Taranaki Galvanizers Ltd

Monitoring Programme

Annual Report

2021-2022

Technical Report 2022-88

Working with people | caring for Taranaki

Taranaki Regional Council

Taranaki Regional Council
Private Bag 713
Stratford

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Executive summary

Taranaki Galvanizers Ltd (the Company) operates a zinc galvanising plant located on Monmouth Road, approximately 1 km north of Stratford, in the Kahouri Stream catchment. The Company utilises a hot-dip galvanising process to provide a protective coating for steel materials.

This report for the period July 2021 to June 2022 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess the Company's environmental and consent compliance performance during the period under review. The report also details the results of the monitoring undertaken and assesses the environmental effects of the Company's activities.

During the monitoring period, Taranaki Galvanizers Ltd demonstrated a high level of environmental and administrative performance.

The Company holds two resource consents, which include a total of 16 conditions setting out the requirements that the Company must satisfy. The Company holds one consent to allow it to discharge stormwater into an unnamed tributary of the Kahouri Stream, and one consent to discharge emissions into the air at this site.

The Council's monitoring programme for the year under review included two inspections and eight water samples collected for physicochemical analysis.

Elevated zinc concentrations were recorded in the receiving waters upstream and downstream of the Company's discharge. The historical disposal of galvanising waste materials into a bore on the Company's site is considered to be the most likely source of zinc contamination in the discharge. However, monitoring results have shown that zinc concentrations have generally continued to decline over time. Sampling undertaken in the current period found zinc concentrations were within the resource consent condition limits and that there was no likely effect on the receiving environment downstream of the site.

In the reported period, no effects from the emissions to air from the galvanising site were detected at or beyond the boundary of the site.

For reference, in the 2021-2022 year, consent holders were found to achieve a high level of environmental performance and compliance for 88% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 10% of the consents, a good level of environmental performance and compliance was achieved.

In terms of overall environmental and compliance performance by the consent holder over the last several years, this report shows that the consent holder's performance has improved to a high level in the year under review.

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1 Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is for the period July 2021 to June 2022 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by Taranaki Galvanizers Ltd (the Company). The Company operate a galvanising plant situated on the corner of Monmouth Road and State Highway 3, near Stratford. This site is located in the Patea catchment.

The report includes the results and findings of the monitoring programme implemented by the Council in respect of the consents held by the Company that relate to discharges of water within the Patea catchment, and the air discharge permit held by the Company to cover emissions to air from the site.

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 generally implements integrated environmental monitoring programmes and reports the results of the programmes jointly. This report discusses the environmental effects of the Company's use of water, land and air, and is the tenth combined annual report by the Council for the Company.

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 though annual programmes;
- the resource consents held by Company in the Patea 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 Company's site/catchment.

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

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

Section 4 presents recommendations to be implemented in the 2022-2023 monitoring year.

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

1.1.3 The Resource Management Act 1991 and monitoring

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

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

d. natural and physical resources having special significance (for example recreational, cultural, or aesthetic); and

e. risks to the neighbourhood or environment.

In drafting and reviewing conditions on discharge permits, and in implementing monitoring programmes, the Council is recognising the comprehensive meaning of 'effects' in as much as is appropriate for each activity. Monitoring programmes are not only based on existing permit conditions, but also on the obligations of the RMA to assess the effects of the exercise of consents. In accordance with Section 35 of the RMA, the Council undertakes compliance monitoring for consents and rules in regional plans, and maintains an overview of the performance of resource users and consent holders. Compliance monitoring, including both activity and impact monitoring, enables the Council to continually re-evaluate its approach and that of consent holders to resource management and, ultimately, through the refinement of methods and considered responsible resource utilisation, to move closer to achieving sustainable development of the region's resources.

1.1.4 Evaluation of environmental and administrative performance

Besides discussing the various details of the performance and extent of compliance by the Company, this report also assigns them a rating for their environmental and administrative performance during the period under review. The rating categories are high, good, improvement required and poor for both environmental and administrative performance. The interpretations for these ratings are found in Appendix II.

For reference, in the 2021-2022 year, consent holders were found to achieve a high level of environmental performance and compliance for 88% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 10% of the consents, a good level of environmental performance and compliance was achieved.[1]

1.2 Process description

The galvanising plant owned and operated by the Company is situated at the corner of State Highway 3 and Monmouth Road, approximately 1 km north of Stratford (Figure 1). Road access to the site is via Monmouth Road.

The Company utilise a hot-dip galvanising process which protects steel from corrosion by providing a thick, tough metallic zinc alloy coating. The process consists of various stages of preparation and treatment prior to completion of the process. A brief description of the process is given in Figure 2.

1 The Council has used these compliance grading criteria for more than 18 years. They align closely with the 4 compliance grades in the MfE Best Practice Guidelines for Compliance, Monitoring and Enforcement, 2018

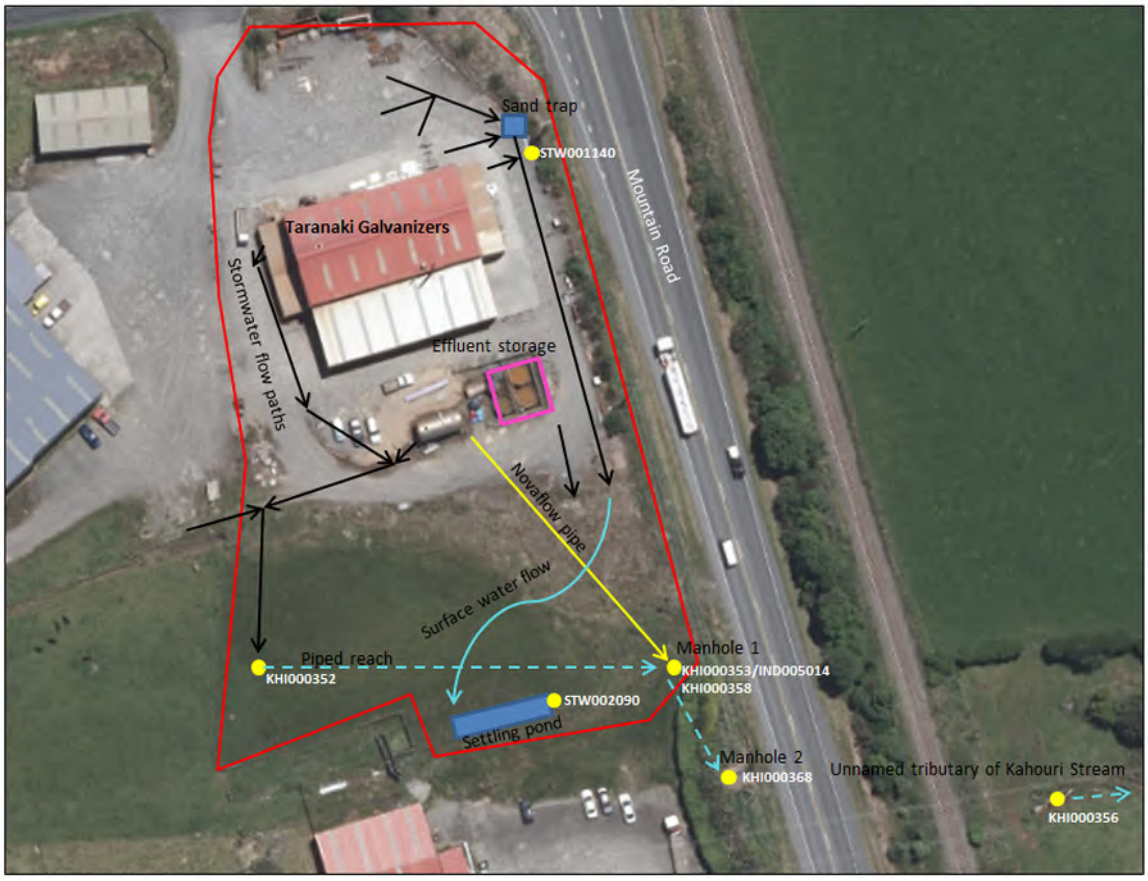

Figure 1 Taranaki Galvanizers site layout

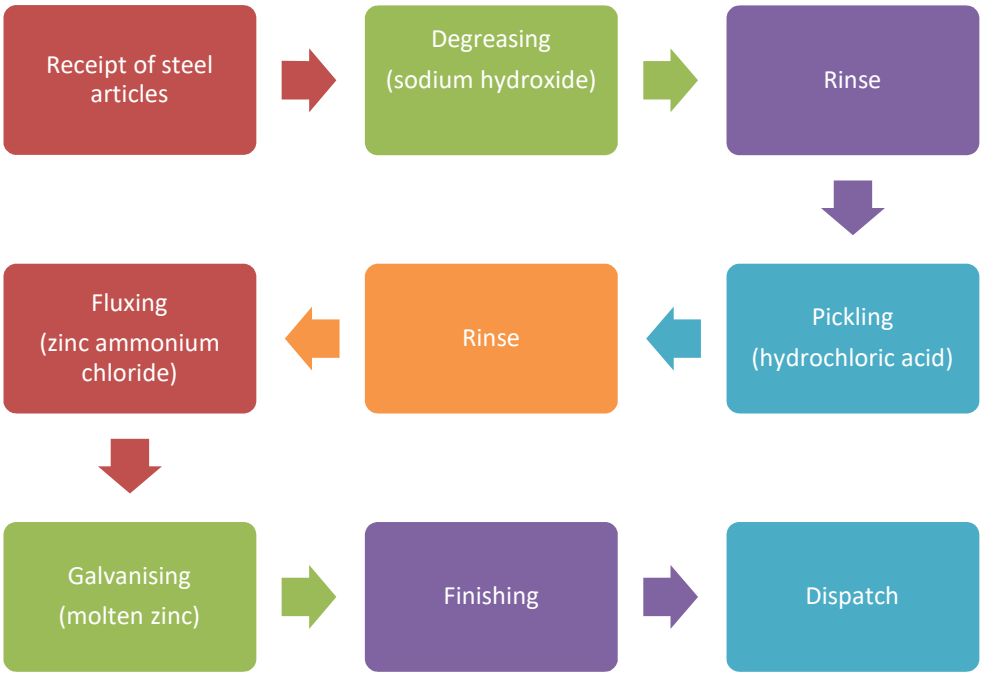

Figure 2 Hot-dip galvanising process undertaken at Taranaki Galvanizers

1.3 Resource consents

The Company holds two resource consents the details of which are summarised in the table below. Summaries of the conditions attached to each permit are set out in Section 3 of this report.

A summary of the various consent types issued by the Council is included in Appendix I, as are copies of all permits held by the Company during the period under review.

Table 1 Summary of consents held by Taranaki Galvanizers Ltd

Consent number	Purpose	Granted	Review	Expires
Water discharge permit				
4657-2	To discharge stormwater from the galvanising plant premises into an unnamed tributary of the Kahouri Stream in the Patea catchment at or about (NZTM) 1709996E-5647129N.	17 June 2010	No further reviews	1 June 2028
Air discharge permit				
4064-3	To discharge emissions into the air from the operation of a hot dip galvanising plant and associated processes at or about GR: Q20: 198-088	17 June 2010	No further reviews	1 June 2028

1.4 Monitoring programme

1.4.1 Introduction

Section 35 of the RMA sets obligations upon the Council to gather information, monitor and conduct research on the exercise of resource consents within the Taranaki region. The Council is also required to assess the effects arising from the exercising of these consents and report upon them.

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

The monitoring programme for the Taranaki Galvanizers site consisted of four primary components.

1.4.2 Programme liaison and management

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

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

1.4.3 Site inspections

The galvanising site was visited two times during the monitoring period. With regard to the consent for the discharge to water, the main points of interest were plant processes with potential or actual discharges to receiving watercourses, including contaminated stormwater and process wastewaters. Air inspections focused on plant processes with associated actual and potential emission sources and characteristics,

including potential odour, dust, noxious or offensive emissions. Sources of data being collected by the Company were identified and accessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council. The neighbourhood was surveyed for environmental effects.

1.4.4 Chemical sampling

The Council undertook sampling of both the discharges from the site and the water quality upstream and downstream of the discharge point and mixing zone.

The industrial discharge was sampled on one occasion. The unnamed tributary of the Kahouri Stream was sampled on two occasions, and the samples analysed by Hill Laboratories Ltd (Hills) for temperature, pH, conductivity, ammoniacal nitrogen, chromium, hydrocarbons, turbidity, suspended solids and zinc. Table 2 shows a summary of the current sampling sites related to the Company's discharge to water, and these locations are illustrated in Figure 1.

Table 2 Location of the physicochemical sampling points associated with the Company's discharge to water

Site	Location	GPS location	Site code	Sampling date/s
Unnamed tributary of the Kahouri Stream	Approximately 75 m u/s of SH3	1709926E-5647120N	KHI000352	06/12/2021 04/04/2022
Industrial discharge (stormwater and ground water seepage)	Stormwater and groundwater leachate from the southern end of the site	1709995E-5647129N	IND005014*	06/12/2021
Unnamed tributary of the Kahouri Stream	Immediately upstream of Company's industrial discharge	1709995E-5647129N	KHI000353*	06/12/2021 04/04/2022
Stormwater discharge point *(new site)*	Settling pond at the southern end of the site	1709986E-5647127N	STW002090	06/12/2021
Unnamed tributary of the Kahouri Stream	200 m downstream of Taranaki Galvanizers	1710232E-5647063N	KHI000356	06/12/2021 04/04/2022

**These sites are given the same GPS point as they are all located in the same manhole (1)*

1.4.5 Air quality monitoring

Air monitoring in the 2021-2022 period comprised of visual and olfactometric (odour) surveys undertaken during December and April inspection visits.

2 Results

2.1 Water

2.1.1 Inspections

Two inspections of the Company's site were performed during the period under review. The inspections focused on stormwater and wastewater management, and the impacts of air emissions from the site.

06 December 2021

The site was inspected during wet conditions, following wet weather.

There were no obvious discharges to air at the time of the inspection. Samples were collected from all five physicochemical sampling sites. No odour, sheen or foaming was noted. The stormwater pond at the southern end of the site was discharging. The stormwater areas were clear of any chemicals and the yard was tidy. Stormwater drains were full and flowing slowly.

04 April 2022

The site was inspected during dry conditions, following recent dry weather.

There was a discharge to air evident at the time of the inspection, but there was no associated odour and the discharge dissipated at the site boundary. No odour, foaming or sheen was noted at any of the sampling sites. Stormwater areas were clear of any chemicals and the yard was tidy. Minimal zinc flecks were visible on the concrete and gravel yards. The stormwater pond at the southern end of the site (STW0002090) and the novaflow pipe at site IND005014 were not discharging at the time of sampling. Three out of five samples were collected.

2.1.2 Stormwater and industrial discharge monitoring

Results of the two sampling surveys carried out in the 2021-2022 monitoring year are presented in Table 3 and Table 4. There were no breaches of consented limits for pH, hydrocarbons, suspended solids and dissolved zinc in the year under review.

Table 3 Results of wet-run sampling carried out 6 December 2021 at five sites in relation to the Company

Parameter	Units	Consent limit	06/12/2021				
			(KHI000352)	(IND005014)	(KHI000353)	(STW002090)	(KHI000356)
Temperature	˚C	-	17.8	16.2	18.3	18.6	18.2
pH	pH	6.0-9.0	6.5	6.3	6.8	6.6	6.6
Conductivity at 25°C	mS/m	-	4.6	14.1	4.3	4.0	5.1
Ammoniacal Nitrogen	g/m^{3}N	-	0.196	0.140	0.130	< 0.010	0.122
Chromium-acid soluble	g/m^3	-	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Hydrocarbons	g/m^3	15	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Turbidity	NTU	-	25	67	82	26	48
Suspended solids	g/m^3	100	25	32	106	20	54
Zinc-dissolved	g/m^3	5	0.113	3.0	0.37	1.56	0.192

Table 4 Results of dry-run sampling carried out 4 April 2022 at three sites in relation to the Company

Parameter	Units	Consent limit	04/04/2021		
			(KHI000352)	(KHI000353)	(KHI000356)
Temperature	˚C	-	15.4	15.4	16.1
pH	pH	6.0-9.0	6.7	6.7	6.7
Conductivity at 25°C	mS/m	-	11.9	12.5	11.1
Ammoniacal Nitrogen	g/m^{3}N	-	1.21	1.10	0.72
Chromium-acid soluble	g/m^3	-	< 0.010	< 0.010	< 0.010
Hydrocarbons	g/m^3	15	< 0.7	< 0.7	< 0.7
Turbidity	NTU	-	52	39	32
Suspended solids	g/m^3	100	11	11	7
Zinc-dissolved	g/m^3	5	0.0091	0.158	0.142

Figure 3 depicts zinc concentrations in the unnamed tributary of the Kahouri Stream, immediately upstream of the company's industrial discharge, at site KHI000353. The most recent samples collected 6 December 2021 and 4 April 2022 recorded zinc concentrations of 0.37 g/m^3 and 0.158 g/m^3 respectively, well below the consented limit of 5 g/m^3 and below the median for the site (0.55 g/m^3). Notwithstanding this, the concentrations of zinc at the location remains elevated against background levels and indicates that the contaminated bore is likely to be still having an effect on water quality at the site. Zinc concentrations do however appear however to be reducing over time.

Historical and current results from industrial discharge samples obtained from the industrial discharge novaflow pipe (IND005014) samples are presented in Figure 4. Due to insufficient flow from the pipe no sample was collected during the April 2022 sampling occasion. Dissolved zinc concentrations have decreased considerably over the last 20 years. The most recent sample recorded a dissolved zinc result of 3.0 g/m^3, which was slightly higher than that recorded in December 2020. This most recent result was below the consented limit of 5 g/m^3, however was still elevated and indicative of zinc contamination. The historical disposal of galvanising waste materials into a bore on the Company's site is considered to be the most likely source of zinc contamination in this discharge; although zinc contamination in the stormwater discharge may have also contributed to this result.

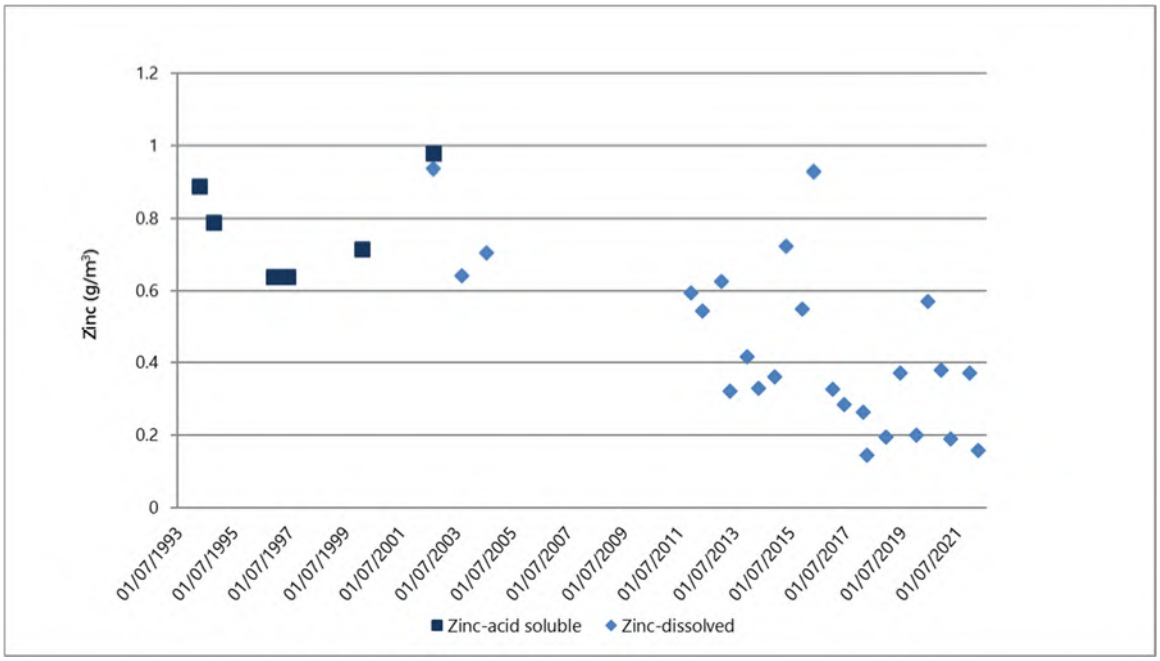

Figure 3 Zinc concentrations in the unnamed tributary of the Kahouri Stream immediately upstream of the Company's industrial discharge since 1994 (site KHI000353)

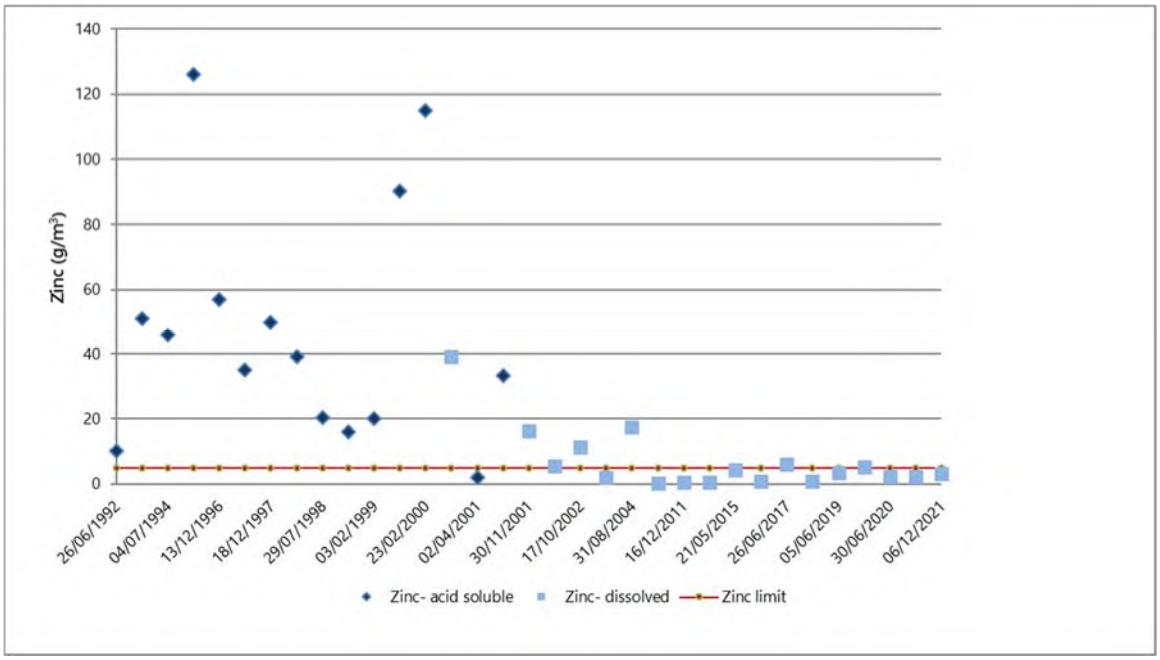

Figure 4 Zinc concentrations recorded in the discharge sample (IND005014) from the Company's site between June 1992 and December 2021

2.1.3 Results of receiving environment monitoring

Monitoring of the unnamed tributary of the Kahouri Stream has shown that zinc concentrations decreased through the 1990's, then remained relatively constant, varying between the detection limit of 0.005 g/m^3 and 1 g/m^3, excluding one elevated sample result recorded in December 2010 (Figure 5). Sampling at downstream site (KHI000356), on 6 December 2021 and 4 April 2022 recorded zinc concentrations of 0.192 g/m^3 and 0.142 g/m^3 which were fairly typical of what has been recorded in recent years, and were below the median zinc concentration for the site. Generally zinc concentrations have decreased over time, but it is considered likely that it will take some years before concentrations in the tributary are reduced significantly, due to the level of contamination (from the bore) under the Company's site.

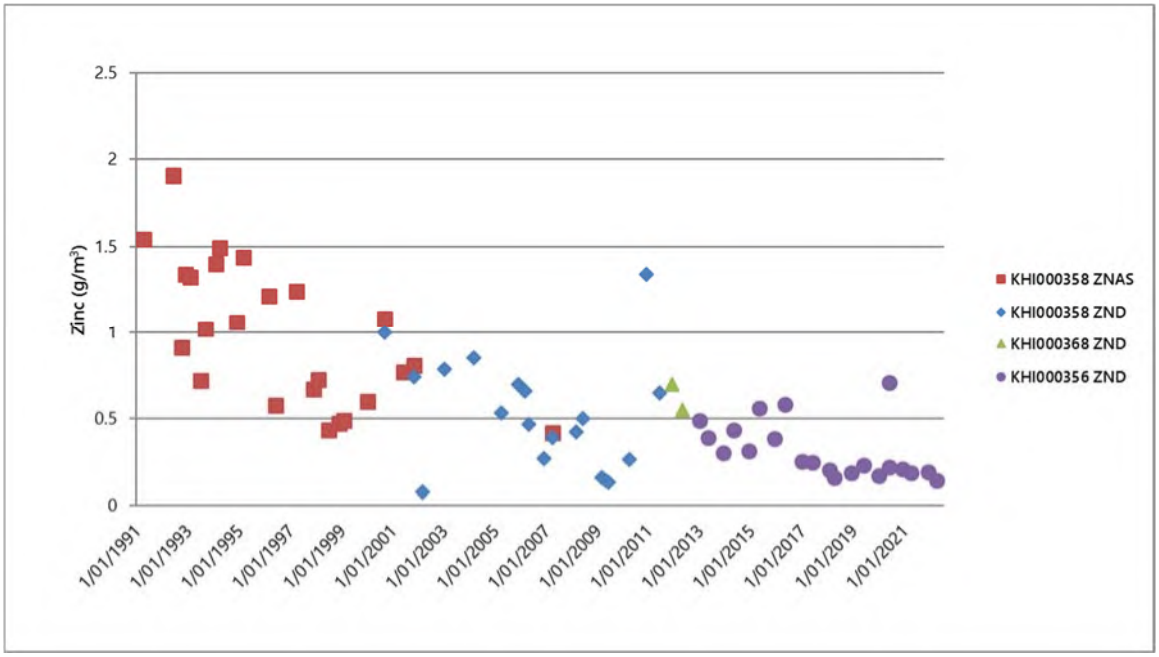

Figure 5 Zinc concentrations in the unnamed tributary of the Kahouri Stream downstream of the Taranaki Galvanizers industrial discharge since 1991

Figure 6 illustrates dissolved zinc concentrations at all sites sampled during the 2021-2022 monitoring year. Samples were collected from all five sites in December 2021, while only three sites were sampled in April 2022, due to a lack of flow at sites IND005014 and STW002090. During the December 2021 survey the highest dissolved zinc concentrations were recorded at sites IND005014 (3.0 g/m^3) and STW002090 (1.56 g/m^3), suggesting both stormwater and ground water contamination of zinc. However, zinc concentrations dropped substantially in the receiving environment (0.192 g/m^3) and were only slightly higher than that recorded at the upstream site KHI000352 (0.113 g/m^3). In April 2022, upstream site KHI000352 recorded the lowest dissolved zinc concentration of 0.0091 g/m^3, while higher zinc concentrations were recorded at site KHI000353, immediately upstream of the industrial discharge point (0.158 g/m^3) and in the receiving environment at site KHI000356 (0.142 g/m^3). Seepage from the contaminated bore under the Company's site is the most likely source of the contamination recorded upstream, while zinc contamination of the industrial and stormwater discharge have contributed to the elevated results recorded downstream.

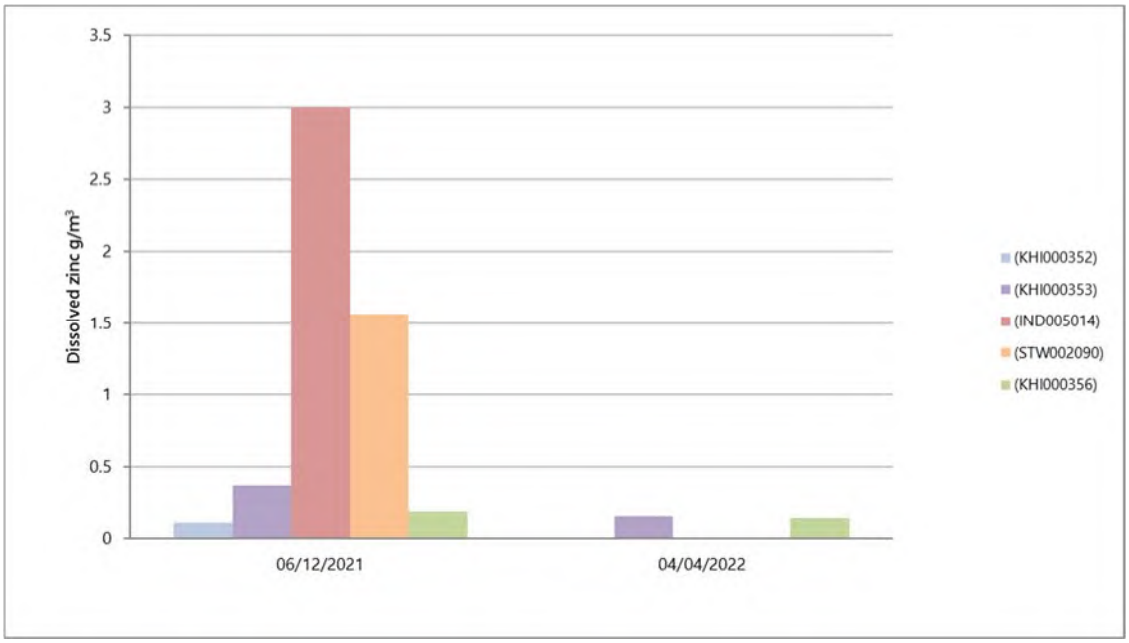

Figure 6 Dissolved zinc concentrations at all sites sampled in the 2020-2021 monitoring year*.

** No discharge was occurring at sites IND005014 and STW002090 in April 2022*

2.1.4 Inspections

Air monitoring inspections were undertaken on two occasions during the monitoring period under review.

On 6 December 2021 an inspection was carried out. At the time of the inspection there was no visible discharge to air from the building (smoke).

On 4 April 2022 an inspection was carried out. At the time of the inspection there was a smoky discharge to the air but there was no associated odour and the discharge dissipated at the site boundary.

2.2 Incidents, investigations, and interventions

The monitoring programme for the year was based on what was considered to be an appropriate level of monitoring, review of data, and liaison with the Company. 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.

For all significant compliance issues, as well as complaints from the public, the Council maintains a database record. The record includes events where the individual/organisation concerned has itself notified the Council. Details of any investigation and corrective action taken are recorded for non-compliant events.

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 individual/organisation is indeed the source of the incident (or that the allegation cannot be proven).

In the 2021-2022 period, the Council was not required to undertake significant additional investigations and interventions, or record incidents, in association with the Company's conditions in resource consents or provisions in Regional Plans.

3 Discussion

3.1 Discussion of site performance

In general, monitoring during the 2021-2022 period found the site in good condition and being well managed. The stormwater catchment area was kept clear of contaminants. Inspections found wastewater from the site was being well managed, and operations were undertaken in a manner that minimised environmental effects.

No issues related to air emissions where identified during inspection visits.

3.2 Environmental effects of exercise of consents

Physicochemical water quality monitoring over previous monitoring periods indicated that elevated zinc levels were continuing to occur from the discharges of stormwater and groundwater leachate from the galvanising site, as a result of historical disposal of spent acid to a bore on the property. The results have shown that in general, zinc concentrations have continued to decline over time. Sampling undertaken in the current period showed that the latest concentrations of zinc (6 December 2021 and 4 April 2022) were within the resource consent condition requirements at site and there was no likely effect on the receiving environment downstream of the site.

It is noted that the factory is located in a rural area and is isolated from residences or other commercial premises. Accordingly, there is no evidence of aerial emissions from galvanising activities causing adverse effects off-site.

3.3 Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Tables 5 to 7.

Table 5 Summary of performance for consent 4657-2

Purpose: ***To discharge stormwater from the galvanising plant premises into an unnamed tributary of the Kahouri Stream.***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Adopt best practicable option	Inspections	Yes
2. Limit on stormwater catchment area	Inspections	Yes
3. Requirements for storage and containment facilities for hazardous substances	Inspections	Yes
4. Discharge contaminant limits	Water quality monitoring	Yes
5. Defines no adverse effects on receiving waters after reasonable mixing	Water quality monitoring and inspections	Yes
6. Requirement to maintain a spill or emergency contingency plan	Review by Council	Yes
7. Requirement to maintain a stormwater management plan	Review by Council	Yes

Purpose: *To discharge stormwater from the galvanising plant premises into an unnamed tributary of the Kahouri Stream.*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
8. Requirement to notify Council of any significant changes that may alter nature of the discharge	Notify Council (no notification)	N/A
9. Optional review of consent	Not exercised	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

Table 6 Summary of performance for consent 4064-3

Purpose: *To discharge emissions into the air from the operation of a hot dip galvanising plant and associated processes*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Adopt best practicable option	Inspections	Yes
2. Discharge shall not result in offensive or objectionable odours beyond the site boundary	Inspections	Yes
3. Limit on zinc deposition rate near the property boundary	Not carried out	N/A
4. Requires galvanising process to be dry flux as far as practicable	Inspections; Records from Company	Yes
5. Wet fluxing or flux dusting prohibited from occurring on site	Inspections	Yes
6. Requirement to notify Council of any significant changes that may alter nature of the discharge	Notify Council (no notification)	N/A
7. Optional review of consent	Not exercised	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

Table 7 Evaluation of environmental performance over time

Year	Consent no	High	Good	Improvement req	Poor
2010-2011	4657-2	-	1	-	-
	4064-3	-	1	-	-
2011-2012	4657-2	1	-	-	-
	4064-3	1	-	-	-
2012-2013	4657-2	1	-	-	-
	4064-3	1	-	-	-
2013-2014	4657-2	-	1	-	-
	4064-3	1	-	-	-
2014-2015	4657-2	-	-	1	-
	4064-3	1	-	-	-
2015-2016	4657-2	1	-	-	-
	4064-3	1	-	-	-
2016-2017	4657-2	-	1	-	-
	4064-3	1	-	-	-
2017-2018	4657-2	1	-	-	-
	4064-3	1	-	-	-
2018-2019	4657-2	1	-	-	-
	4064-3	1	-	-	-
2019-2020	4657-2	-	1	-	-
	4064-3	1	-	-	-
2020-2021	4657-2	1	-	-	-
	4064-3	1	-	-	-
2021-2022	4657-2	1	-	-	-
	4064-3	1	-	-	-
Totals	-	18	5	1	0

During the year, the Company demonstrated a high level of environmental and high level of administrative performance with the resource consents as defined in Appendix II.

3.4 Recommendations from the 2020-2021 Annual Report

1. THAT in the first instance, monitoring of consented activities at Taranaki Galvanizers Ltd site in the 2021-2022 year continue at the same level as in 2020-2021.
2. THAT should there be issues with environmental or administrative performance in 2021-2022, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

3.5 Alterations to monitoring programmes for 2022-2023

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 2022-2023 that the monitoring continue at the same level as it had in 2021-2022.

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 2022-2023.

4 Recommendations

1. THAT in the first instance, monitoring of consented activities at Taranaki Galvanizers Ltd site in the 2022-2023 year continue at the same level as in 2021-2022.
2. THAT should there be issues with environmental or administrative performance in 2022-2023, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Glossary of common terms and abbreviations

The following abbreviations and terms may be used within this report:

Al*	Aluminium.
As*	Arsenic.
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.
Bund	A wall around a tank to contain its contents in the case of a leak.
CBOD	Carbonaceous biochemical oxygen demand. A measure of the presence of degradable organic matter, excluding the biological conversion of ammonia to nitrate.
COD	Chemical oxygen demand. A measure of the oxygen required to oxidise all matter in a sample by chemical reaction.
Conductivity	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 25°C and expressed in µS/cm.
Cu*	Copper.
Cumec	A volumetric measure of flow- 1 cubic metre per second (1 m^3s^{-1}).
DO	Dissolved oxygen.
DRP	Dissolved reactive phosphorus.
FNU	Formazin nephelometric units, a measure of the turbidity of water
$g/m^2/day$	grams/$metre^2$/day.
g/m^3	Grams per cubic metre, and equivalent to milligrams per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures.
Incident	An event that is alleged or is found to have occurred that may have actual or potential environmental consequences or may involve non-compliance with a consent or rule in a regional plan. Registration of an incident by the Council does not automatically mean such an outcome had actually occurred.
Intervention	Action/s taken by Council to instruct or direct actions be taken to avoid or reduce the likelihood of an incident occurring.
Investigation	Action taken by Council to establish what were the circumstances/events surrounding an incident including any allegations of an incident.
Incident register	The incident register contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan.
L/s	Litres per second.
m^2	Square Metres.
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.
µS/cm	Microsiemens per centimetre.
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).

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.
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 including all subsequent amendments.
SS	Suspended solids.
Temp	Temperature, measured in °C (degrees Celsius).
Turb	Turbidity, expressed in NTU or FNU.
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 an Environmental Quality Manager.

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Appendix I

Resource consents held by Taranaki Galavanizers Ltd

(For a copy of the signed resource consent
please contact the TRC Consents department)

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. Permits authorising discharges to water are issued by the Council under Section 87(e) of the RMA.

Air discharge permits

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. Permits authorising discharges to air are issued by the Council under Section 87(e) of the RMA.

Discharge Permit

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

Name of Consent Holder:	Taranaki Galvanizers Limited R D 23 STRATFORD 4393
Consent Granted Date:	17 June 2010

Conditions of Consent

Consent Granted:	To discharge emissions into the air from the operation of a hot dip galvanising plant and associated processes at or about (NZTM) 1709953E-5647196N
Expiry Date:	1 June 2028
Review Date(s):	June 2016, June 2022
Site Location:	Corner Monmouth Road and State Highway 3, Stratford
Legal Description:	Lot 2 DP 19286 Blk I Ngaere SD

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

General condition

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

Special conditions

1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.

2. The 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.

3. The zinc deposition rate near the property boundary, at sampling locations as agreed to by the Chief Executive, Taranaki Regional Council, shall be less than 8.2 milligrams of zinc per square metre per day [$mg/m^2/day$]. The agreed locations are to be indicative of the zinc deposition rate immediately beyond the boundary.

4. The consent holder shall ensure that all items to be dry flux galvanised shall be clean and dry as far as practicable before hot dipping.

5. No wet fluxing or flux dusting will be undertaken on site.

6. 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 worknotification@trc.govt.nz. Notification by fax or post is acceptable if the consent holder does not have access to email.

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 2016 and/or June 2022, 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 June 2010

For and on behalf of
Taranaki Regional Council

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Chief Executive

Discharge Permit

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

Name of Consent Holder:	Taranaki Galvanizers Limited R D 23 STRATFORD 4393
Consent Granted Date:	17 June 2010

Conditions of Consent

Consent Granted:	To discharge stormwater from the galvanising plant premises into an unnamed tributary of the Kahouri Stream in the Patea catchment at or about (NZTM) 1709996E-5647129N
Expiry Date:	1 June 2028
Review Date(s):	June 2016, June 2022 and/or within 3 months of receiving a notification under special condition
Site Location:	Corner Monmouth Road and State Highway 3, Stratford
Legal Description:	Lot 2 DP 19286 Blk I Ngaere SD
Catchment:	Patea
Tributary:	Kahouri

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

General condition

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

Special conditions

1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.

2. The stormwater discharged shall be from a catchment area not exceeding 0.735 hectares.

3. Any significant volumes of hazardous substances [e.g. hydrochloric acid, zinc ammonium chloride, sodium hydroxide] 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}
total recoverable hydrocarbons	Concentration not greater than 15 gm^{-3}
zinc	Concentration not greater than 5 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 5 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.

6. 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.

7. 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.

   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 2016 and/or June 2022; 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.

Signed at Stratford on 17 June 2010

For and on behalf of
Taranaki Regional Council

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Chief Executive

Appendix II

Categories used to evaluate environmental and administrative performance

Categories used to evaluate environmental and administrative performance

Environmental performance is concerned with actual or likely effects on the receiving environment from the activities during the monitoring year. Administrative performance is concerned with the Company's approach to demonstrating consent compliance in site operations and management including the timely provision of information to 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 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 during investigations of incidents reported to the Council by a third party 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 during investigations of incidents reported to the Council by a third party. 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 during investigations of incidents reported to the Council by a third party. 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.