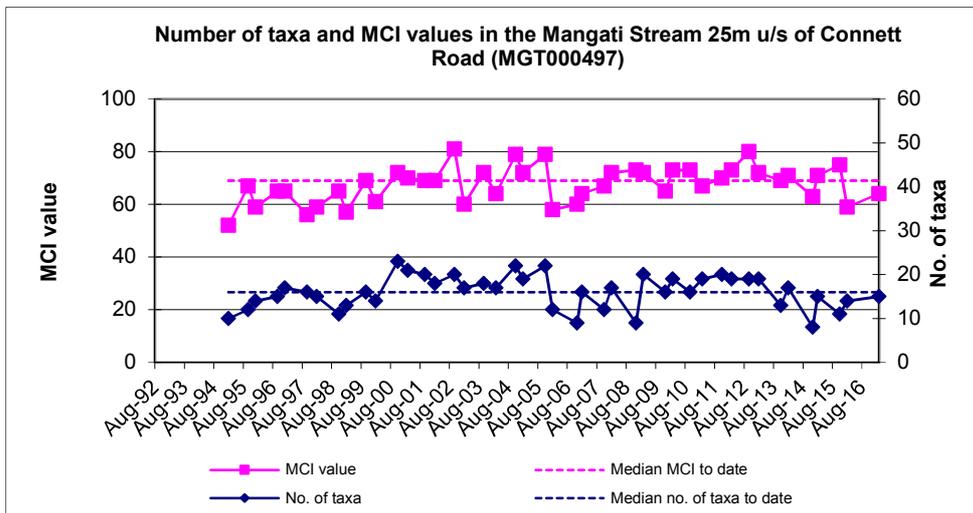


Figure 7 Numbers of taxa and MCI values recorded at site A3 to date

Site B (MGT000500)

A moderate macroinvertebrate community richness of 17 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) but lower than the previous survey (21 taxa) (Table 7, Figure 8).

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 68 units. The MCI score was also not significantly different (Stark, 1998) to the preceding survey (61 units).

The SQMCI_s score of 1.9 units was not significantly different (Stark, 1998) to the median MCI score of 2.5 units and the previous survey (2.5 units) (Table 7).

The community was characterised by four 'tolerant' taxa [oligochaete worms, snails (*Potamopyrgus*), seed shrimp (Ostracoda), and sandflies (*Austrosimulium*)] (Table 8).

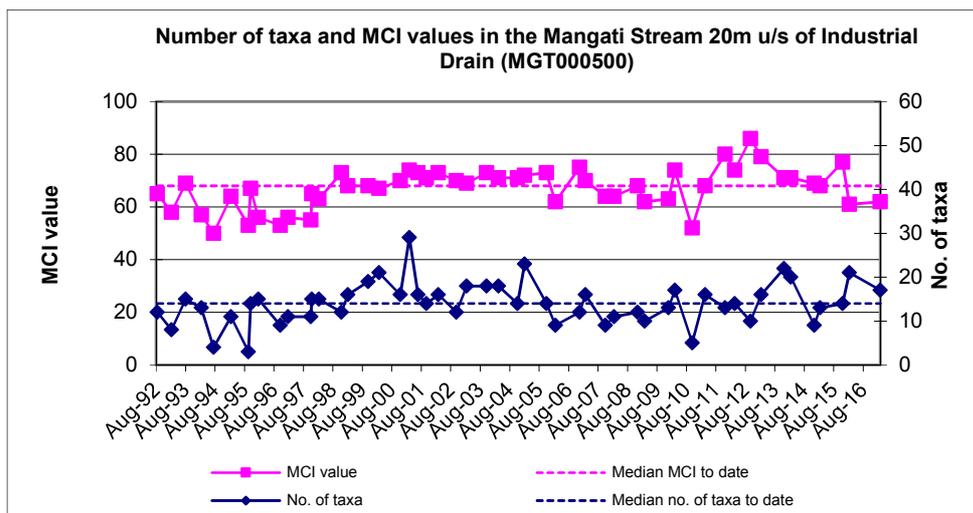


Figure 8 Numbers of taxa and MCI values recorded at site B to date

Site D2 (MGT000512)

A moderately low macroinvertebrate community richness of 14 taxa was found at site D2, below the industrial drain and wetlands high flow level outlet from pond 4 (Table 7). This was higher than the historical median for this site (11 taxa) and the previous survey (12 taxa) (Table 7, Figure 9).

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 70 units. The MCI score was also not significantly lower (Stark, 1998) than the preceding survey (62 units).

The SQMCI_s score of 2.6 units was not significantly different (Stark, 1998) to the median MCI score of 2.5 units and was the same as the previous survey (2.6 units) (Table 7).

The community was characterised by five 'tolerant' taxa [nematode worms, oligochaete worms, snails (*Potamopyrgus*), midge (Orthocladiinae) and sandflies (*Austrosimulium*)] (Table 8).

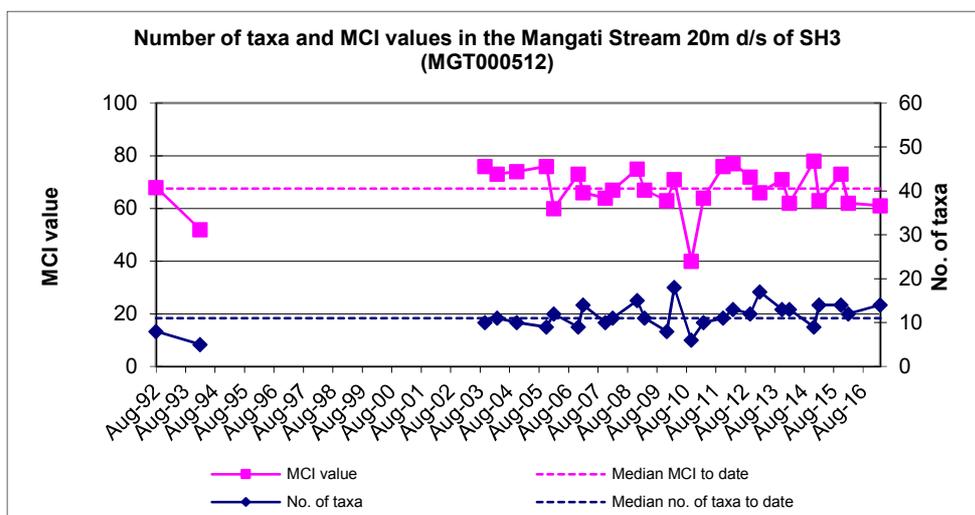


Figure 9 Numbers of taxa and MCI values recorded at site D2 to date

Site E (MGT000520)

A moderately low macroinvertebrate community richness of 13 was found at site E (Table 7). This was higher than the historical median for this site (10 taxa) but slightly lower than the previous survey (14 taxa) (Table 7, Figure 10).

The MCI score of 72 units indicated a community of 'poor' biological health which was not significantly different (Stark, 1998) to the median MCI score of 65 units. The MCI score was also not significantly different (Stark, 1998) to the preceding survey (79 units).

The SQMCI_s score of 2.5 units was the same as the median MCI score of 2.5 units and not significantly different (Stark, 1998) to the previous survey (2.6 units) (Table 7).

The community was characterised by three 'tolerant' taxa [oligochaete worms, snails (*Potamopyrgus*), and midge (Orthocladiinae)] (Table 8).

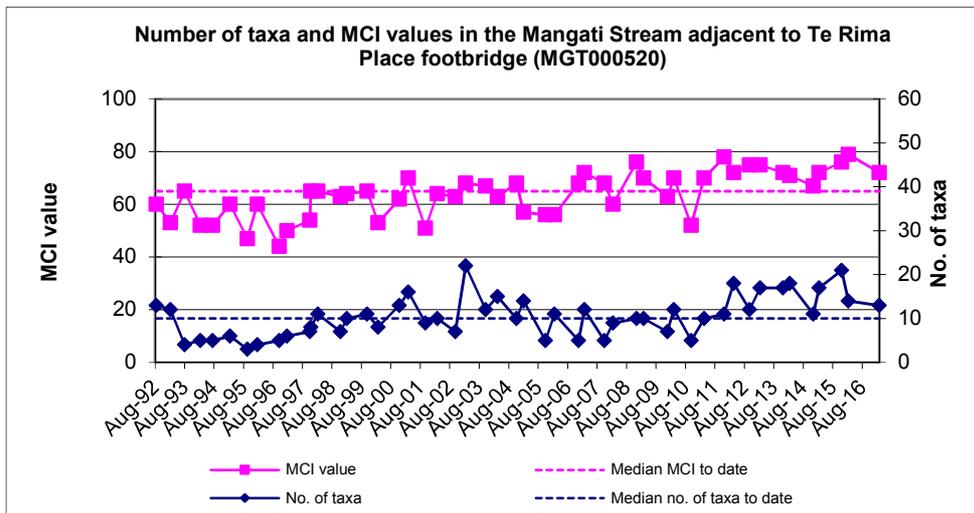


Figure 10 Numbers of taxa and MCI values recorded at site E to date

Site F (MGT000550)

A moderately low macroinvertebrate community richness of 14 was found at site F (Table 7). This was higher than the historical median for this site (11 taxa) and slightly lower than the previous survey (16 taxa) (Table 7, Figure 11).

The MCI score of 64 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 (70 units).

The SQMCI_s score of 3.7 units was significantly higher (Stark, 1998) than the median score of 2.4 units and not significantly different (Stark, 1998) to the previous survey (3.9 units) (Table 7).

The community was characterised by four 'tolerant' taxa [oligochaete worms, snails (*Potamopyrgus*), shrimp (*Paratya*) and sandflies (*Austrosimulium*)] and one 'moderately sensitive' taxon [caddisfly (*Triplectides*)] (Table 8).

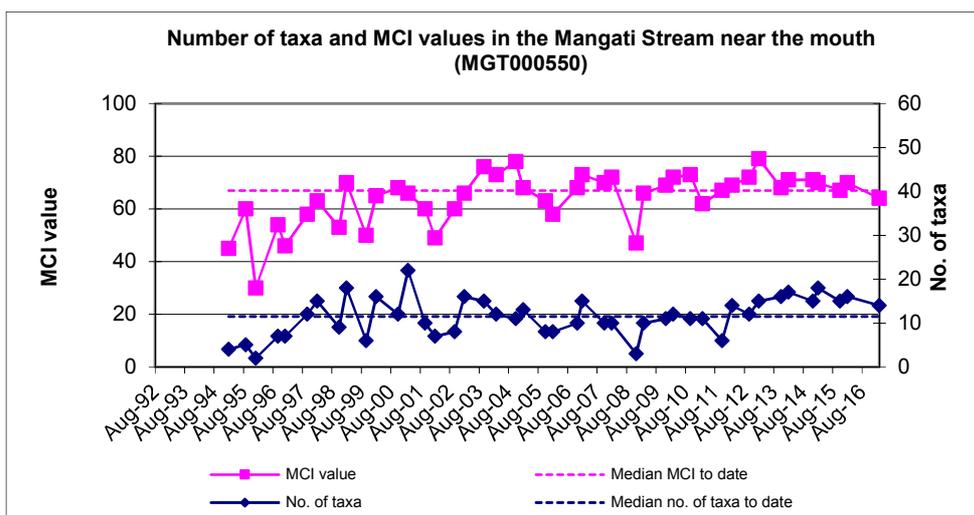


Figure 11 Numbers of taxa and MCI values recorded at site F to date

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 (13-17 taxa), except for site A2 which was had noticeably higher taxa richness (22 taxa). Taxa richnesses were generally slightly lower than the median number recorded for lowland coastal streams below 25m altitude (17 taxa) but there was no obvious evidence of any toxic discharges significantly lowering or limiting taxa richness at sites along the surveyed reach. Taxa richness is not necessarily correlated with water quality and mild nutrient enrichment can cause an increase in taxa richness.

During the 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 was 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 one taxon) than the median taxa richness for the site.

MCI scores among sites varied by 14 units (61-75) and indicated that the surveyed reach was in 'poor' health. MCI scores for all sites were not significantly different from historic median values indicating that the current survey results were typical for the Mangati Stream. However, sites B and D2 were significantly lower than the 'control' site score of 73 units and were 6-7 units below their respective median scores, and sites A1 and A3 were significantly lower than the second most upstream site (A2) suggesting that these sites were being adversely affected by poor water quality.

The SQMCI_s can be more sensitive to pollution compared with the MCI. SQMCI_s scores for all sites indicated 'poor' water quality (Stark and Maxted, 2007) and were generally consistent with MCI scores. However, the SQMCI_s scores indicated that there was a significant decrease in macroinvertebrate health below site A, instead of site A2, with sites A2-B, all having scores significantly lower than the 'control' site. Furthermore, sites A2, A1 and A3 all had SQMCI_s scores significantly below historic medians (Stark, 1998).

With regard to both MCI and SQMCI_s indices, the poor state of sites A2-D2 suggest discharges below the control site were having a negative affect on the macroinvertebrates present in the Mangati Stream. Discharges from Tegel Poultry below site A were likely to be a contributing factor, this is particularly apparent when SQMCI_s scores are examined as it appears after the initial impact, scores slowly recover downstream of the discharge point. However, discharges from De Havilland Drive and below the wetland area may also have been having a negative affect on the macroinvertebrate stream communities present. This deterioration in condition was also noted in the preceding survey on February 2016. The bottom two sites (sites E and F) were in slightly better condition suggesting a recovery.

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. amphipods (*Paracalliope*). The results of this survey in respect to community composition are largely congruent with past results though the 'moderately sensitive' amphipod (*Paracalliope*), was 'extremely abundant' at the 'control' site, dropping to 'abundant' at site A2, and then nearly disappeared below site A2. This indicated degradation in water quality downstream of site A. This is a similar result to the preceding survey. The 'tolerant' oligochaete worms and snail (*Potamopyrgus*) were still 'very abundant' to 'extremely abundant' at most sites.

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 '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 1 March 2017 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) SQMCI_s scores for sites A2 and A1 were significantly lower than historical medians. This was the same result as the preceding survey. MCI scores were non-significantly lower than the 'control' site, site A, but for the more sensitive SQMCI_s scores were significantly lower than site A. The lower than normal scores at sites A2 and A1 suggest that Tegel Poultry discharges were adversely affecting the health of the macroinvertebrate communities present in the Mangati Stream. Previous recent surveys have also noted concerns about Tegel Poultry discharges (DS047 and DS048).

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 also having a negative affect on the macroinvertebrate stream communities present there. However, discharges from Tegel Poultry may also have contributed to the lowered macroinvertebrate health.

At site E there was a significant increase in MCI score from the closest upstream site suggesting water quality had improved by the time it reached site E. MCI and SQMCI_s scores were not significantly different from median scores though the MCI score was seven units higher than the median.

At site F there was a non-significant decrease in the MCI score from site E but the SQMCI_s score was the highest recorded in the current survey. Furthermore, the SQMCI_s score was significant higher than the closest upstream site and also significantly higher than the historic median suggesting a further improvement in water quality.

Overall, the changes in community structures, MCI and SQMCI_s 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 appears to have largely recovered from the impact of discharges having macroinvertebrate indices non-significantly different from the 'control' site while Site F also showed some improvement. Overall, the results of the current survey indicate that macroinvertebrate health was '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.

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To Job Manager, Scott Cowperthwaite
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Report No DS078
Doc No 1905356
Date 27 July 2017

Biomonitoring of the Mangati Stream in relation to the Bell Block industrial area, May 2017

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 May 2017 survey was undertaken as the second of two surveys scheduled for the 2016-2017 monitoring year. Usually a spring and summer survey are completed but due to persistent wet weather a spring survey was not able to be undertaken and therefore this autumn survey was completed instead. 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 May 2017. 'Kick samples' were collected at sites A, A2, A1, B, D2, E and F a while a combination of the 'kick-sampling' and 'sweep-sample' techniques were used at sites A3. 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 No	Site code	Grid reference	Location
A	MGT000488	E1700095 N5678043	Mangati Stream, 20 m upstream of swampy tributary
A2	MGT000490	E1700062 N5678084	Mangati Stream, 100 m downstream of swampy tributary
A1	MGT000491	E1700018 N5678166	Mangati Stream, 50 m upstream of De Havilland Drive
A3	MGT000497	E1699775 N5678573	Mangati Stream, 10 m above Connett Road
B	MGT000500	E1699596 N5678691	Mangati Stream above the industrial tributary, below wetland
D2	MGT000512	E1699513 N5678787	Mangati Stream, 20 m downstream SH3
E	MGT000520	E1699385 N5679103	Mangati Stream, 400 m below Devon Road
F	MGT000550	E1699215 N5680409	Mangati Stream, 50 m above Bell Block beach

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, 2015) from Stark's classification (Stark, 1985, Boothroyd and Stark, 2000, and Stark and Maxted, 2007)

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.

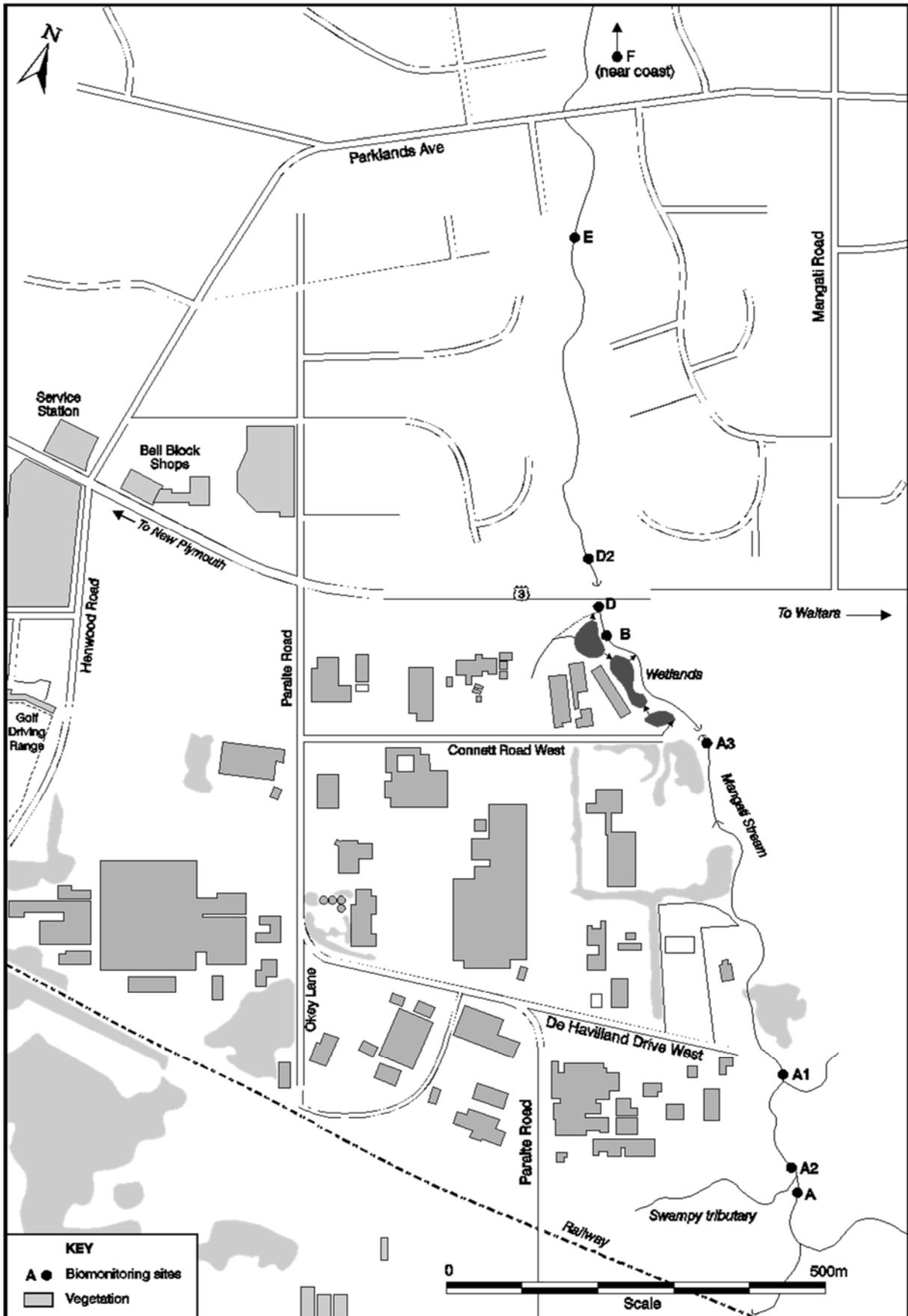


Figure 1 Sampling sites in the Mangati Stream catchment

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 autumn survey was performed moderate flow conditions (median flow), nine days after a fresh in excess of 3 times median flow and 10 days after a fresh in excess of 7 times median flow (flow gauge at Mangaoraka Stream at Corbett Rd). The survey followed a period with four significant river freshes recorded over the preceding month. The water temperatures during the survey were in the range 13.8-15.1 °C. Water speed was steady for the upper sites (site A-A3) and swift for sites B-F. The water was uncoloured and clear for all the sites.

The substrate type at each site is presented in Table 5. For site B for the survey on February 2016 boulder was a dominant substrate type but in the current and preceding survey the substrate was recorded as 100% silt, which indicates significant silt deposition has occurred. Significant silt deposition was also noted in the previous survey with large increases of silt at several sites (DS048).

Table 5 Substrate types at each site

Site	Silt	Sand	Fine gravel	Coarse gravel	Cobble	Boulder	Bedrock	Hard clay	Wood/ root	Concrete/ gabion
A	30	30						40		
A2								100		
A1	100									
A3	100									
B	5	5	10	30	45	5				
D2	10	5	30	25	30					
E	15	5	5	5	60	10				
F	10	10	5	5	40	10				40

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	None	Edge	Yes
A2	None	None	None	None	None	Edge	Yes
A1	None	Patchy	None	None	None	Edge	None
A3	None	None	None	None	None	Edge	None
B	Slippery	None	None	None	None	Edge	None
D2	None	None	None	None	None	None	Yes
E	Patchy	None	Patchy	None	None	None	None
F	Slippery	None	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 (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 cloudy during the current survey except for the control site and silt was evident at all sites. As noted above, siltation appears to be increasing. 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, urban 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 2016)]. 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, urban or industrial 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 2016)]. 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 10 May 2017 survey

Site No.	N	No of taxa			MCI value			SQMCI _s value		
		Median	Range	Current survey	Median	Range	Current survey	Median	Range	Current survey
A	45	16	9-29	12	78	56-91	67	3.6	2.2-4.7	4.7
A2	43	16	10-29	13	75	57-92	72	3.5	1.6-4.7	3.2
A1	45	16	7-23	14	73	47-89	71	3.5	1.5-4.7	3.7
A3	43	16	8-23	14	69	52-81	63	2.6	1.6-4.6	1.7
B	51	14	3-29	9	68	50-86	60	2.5	1.1-4.5	2.5
D2	27	11	5-18	18	68	40-78	73	2.5	1.1-3.5	1.6
E	49	10	3-22	11	65	44-79	64	2.5	1.1-3.9	2.1
F	43	12	2-22	14	67	30-79	71	2.5	1.2-4.1	3.6

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

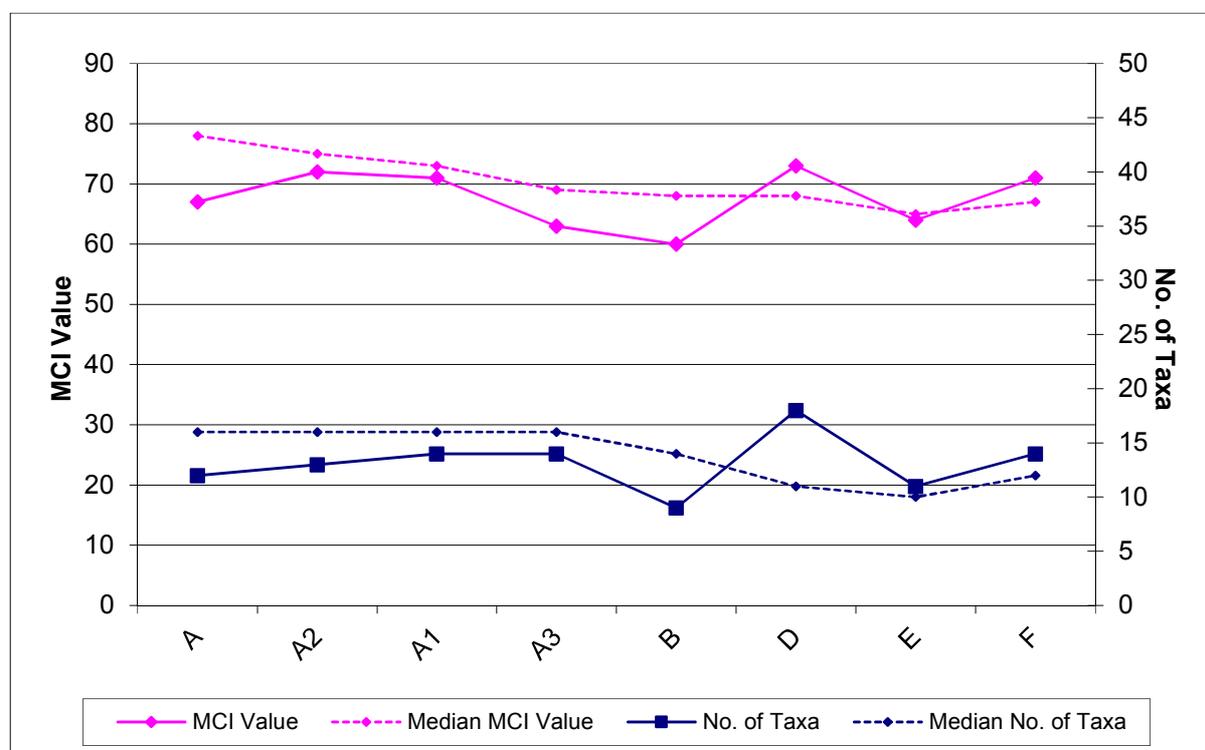


Figure 2 Numbers of taxa and MCI values recorded at sites in the Mangati Stream by the current survey

Table 8 Macroinvertebrate fauna of the Mangati Stream sampled on 10 May 2017

Taxa List	Site Number	MCI score	A	A2	A1	A3	B	D2	E	F
	Site Code		MGT000488	MGT000490	MGT000491	MGT000497	MGT000500	MGT000512	MGT000520	MGT000550
	Sample Number		FWB17256	FWB17257	FWB17258	FWB17259	FWB17260	FWB17261	FWB17262	FWB17263
PLATYHELMINTHES (FLATWORMS)	<i>Cura</i>	3	-	-	-	R	-	R	-	-
NEMERTEA	Nemertea	3	R	R	-	C	C	C	R	R
NEMATODA	Nematoda	3	-	-	-	R	-	R	R	-
ANNELIDA (WORMS)	Oligochaeta	1	C	A	A	XA	VA	XA	A	VA
	Lumbricidae	5	-	-	R	-	-	R	R	-
HIRUDINEA (LEECHES)	Hirudinea	3	R	R	R	C	C	C	R	R
MOLLUSCA	<i>Gyraulus</i>	3	-	-	-	R	-	-	-	-
	<i>Physa</i>	3	-	-	R	-	-	-	-	R
	<i>Potamopyrgus</i>	4	C	A	C	VA	VA	VA	C	XA
	Sphaeriidae	3	R	R	R	R	-	R	-	-
CRUSTACEA	Ostracoda	1	R	C	A	A	C	C	R	-
	Isopoda	5	-	-	R	-	-	R	-	C
	<i>Paracalliope</i>	5	VA	A	VA	R	R	C	-	-
	Talitridae	5	-	-	-	-	-	-	-	R
	<i>Paratya</i>	3	-	-	-	-	-	-	-	R
EPHEMEROPTERA (MAYFLIES)	<i>Austroclima</i>	7	C	R	R	-	-	R	-	-
TRICHOPTERA (CADDISFLIES)	<i>Hydrobiosis</i>	5	-	R	-	-	-	R	R	R
	<i>Triplectides</i>	5	-	R	-	R	-	R	-	A
DIPTERA (TRUE FLIES)	<i>Aphrophila</i>	5	-	-	-	-	-	-	-	A
	Orthoclaadiinae	2	R	C	C	A	C	A	C	C
	<i>Polypedilum</i>	3	R	-	R	-	-	-	-	R
	Empididae	3	-	-	-	-	-	R	-	-
	<i>Austrosimulium</i>	3	C	R	A	VA	R	A	R	R
ACARINA (MITES)	Acarina	5	R	R	R	R	C	R	R	-
No of taxa			12	13	14	14	9	18	11	14
MCI			67	72	71	63	60	73	64	71
SQMCIs			4.7	3.2	3.7	1.7	2.5	1.6	2.1	3.6
EPT (taxa)			1	3	1	1	0	3	1	2
%EPT (taxa)			8	23	7	7	0	17	9	14
'Tolerant' taxa	'Moderately sensitive' taxa	'Highly sensitive' taxa								

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

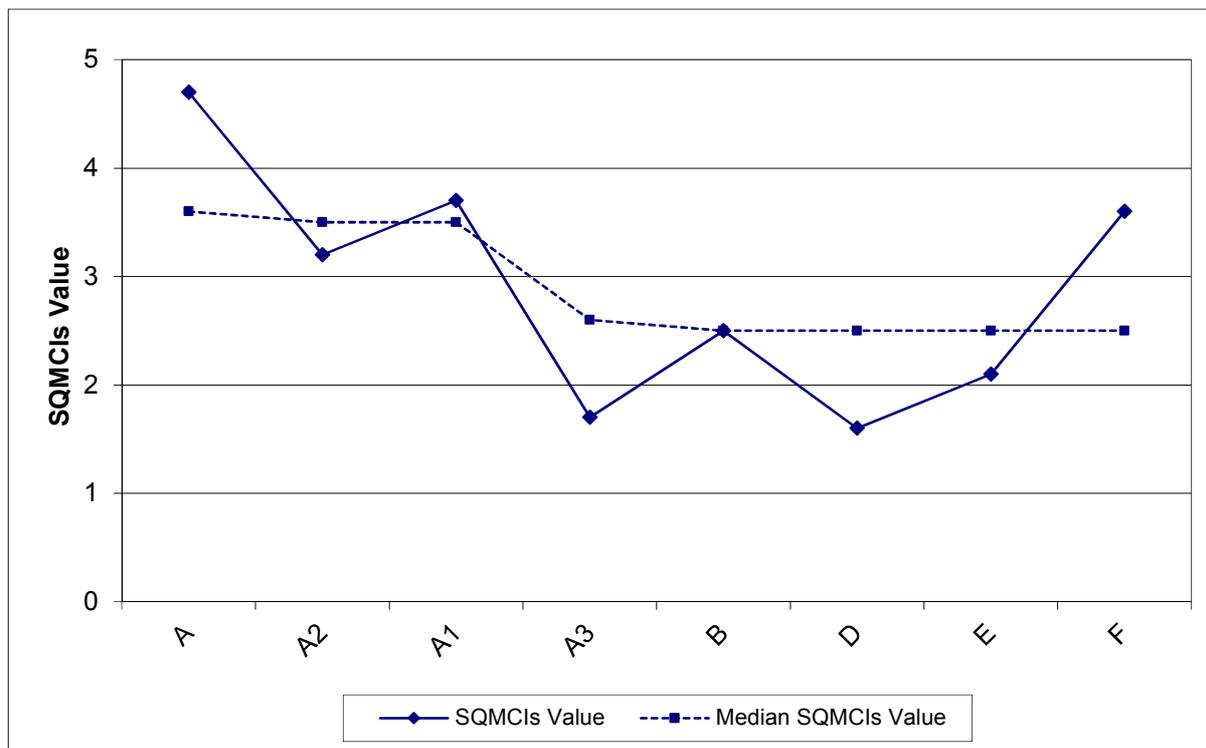


Figure 3 SQMCI₅ values recorded at sites in the Mangati Stream by the current survey

Site A (20m upstream of the swampy tributary)

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 four taxa lower than the historical median for this site (16 taxa) and five taxa lower than the previous survey (17 taxa) on March 2017 (Table 7, Figure 4).

The MCI score of 67 units indicated a community of 'poor' biological health which was significantly lower (Stark, 1998) than the median MCI score of 78 units. The MCI score was not significantly different (Stark, 1998) to the preceding survey (73 units). This was the fourth lowest score ever recorded for this site in 46 surveys.

The SQMCI₅ score of 4.7 units was significantly higher (Stark, 1998) than the median SQMCI₅ score of 3.6 units (Stark, 1998) and to the previous survey (3.2 units) (Table 7).

The community was characterised by only one, 'moderately sensitive', taxon [amphipod (*Paracalliope*)] (Table 8). Taxa abundances for the site were quite low with seven of the twelve taxa 'rare'.

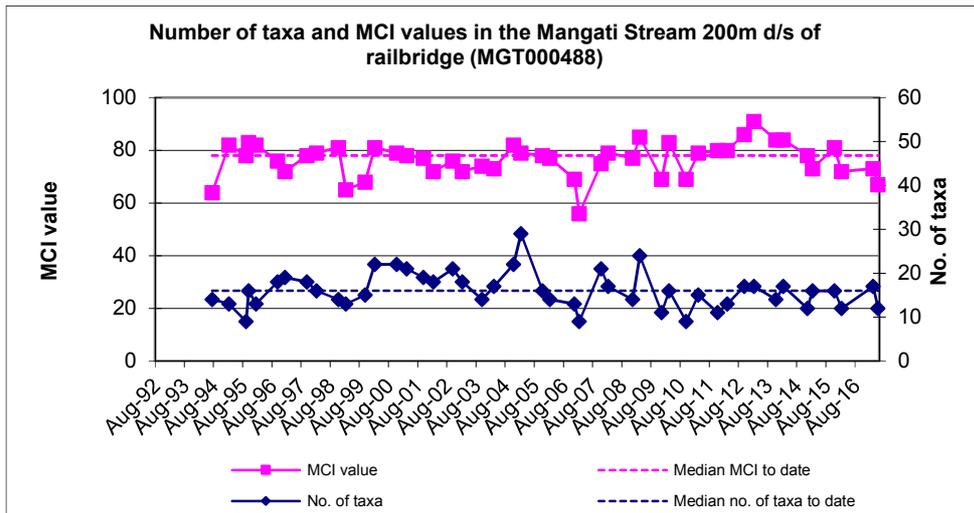


Figure 4 Numbers of taxa and MCI values recorded at site A to date

Site A2 (100m downstream of the swampy tributary)

A moderately low macroinvertebrate community richness of 13 taxa was found at site A2, downstream of a discharge from Tegal Poultry (Table 7). This was higher than the historical median (16 taxa) for this site and to the previous survey (22 taxa) (Table 7, Figure 5).

The MCI score of 72 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 not significantly different (Stark, 1998) to the preceding survey (75 units).

The SQMCI_s score of 3.2 units was not significantly different (Stark, 1998) to the median MCI score of 3.5 units (Stark, 1998) and was significantly higher than the previous survey (1.6 units) (Table 7).

The community was characterised by two ‘tolerant’ taxa [oligochaete worms and snails (*Potamopyrgus*)] and a ‘moderately sensitive’ taxon [amphipod (*Paracalliope*)] (Table 8).

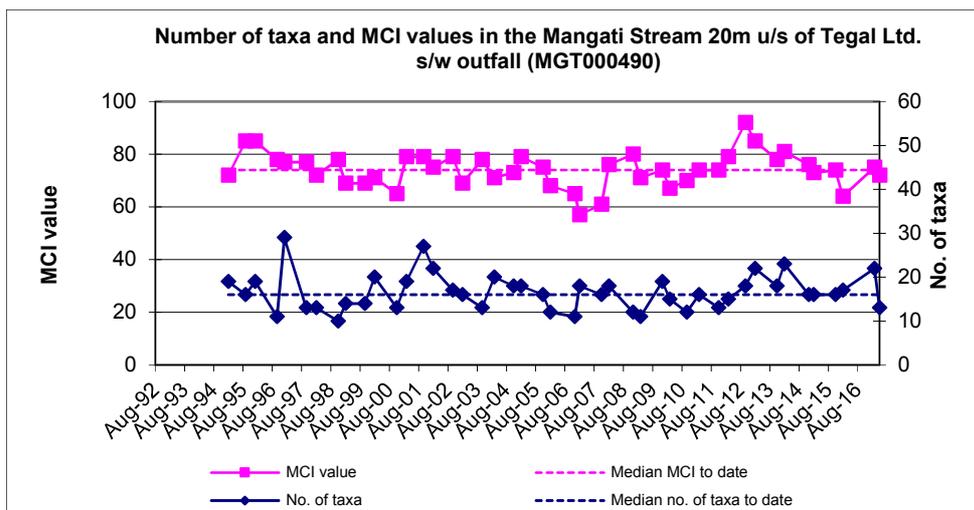


Figure 5 Numbers of taxa and MCI values recorded at site A2 to date

Site A1 (50m upstream of De Havilland Drive)

A moderately low macroinvertebrate community richness of 14 taxa was found at site (Table 7). This was slightly lower than the historical median for this site (16 taxa) and the same as the previous survey (14 taxa) (Table 7, Figure 6).

The MCI score of 71 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 not significantly higher (Stark, 1998) than the preceding survey (63 units).

The SQMCI₅ score of 3.7 units was not significantly different (Stark, 1998) to the median MCI score of 3.5 units (Stark, 1998) but was significantly higher than the previous survey (1.6 units) (Table 7).

The community was characterised by three 'tolerant' taxa [oligochaete worms, seed shrimp (Ostracoda) and sandfly (*Austrosimulium*)] (Table 8).

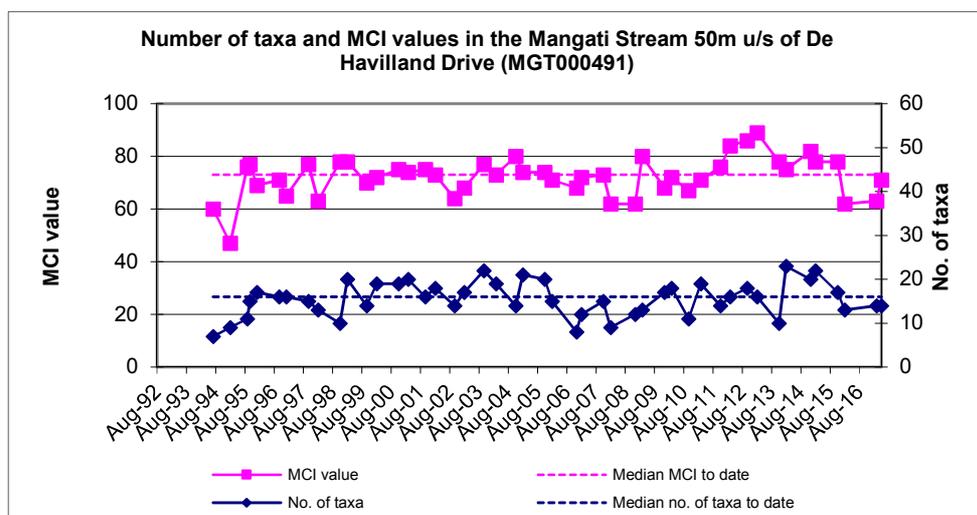


Figure 6 Numbers of taxa and MCI values recorded at site A1 to date

Site A3 (10m upstream of Connett Road)

A moderately macroinvertebrate community richness of 14 taxa was found at site A3 (Table 7). This was two taxa lower than the historical median for this site (16 taxa) and slightly higher than the previous survey (15 taxa) (Table 7, Figure 7).

The MCI score of 63 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 (64 units).

The SQMCI₅ score of 1.7 units was significantly lower (Stark, 1998) than the median MCI score of 2.6 units)but not to the preceding survey (1.6 units) (Table 7).

The community was characterised by five 'tolerant' taxa [oligochaete worms, snails (*Potamopyrgus*), seed shrimp (Ostracoda), midge (Orthocladiinae) and sandflies (*Austrosimulium*)] (Table 8).

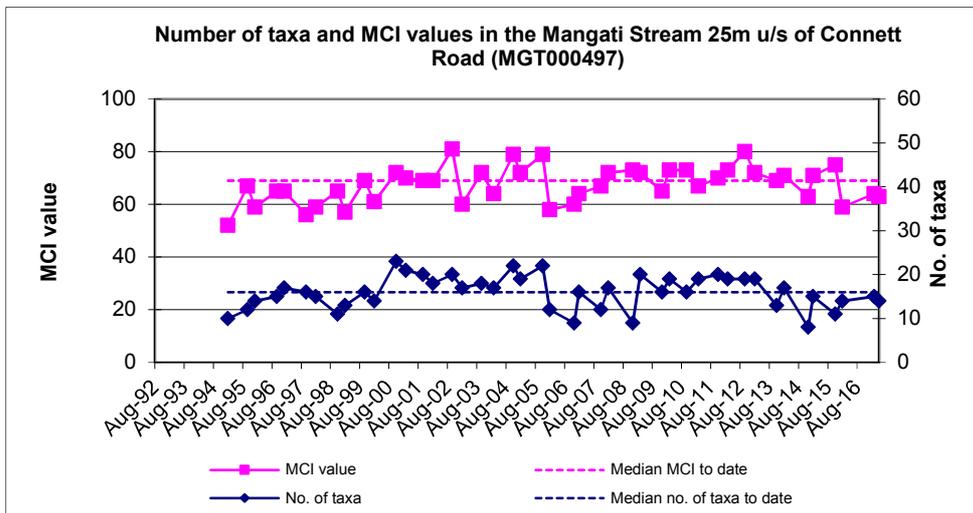


Figure 7 Numbers of taxa and MCI values recorded at site A3 to date

Site B (Upstream of the industrial tributary)

A low macroinvertebrate community richness of nine taxa was found at site B in which is the wetland that receives discharges from a large industrial area discharges to the Mangati Stream (Table 7). This was five taxa lower than the historical median for this site (14 taxa) and eight taxa lower than the previous survey (17 taxa) (Table 7, Figure 8).

The MCI score of 60 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 (62 units).

The SQMCI_s score of 2.5 units was not significantly different (Stark, 1998) to the median MCI score of 2.5 units and the previous survey (1.9 units) (Table 7).

The community was characterised by two 'tolerant' taxa [oligochaete worms and snails (*Potamopyrgus*)] (Table 8).

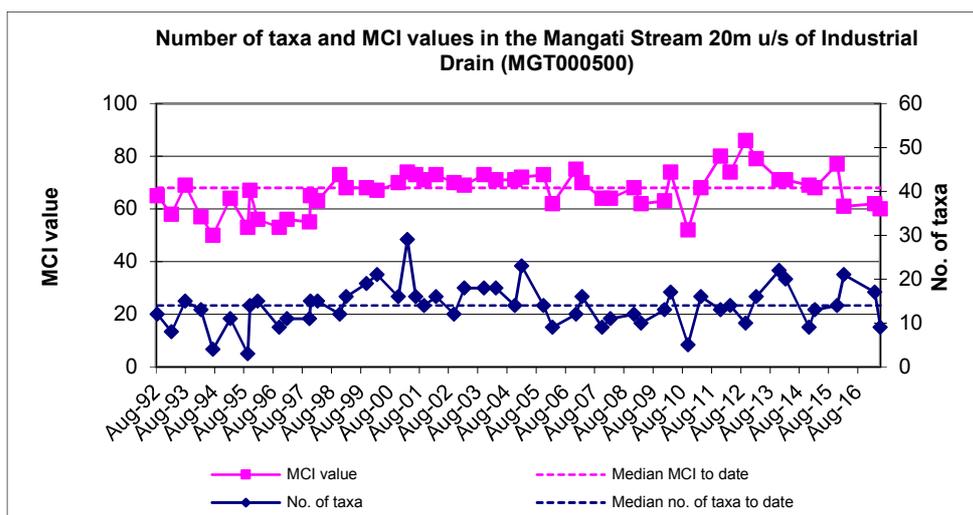


Figure 8 Numbers of taxa and MCI values recorded at site B to date

Site D2 (20m downstream of SH3)

A moderate macroinvertebrate community richness of 18 taxa was found at site D2, below the industrial drain and wetlands high flow level outlet from pond 4 (Table 7). This was seven taxa higher than the historical median for this site (11 taxa) and four taxa lower than the previous survey (14 taxa) (Table 7, 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 significantly higher (Stark, 1998) than the preceding survey (61 units).

The SQMCI₅ score of 1.6 units was significantly lower (Stark, 1998) than the median MCI score of 2.5 units and to the previous survey (2.6 units) (Table 7).

The community was characterised by four 'tolerant' taxa [oligochaete worms, snails (*Potamopyrgus*), midge (Orthocladiinae) and sandflies (*Austrosimulium*)] (Table 8).

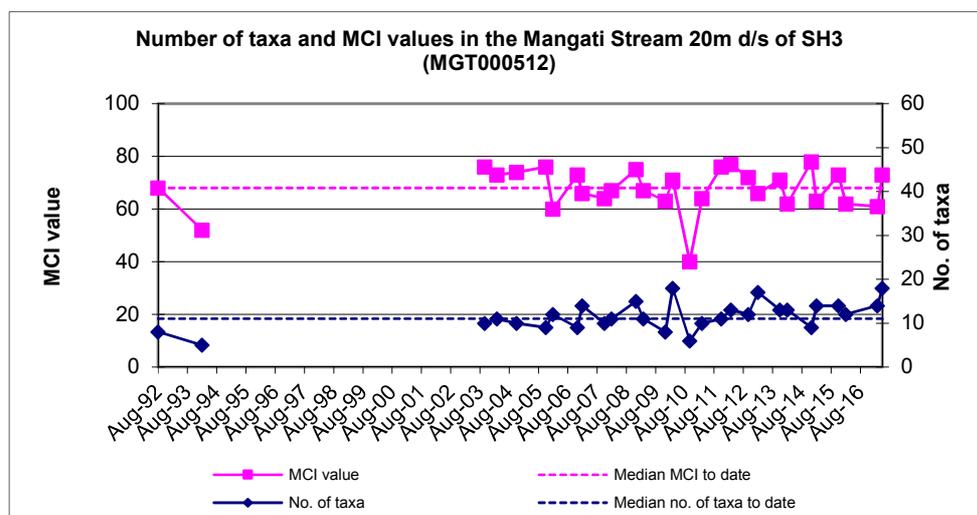


Figure 9 Numbers of taxa and MCI values recorded at site D2 to date

Site E (Te Rima footbridge)

A moderately low macroinvertebrate community richness of 11 was found at site E (Table 7). This was one taxon higher than the historical median for this site (10 taxa) but slightly lower than the previous survey (13 taxa) (Table 7, Figure 10).

The MCI score of 64 units indicated a community of 'poor' biological health which was not significantly different (Stark, 1998) to the median MCI score of 65 units. The MCI score was also not significantly different (Stark, 1998) to the preceding survey (72 units).

The SQMCI₅ score of 2.1 units was not significantly lower (Stark, 1998) than the median MCI score of 2.5 units and to the previous survey (2.5 units) (Table 7).

The community was characterised by only one, 'tolerant', taxa [oligochaete worms,] (Table 8). Taxa abundances for the site were quite low with eight of the eleven taxa 'rare'.

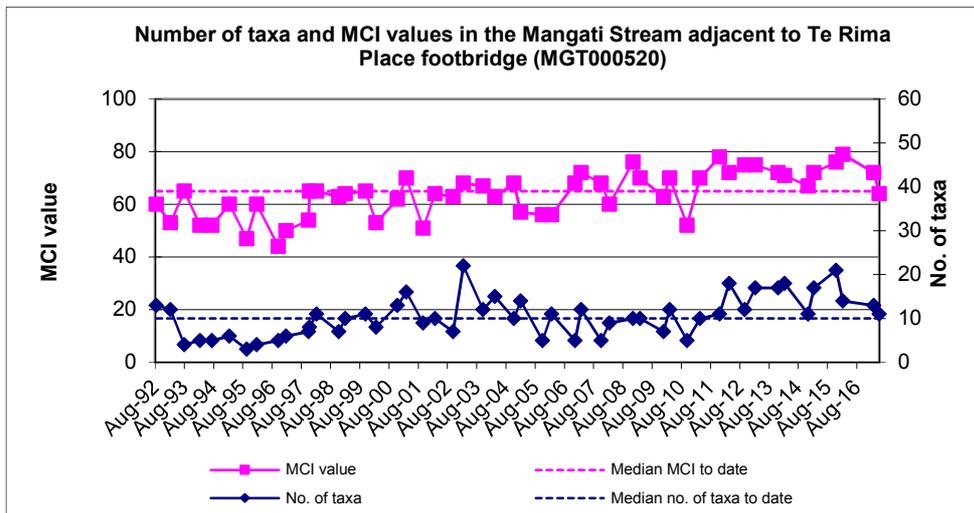


Figure 10 Numbers of taxa and MCI values recorded at site E to date

Site F (50m upstream beach)

A moderately low macroinvertebrate community richness of 14 was found at site F (Table 7). This was two taxa higher than the historical median for this site (12 taxa) and the same as the previous survey (14 taxa) (Table 7, Figure 11).

The MCI score of 71 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 (64 units).

The SQMCI_s score of 3.6 units was significantly higher (Stark, 1998) than the median score of 2.5 units and not significantly different (Stark, 1998) to the previous survey (3.7 units) (Table 7).

The community was characterised by four 'tolerant' taxa [oligochaete worms and snails (*Potamopyrgus*)] and two 'moderately sensitive' taxa [caddisfly (*Triplectides*) and crane fly (*Aphrophila*)] (Table 8).

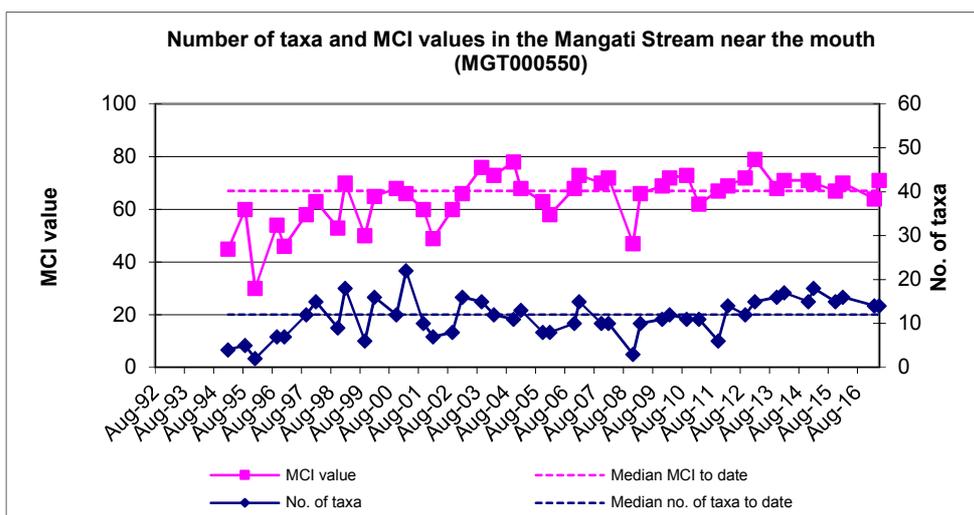


Figure 11 Numbers of taxa and MCI values recorded at site F to date

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 the sites showed that the upper five sites had lower than normal richnesses (by 2-5 taxa) while the lower three sites had taxa richness that were higher than historic medians with site D2 being significantly higher (by seven taxa). However, there was no obvious evidence of any toxic discharges significantly lowering or limiting taxa richness at sites along the surveyed reach. It should be noted that while taxa richness is a useful indicator of acute toxic discharges it is not necessarily correlated with water quality and mild nutrient enrichment can cause an increase in taxa richness.

During the 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 was 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 one taxon) than the median taxa richness for the site.

MCI scores among sites varied by 13 units (60-73), a similar range to the preceding survey (14 units), and indicated that the surveyed reach was in 'poor' health. MCI scores for all the 'impact' sites were not significantly different from historic median values but there was a significant decrease at the upstream 'control' site (by 11 units) indicating that there may be a decline in water quality upstream of the surveyed reach. The long term graphs depicting MCI values suggest that MCI values at the 'control' site, and sites upstream of SH3, have been declining since 2013. This trend is too short to undertake any statistical analysis as ten years of data is required, but if the trend continues a site upstream of the 'control' site may need to be established or there may need to be an investigation into the deterioration. Declines in upstream water quality will potentially impact on downstream water quality and care needs to be taken when determining causes. For instance, discharges from the surveyed reach may improve but due to poorer upstream water quality results in regard to comparisons with long term medians may not show this improvement.

The SQMCI_s can be more sensitive to pollution compared with the MCI. SQMCI_s scores for all sites indicated 'poor' water quality (Stark and Maxted, 2007). There were several significant differences (Stark, 1998) with historic medians, with sites A and F (the top and bottom site) significantly higher and sites A3 and D2 significantly lower than historic medians. The discrepancy between the MCI and SQMCI_s scores for the control site, which show significant differences in opposite direction can largely be explained by the large number of 'tolerant' taxa that are rare (6 of the 12 taxa). This produces a result which means real health of the community is probably higher than the MCI score. The other factor is the general lack of abundant taxa with only one abundant taxon which can skew results. Consistently low taxa abundances can indicate either poor habitat quality or preceding water quality, particularly toxic discharges.

With regard to both MCI and SQMCI_s indices, the poor state of sites A3-D2 suggest there are discharges below the control site were having a negative affect on the macroinvertebrates present in the Mangati Stream. Discharges from De Havilland Drive and below the wetland area may have been having a negative affect on the macroinvertebrate stream communities present. This deterioration in condition was also noted in the preceding surveys on February 2017 and February 2016.

At site E macroinvertebrate health was consistent with historic medians but unlike recent surveys there was no improvement in health from the site immediately upstream of it (site D2). Furthermore, there was a large decrease of by seven taxa from site D2 and taxa abundances were low with only one abundant taxon (highly tolerant oligochaete worms) and nine of the eleven taxa were recorded as 'rare' (less than five). A notable hydrocarbon smell was evident when the sample was processed and therefore a discharge of hydrocarbons (e.g. oil) upstream of the site likely had a negative affect on the macroinvertebrates present there.

The bottom site (site F) was in a slightly better condition suggesting a recovery. There was a non-significant increase in the MCI score from site E but the SQMCI_s score was significantly higher than the historic median and to the site immediately upstream of it (site E). This suggests continuing improvement in water quality at the site.

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. amphipods (*Paracalliope*). The results of this survey in respect to community composition are largely congruent with past results.

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 'poor' for the surveyed sites in the Mangati Stream and that discharges upstream of the 'control' site, other discharges downstream of De Havilland Drive and at the wetlands, as well as a hydrocarbon spill, were adversely affecting the health of the macroinvertebrate communities in the Mangati Stream.

Summary

On 10 May 2017 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 the two 'impact' sites, sites A2 and A1, were similar to historical medians and generally show an improvement on recent preceding surveys which have indicated that discharges have been significantly negatively affecting macroinvertebrate communities there.

Results recorded at the next three sites (A3, B and D2) indicated that they were in a poor state consistent with what was found in the preceding survey suggesting discharges below De Havilland Drive and possibly also below the wetland were also having a negative affect on the macroinvertebrate stream communities present there.

At site E macroinvertebrate health was consistent with historic medians but unlike recent surveys there was no improvement in health from the site immediately upstream of it (site D2). Furthermore, taxa abundances were quite low. A notable hydrocarbon smell was evident when the sample was processed and therefore a discharge of hydrocarbons (e.g. oil) likely had a negative affect on the macroinvertebrates present at the site.

At site F there was a non-significant increase in the MCI score from site E but the SQMCI_s score was significantly higher than the historic median and to the site immediately upstream of it (site E). This suggests continuing improvement in water quality at the site.

Overall, the changes in community structures, MCI and SQMCI_s score in the upper reaches of the Mangati Stream indicate that there have likely been some adverse affects on macroinvertebrate communities from a source upstream of the 'control' site. Downstream of De Havilland Drive, where stormwater from De Havilland Drive West, Tasman Oil and Greymouth Petroleum enter, there were 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 appears to have been affected by a hydrocarbon spill that affected taxa abundances while Site F showed some improvement. In conclusion, macroinvertebrate

health was 'poor' for the surveyed sites in the Mangati Stream and discharges upstream of the 'control' site, other discharges downstream of De Havilland Drive and at the wetlands, as well as a hydrocarbon spill, were adversely affecting the health of the macroinvertebrate communities in the Mangati Stream.

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Appendix III

Rule 23 of the Regional Freshwater Plan (permitted stormwater rule)

Discharge of stormwater

Activity	Rule	Standards/Terms/Conditions	Classification	Notification	Control/Discretion	Policy Reference
<p>Discharge of stormwater into or onto land or into water (excluding those wetlands listed in Appendix II) that is not provided for by Rules 25-27</p>	<p>23</p>	<ul style="list-style-type: none"> • The discharge shall not originate from any industrial or trade premise where the active area of the site is greater than 0.5 ha, unless there is an interceptor system in place that is designed and managed so that it will keep stormwater from entraining contaminants; • The discharge shall not originate from any industrial or trade premise where hazardous substances are used, stored or potentially spilt unless: <ul style="list-style-type: none"> (i) there is an interceptor system in place that is designed and managed so that it will keep stormwater from entraining contaminants; or (ii) there is an interceptor system in place that is designed and managed so that it is capable of capturing contaminated stormwater and either diverting it to trade waste or containing it and/or removing or reducing the contaminants such that: <ul style="list-style-type: none"> - any spills can be recovered; - the discharge shall not contain any persistent or bioaccumulative substances; - the discharge shall not breach any other specified condition of this rule; and a spill contingency and interceptor system maintenance plan is maintained and regularly updated for the site; • The discharge shall not originate from any industrial or trade premises where the movement of rock, earth or other soil material is taking place, unless that movement is being undertaken in connection with site landscaping, or the installation, construction, maintenance or demolition of buildings, structures or equipment; • The discharge shall not be greater than is able to be discharged from a pipe of 900 mm in diameter; 	<p>Permitted</p>			

Discharge of stormwater (continued)

Activity	Rule	Standards/Terms/Conditions	Classification	Notification	Control/Discretion	Policy Reference												
		<ul style="list-style-type: none"> • The discharge shall not cause significant erosion, scour or deposition; • Discharge that will, or is liable to enter surface water, shall not exceed the following: <table style="margin-left: 20px; border: none;"> <tr> <td style="padding-right: 10px;">pH</td> <td>6.0-9.0</td> </tr> <tr> <td>oil and grease</td> <td>15 gm⁻³</td> </tr> <tr> <td>suspended solids</td> <td>100 gm⁻³</td> </tr> <tr> <td>BOD</td> <td>5 gm⁻³</td> </tr> <tr> <td>unionised ammonia</td> <td>0.025 gm⁻³</td> </tr> <tr> <td>free chlorine</td> <td>0.2 gm⁻³</td> </tr> </table> • The discharge shall not give rise to any of the following effects in receiving waters after reasonable mixing: <ul style="list-style-type: none"> (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. 	pH	6.0-9.0	oil and grease	15 gm ⁻³	suspended solids	100 gm ⁻³	BOD	5 gm ⁻³	unionised ammonia	0.025 gm ⁻³	free chlorine	0.2 gm ⁻³	Permitted			
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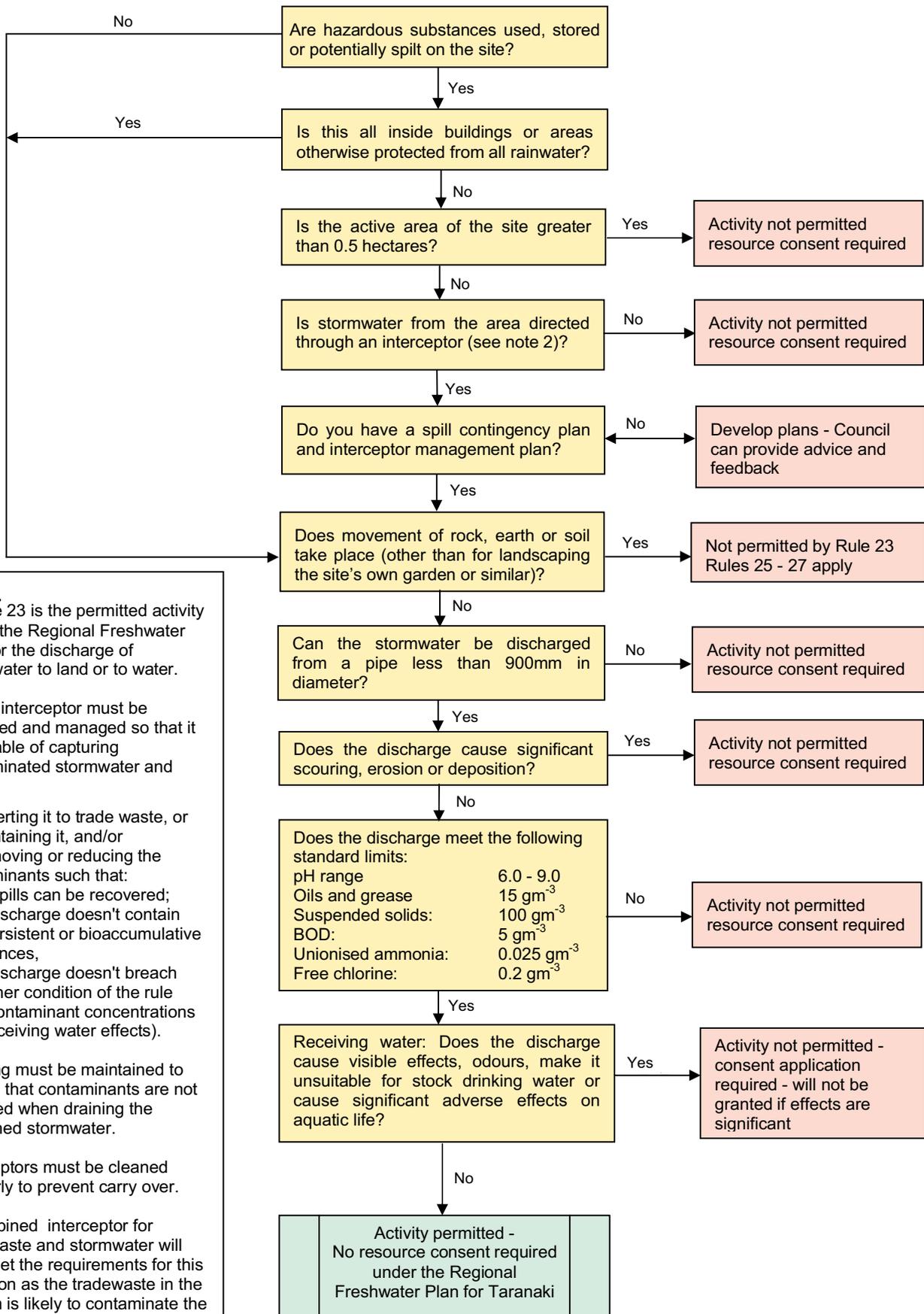
Explanation

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 persistent 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.