Taranaki Galvanizers Monitoring Programme Annual Report 2013-2014

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Executive summary

Taranaki Galvanizers Limited (the Company) operate a zinc galvanising plant located on Monmouth Road, approximately 1 kilometre 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 annual report for the period July 2013-June 2014 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess the Company's environmental performance during the period under review, and the results and environmental effects of the Company's activities.

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

The Council's monitoring programme for the period under review included two inspections and seven water samples collected for physicochemical analyses.

In general, the site was managed to a good standard in relation to stormwater and wastewater management. Stormwater was managed to avoid any contact with chemicals stored on-site with all wastewater either disposed of directly to trade waste or temporarily stored in the bunded area of the site before being removed off-site for disposal or recycling at an approved facility.

During the period under review, no sampling of the novaflow pipe containing leachate was undertaken, as there was little to no flow observed on inspection.

On both sampling occasions, upstream and downstream of the industrial discharge was sampled during the reported period. Physicochemical sampling of the receiving waters showed compliance with consent limits for the major constituents of the discharge including zinc concentration, pH level, suspended solids, and oil and grease concentrations.

Elevated zinc concentrations were recorded in the receiving waters upstream and downstream of the Taranaki Galvanizer's discharge. However, zinc concentrations recorded complied with consent limits. The historical disposal of galvanising waste materials into a bore on the Galvanizer's site is considered to be the most likely source of zinc contamination in the unnamed tributary. Previous monitoring of the unnamed tributary has shown that there was an initial decrease in the zinc concentrations recorded in the unnamed tributary during the 1990's. Zinc concentrations then remained relatively constant varying between 0.005 g/m^3 and 1 g/m^3. Results from the current monitoring period suggest that in general zinc concentrations are continuing to decline over time.

The stormwater drain situated on the north east corner of the site was not discharging on 11 December 2013, and no sample was taken. A low and slow flow of stormwater discharge was sampled during the second sampling occasion, 29 May 2014. Physicochemical sampling of this stormwater discharge showed compliance with consent limits for the major constituents of the discharge including zinc concentration, pH level, and oil and grease concentrations. However, a non-compliance was discovered in relation to suspended solid concentrations. No enforcement action was taken on this occasion as is was undeterminable whether or not this

very low and slow discharge was reaching the unnamed tributary of the Kahouri Stream . A follow-up sample for suspended solids was taken and will be reported on in the 2014-2015 annual report.

Both visual and physicochemical results from upstream and downstream of the Taranaki Galvanizers discharge, suggested no impact on the unnamed tributary of the Kahouri Stream.

In the reported period, no effect of emissions to air from the galvanising site was detected at or beyond the boundary of the site during inspections. A deposition gauge survey was undertaken at two sites on the boundary of the Galvanizers site in November 2013. The results of this survey showed that at both sites the zinc deposition level was well below the consent limit of 8.2 $mg/m^2/day$.

No complaints were received by Council in relation to the discharges to water and to air from the Galvanizer's site over the period under review.

During the 2013-2014 monitoring period, the Company demonstrated a good level of environmental performance and compliance with the resource consents. In addition, there were no incidents recorded by Council in relation to the galvanising plant during the reported period.

This report makes recommendations for the 2014-2015 year, including a recommendation that the monitoring programme continue on the same basis as that in the previous monitoring period. It is recommended that deposition gauging continue to be undertaken on a biennial basis with the next survey scheduled for the 2015-2016 monitoring 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 an annual report for the period July 2013 to June 2014 by the Taranaki Regional Council (the Council), describing the monitoring programme associated with the resource consents held by Taranaki Galvanizers Limited for the operations of its galvanising plant situated near Stratford.

Prior to July 2010, compliance monitoring for the Taranaki Galvanizers consents was incorporated into a Kahouri Stream Annual Monitoring Programme which included the monitoring of eight industries in the catchment (TRC, 2002). In the 2009-2010 Kahouri Stream Monitoring Programme Annual Report (TRC, 2011), it was recommended that monitoring of Taranaki Galvanizers be undertaken as a stand-alone monitoring programme in the 2010-2011 monitoring period.

As a consequence of this transition, the 2010-2012 monitoring period was the first to be reported on under the new stand-alone Taranaki Galvanizers Monitoring Programme. This report covers results and findings of the 2013-2014 monitoring period.

1.1.2 Structure of this report

Section 1 of this report is a background section. It sets out general information about compliance monitoring under the *Resource Management Act 1991*(RMA) and the Council's obligations and general approach to monitoring sites through annual programmes, the resource consents held by Taranaki Galvanizers in the Kahouri Stream Catchment, the nature of the monitoring programme in place for the period under review, and a description of the activities and operations conducted in Kahouri Stream Catchment.

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

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

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

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

1.1.3 The Resource Management Act (1991) and monitoring

The *Resource Management Act 1991* (RMA) primarily addresses environment 'effects' which are defined as positive or adverse, temporary or permanent, past, present or future, or cumulative. Effects may rise in relation to:

a) the neighbourhood or the wider community around an activity 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 (e.g. recreational, cultural or aesthetic);
e) risks to the neighbourhood or environment.

In drafting and reviewing conditions on discharge permits, and in implementing monitoring programmes, the Taranaki Regional Council is recognising the comprehensive meaning of 'effects' inasmuch as is appropriate for each 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 of consents and rules in regional plans; and maintains an overview of performance of resource users against regional plans and consents. Compliance monitoring , including impact monitoring, also enables the Council to continuously assess its own performance in resource management as well as that of resource users particularly consent holders. It further enables the Council to continually re-evaluate its approach and that of consent holders to resource management, and, ultimately, through the refinement of methods, to move closer to achieving sustainable development of the region's resources.

1.1.4 Evaluation of environmental performance

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

- A **high** level of environmental performance and compliance indicates that essentially there were no adverse environmental effects to be concerned about, and no, or inconsequential (such as data supplied after a deadline) non-compliance with conditions.

- A **good** level of environmental performance and compliance indicates that adverse environmental effects of activities during the monitoring period were negligible or minor at most, or, the Council did not record any verified unauthorised incidents involving significant environmental impacts and was not obliged to issue any abatement notices or infringement notices, or, there were perhaps some items noted on inspection notices for attention but these items were not urgent nor critical, and follow-up inspections showed they have been dealt with, and any inconsequential non compliances with conditions were resolved positively, co-operatively, and quickly.

- **Improvement desirable (environmental)** or **improvement desirable (administrative compliance)** (as appropriate) indicates that the Council may have been obliged to record a verified unauthorised incident involving measurable environmental impacts, and/or, there were measurable environmental effects arising from activities and intervention by Council staff was required and there were matters that required urgent intervention, took some time to resolve, or remained unresolved at the end of the period under review, and/or, there were on-going issues around meeting resource consent conditions even in the absence of environmental effects. Abatement notices may have been issued.

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

1.2 Site description

The galvanising plant owned and operated by Taranaki Galvanizers 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 galvanising plant is positioned in the central part of the site and houses a series of treatment tanks involved in the galvanising process (Figure 1). Two exhaust fans, one positioned at either end of the main building, are used to extract fumes from the building during galvanising operations. Large doors positioned on the northern and eastern sides of the main building provide access for the receipt and dispatching of materials at the site.

The area immediately surrounding the galvanising buildings is concreted. The concrete and metal yard located on the northern side of plant is used as laydown area for materials waiting to be processed or dispatched.

Effluent tanks collecting wastewater from the plant are housed within a concrete bunded area situated on the south-eastern corner of the galvanizing plant (Figure 1).

Stormwater from the roofs of the galvanising plant is collected for use on site.

Stormwater from the northern part of the site is directed to a stormwater drain located on the north-eastern side of the site and then enters a road side drain along SH3. This roadside drain discharges into the manhole beside the entranceway to the neighboring property owned by Taranaki Steelformers (manhole 2 in Figure 1).

An unnamed tributary of the Kahouri Stream originally ran close to the southern boundary of the galvanising site. This stream is now piped from its origin, through two manholes (Figure 1), to where it appears as an open channel on the other side of SH3. The piped tributary is also thought to receive groundwater seepage from a

disused bore on site which was in the past contaminated with waste from the galvanizing plant. Further discussion of this event is given in section 1.4 of this report.

Stormwater from the southern side of the site either flows overland to a grated manhole (manhole 1 in Figure 1) on the southeastern corner of the site or via a yellow nova flow pipe that then discharges into this same manhole. The yellow novaflow pipe conveys both site stormwater and some groundwater seepage from the southern end of the site and is therefore referred to as an industrial discharge as opposed to only a stormwater discharge. The piped unnamed tributary enters manhole 1 immediately above the point of discharge from the yellow novaflow pipe (Photo 1).

Figure 1 Taranaki Galvanizers site layout

Photo 1 The view down manhole 1 including outlet of the unnamed tributary, the yellow novaflow pipe from the Taranaki Galvanizers site (IND005014) and the tributary immediately downstream of the discharge (KHI000358)

1.3 Process description

The galvanising plant was owned and operated by Union Galvanizers 1995 Limited until September 1998, at which time that company ceased to operate. The plant operations remained suspended until May 1999, when Taranaki Galvanizers (2003) Limited took over ownership of the site (TRC, 2004). During the 2006–2007 monitoring period ownership changed once again, to Taranaki Galvanizers Limited.

Taranaki Galvanizers 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**.

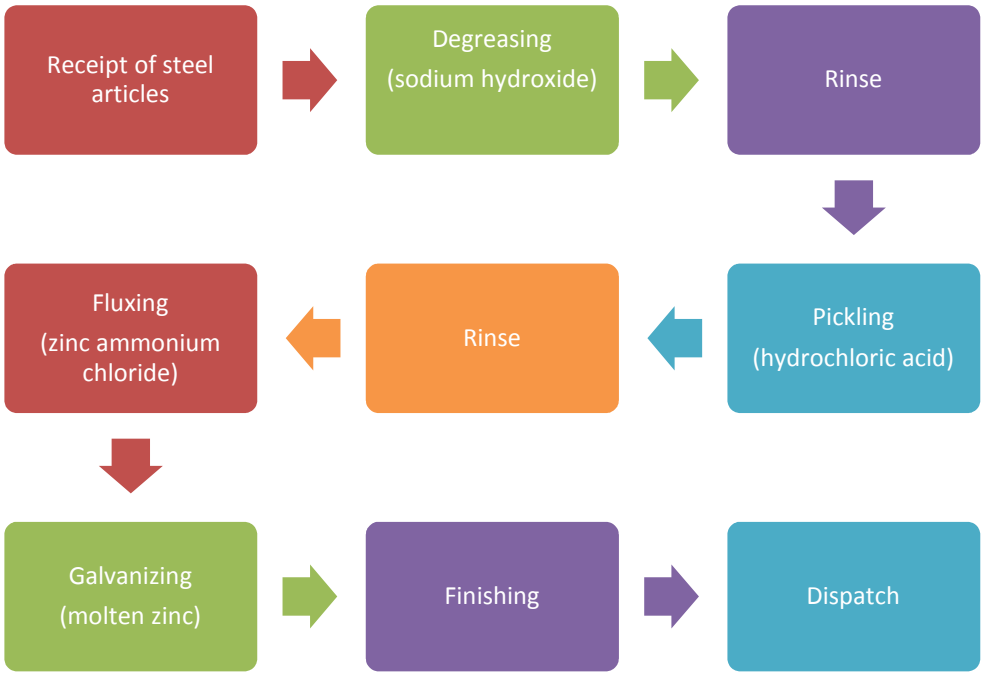

Figure 2 Hot-dip galvanizing process undertaken at Taranaki Galvanizers

Articles of steel to be galvanized are initially immersed in a hot sodium hydroxide degreasing or stripping bath to remove any oil or grease contaminants. Oils removed from the surface of the steel remain on the surface of the degreasing bath. After degreasing, the articles are rinsed in a water bath to reduce the carry-over of caustic solution into the next phase of the process.

The next stage of the process involves the removal of mill scale, rust, paint and other oxides from the article being galvanized by 'pickling', or acid treatment, in hydrochloric acid. Again, the article is rinsed in water to remove any excess acid and to minimise the amount of acid carried over to the next stage in the process.

The acid-cleaned steel is then immersed in a flux solution containing zinc ammonium chloride to remove the oxide film which forms on the highly reactive steel surface after acid cleaning and prevents further oxidation prior to galvanizing. The fluxing treatment also assists with the adhesion of the molten zinc to the steel, thereby providing a more uniform coating.

Fluxed steel articles are then galvanized by immersion in a hot bath of molten zinc. On completion of the galvanising process articles may be filed or sanded down to remove excess zinc prior to dispatch.

Particular care is taken to ensure that the flux solution dries on articles before they are dipped into the zinc bath. This minimises fume generation and spluttering. In the 2003-2004 monitoring period the Company switched from the hosing of articles after caustic and acid treatment, to using a rinse tank which resulted in a decrease in the volumes going to the trade waste tanks.

Wastewater produced during the galvanising process can be divided into two main categories: a concentrated wastewater stream comprising largely of spent caustic cleaning and acid pickling liquids, and a dilute wastewater stream consisting of washings from the rinsing of articles and cleaning of floors as well as condensation from steam-jacketed vessels. These wastewater streams are disposed of separately.

All dilute wastewater is directed to a series of concrete tanks set within a concrete bunded area. Stormwater collected inside the bund is also pumped into these tanks. These tanks are used to pH neutralise and settle the wastewaters. This wastewater is then transported by road tanker from the galvanising plant to the Stratford oxidation ponds after testing for zinc and pH under the supervision of the Stratford District Council.

The more concentrated wastewater is either recycled or directed to trade waste but is rarely stored on site. Plastic tanks situated in a bunded area lined with acid/caustic resistant resin are utilised entirely for emergency storage and have not been required for this purpose since 1995.

1.4 Previous monitoring of discharge to water

The unnamed tributary of the Kahouri Stream had been monitored at two sites (manhole 1- KHI000358 and manhole 2- KHI000368) downstream of the Taranaki Galvanizers site on an intermittent basis since it was discovered that spent acid containing a high concentration of zinc was disposed of in a bore on the galvanising plant site in mid-1987. Periodically, samples had also been taken from the unnamed tributary upstream of the Galvanizers site (KHI000353). Zinc leached through the ground and appeared in the piped unnamed tributary parallel to the boundary of the galvanising plant site from Monmouth Road. The then Regional Water Board decided to monitor the tributary regularly and take action if there was a risk to biota of the Kahouri Stream, rather than dig the area up and risk the release of a large amount of zinc into the Kahouri system. The zinc concentration in the tributary appeared to be decreasing exponentially.

1.5 Resource consents

1.5.1 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.

Taranaki Galvanizers hold water discharge permit 4657-2 authorises discharge of stormwater from the galvanising plant premises into an unnamed tributary of the Kahouri Stream. This permit was issued by the Council on 17 June 2010 under Section 87(e) of the RMA and is due to expire on 1 June 2028. A copy of the renewed consent is attached as Appendix I.

Special condition 1 requires the consent holder to adopt the best practicable option.

Special condition 2 limits the area from which the stormwater discharge could originate.

Special condition 3 requires the appropriate storage of hazardous substances onsite to minimise potential for stormwater contamination.

Special condition 4 specifies contaminants and limits for the discharge of stormwater.

Special condition 5 defines the mixing zone and limits on adverse effects in the receiving waters.

Special conditions 6 and 7 require the maintenance of a spill contingency plan and stormwater management plan, detailing measures and procedures to prevent spillages or unauthorised discharges, and to minimise the potential for stormwater contamination.

Special condition 8 requires notification to Council of any changes to processes or operations that could alter the nature of the discharge, and condition 9 is a review condition.

1.5.2 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.

Taranaki Galvanizers hold air discharge permit 4064-3 to cover the discharge of emissions to air from the operation of a hot-dip galvanising plant and associated processes. This permit was issued by the Council on 17 June 2010 under Section 87(e) of the RMA and expires on 1 June 2028. A copy of this consent is included in Appendix I.

Special condition 1 requires the consent holder to adopt the best practicable option.

Special condition 2 requires that offensive or objectionable odours shall not pass the property boundary.

Special condition 3 specifies a limit on the deposition of zinc immediately beyond the boundary of the site.

Special conditions 4 and 5 define the processes that should be used in galvanizing and cleanliness requirements to minimise adverse effects.

Special condition 6 requires notification to Council of any changes to processes or operations that could alter the nature of the discharge, and condition 7 is a review condition.

1.6 Monitoring programme

The monitoring programme for Taranaki Galvanizers comprises three primary components which are discussed below.

1.6.1 Site inspections

The galvanising plant was visited two times over the period under review (i.e. two site inspections per monitoring year). In respect to the discharge to water, the main points of interest were plant processes with potential or actual discharges to the unnamed tributary, 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.

1.6.2 Physicochemical sampling

In late December 2012, a small scale investigation was carried out to determine the suitability of the existing physicochemical sampling sites in monitoring the effects of the stormwater discharges from the Galvanizer's site into the unnamed tributary of the Kahouri Stream. The investigation involved the use of fluorescein dye to determine the exact flow path of the piped section of the unnamed tributary adjacent to the Galvanizers site. In light of the information gathered, three new sites, two upstream and one downstream of the Galvanizers site were established. Three downstream sites (KHI000368, KHI000369 and KHI000358) were deleted from the Taranaki Galvanizers monitoring programme. Table 1 summarises current sampling sites related to the Taranaki Galvanizers discharge to water, and they are presented in Figure 1.

Table 1 Location of the physicochemical sampling points associated with the Taranaki Galvanizer's discharge to water

Site	Location	GPS location	Site code	Sampling date/s
Unnamed tributary of the Kahouri Stream *(existing site)*	Immediately upstream of Taranaki Galvanizers industrial discharge	1709995E-5647129N	KHI000353*	11/12/2013 29/05/2014
Industrial discharge (stormwater and ground water seepage) *(existing site)*	Stormwater and groundwater leachate from the southern end of the site	1709995E-5647129N	IND005014*	Not sampled
Unnamed tributary of the Kahouri Stream *(new site)*	200 m downstream of Taranaki Galvanizers	1710232E-5647063N	KHI000356	11/12/2013 29/05/2014
Stormwater discharge point *(new site)*	Laydown area from the northern side of the site	1709977E-5647210N	STW001140	29/05/2014
Unnamed tributary of the Kahouri Stream *(new site)*	Approximately 75 m u/s of SH3	1709926E-5647120N	KHI000352	11/12/2013 29/05/2014

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

The industrial discharge from the yellow novaflow pipe (IND005014) was not sampled during the inspections undertaken on 11 December 2013 and 29 May 2014 as there was no discharge of leachate occurring at the time of inspection.

The stormwater discharge point (STW001140) located on the north-eastern side of the site was not sampled during the inspection undertaken on 11 December 2013, as there was no discharge occurring at the time of the inspection. On 29 May 2014 the stormwater drain was discharging and a sample was taken. A follow-up sample for suspended solids was taken in the 2014-2015 monitoring year and will be reported on in the 2014-2015 annual report.

Sampling was undertaken at three receiving water sites associated with the stormwater discharge during both of the inspections carried out 11 December and 29 May 2014. The three sites sampled included the unnamed tributary immediately above the Taranaki Galvanizers industrial discharge as it entered manhole 1 (KHI000353), an open channel of the unnamed tributary approximately 200 m downstream of the Taranaki Galvanizers industrial discharge (KHI000356), the unnamed tributary approximately 75 m upstream of SH3 (KHI000352).

Samples were analysed for conductivity, pH, water temperature and zinc (dissolved).

1.6.3 Air quality monitoring

Air monitoring in the 2013-2014 period comprised visual inspections and deposition gauge monitoring at two sites. The two sites included a site near the entrance way (AIR006601) and a site in the northern corner of the site (AIR006602).

2. Results

2.1 Water

2.1.1 Inspections

Two routine inspections of the Taranaki Galvanizers site were conducted over the 2013-2014 monitoring period. The inspections focused on stormwater and wastewater management at the site, with both of these aspects found to be satisfactory during the visits.

During an inspection carried out on 11 December 2014, it was found that areas of the site were clear of any chemicals with the potential to contaminate stormwater. No stormwater was observed to be discharging from the north-eastern side of the site and there were no solid flecks of zinc visible around this stormwater drain. Solid flecks of zinc were visible on both the gravel and concreted areas around the building and galvanized items were laid out around the perimeter of the yard. It was advised that zinc flecks be picked up on a regular basis, particularly when heavy rain was forecast. It was also advised that if the gravel areas around the site were frequently being used to dry items, that this area be concreted to ensure that any flecks of zinc were removed. At the time of sampling, the groundwater discharge pipe was not discharging.

Again, during an inspection carried out on 29 May 2014 stormwater areas were clear of any chemicals. Stormwater was observed to be discharging from the north-eastern end of the site and a sample was collected. The discharge that filled the stormwater drain was grey in colour and had an oily sheen. Some flecks of zinc were observed in and around the stormwater drain and around the galvanized items laid out on the concrete and gravel areas of the yard. It was advised that zinc flecks be removed from both the yard and around the stormwater drain. Again, at the time of sampling the groundwater discharge pipe was not discharging.

2.1.1.1 Historical results from industrial discharge (IND005014)

Historical results from the industrial discharge from the yellow novaflow pipe (IND005014) samples are presented in Table 2; the last sampling occasion was in May 2012 due to a lack of flow in the 2012-2013 and 2013-2014 monitoring periods. The following results are also discussed in the 2010-2012 report (TRC, 2012).

Table 2 Historical results of the discharge of stormwater/groundwater seepage (IND005014) for the period 24 October 1991 to 17 May 2012

Parameter	Unit	Consent limit	Historical data 24/10/1991- 07/05/2012		
			No. of samples	Range	Median
Time	NZST	-	-	-	-
Temperature	°C	-	18	8.7-17.0	13.3
pH	pH	6.0-9.0	27	3.5-6.9	4.4
Conductivity at 20°C	mS/m	-	26	5.8-150	38.0
Ammonia-N	g/m^{3}N	-	11	<0.003-68.0	1.1
Turbidity	NTU	-	7	0.14-80.0	0.6

Parameter	Unit	Consent limit	Historical data 24/10/1991- 07/05/2012		
			No. of samples	Range	Median
Suspended solids	g/m^3	100	3	2-2	2.0
Oil and Grease	g/m^3		2	0.5-0.05	0.5
Dissolved zinc	g/m^3	5	9	0.2-39.2	5.4

Special condition 4 of consent 4657-2 specified limits on certain constituents of the discharge including; pH, suspended solids, total recoverable hydrocarbons and zinc. Although this discharge does not relate to this consent, these conditions can be a useful guide, to which comparisons can be made. Previous sampling records have shown that pH levels have increased markedly since the 1990's to within the lower end of the consented pH range in the last few years (Figure 3).

The concentrations of suspended solids have always fallen well within the specified consent limits at the industrial discharge site (IND005014) (Table 2).

In the past dissolved zinc concentrations have fallen well within the consent limit of 5 g/m^3 and have decreased considerably in the last twelve years (Table 2 and Figure 4).

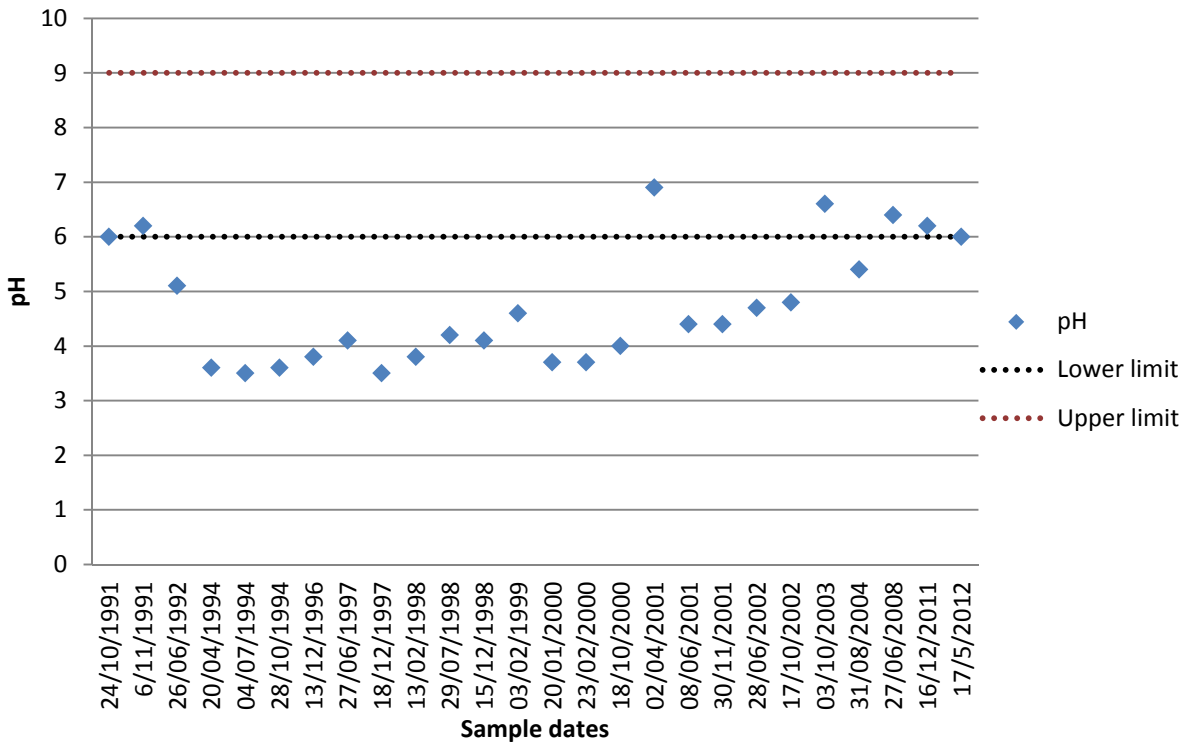

Figure 3 pH levels recorded in the discharge (IND005014) from the Galvanising site between October 1991 and June 2012 (sampling was not undertaken in the 2012-2013 and 2013-2014 monitoring periods due to lack of discharge)

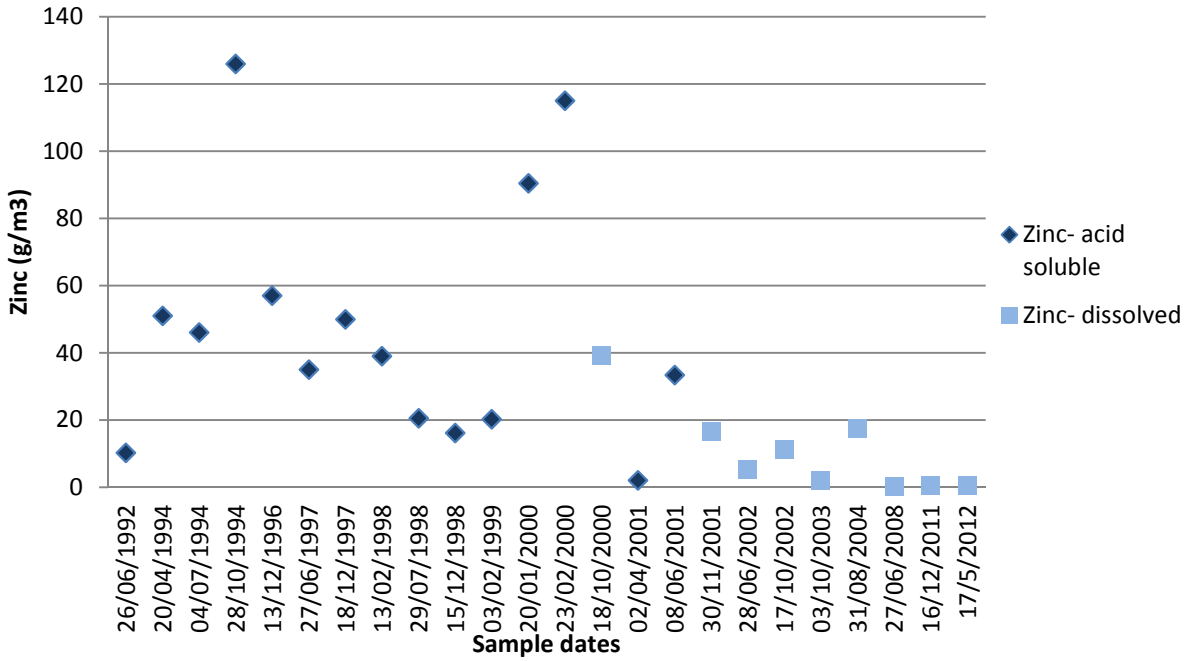

Figure 4 Zinc concentrations recorded in the discharge samples (IND005014) from the Galvanising site between June 1992 and June 2012 (sampling was not undertaken in the 2012-2013 and 2013-2014 monitoring periods due to lack of discharge)

2.1.1.2 Physicochemical results

On two occasions during the reported period (11 December 2013 and 29 May 2014), sampling was undertaken upstream (KHI000352 and KHI000353) and downstream (KHI000356) of the industrial discharge from the 'yellow novaflow pipe' (IND005014). Samples taken from the receiving waters upstream and downstream of the Galvanizers site were analysed for conductivity, chromium, pH, temperature and zinc. Table 3 summarises the results of this sampling. On one occasion during the reported period (29 May 2014) sampling was undertaken at the stormwater drain (STW001140) situated on the north-east corner of the Taranaki Galvanizers building (Table 3).

Table 3 Results of the two sampling surveys of the upstream sites (KHI000352 and KHI000353), and the site 200 m downstream (KHI000356) of Galvanizer's industrial discharge in the period 2013-2014 and results for the stormwater discharge (STW001140), sampled during the second survey only

Parameter	Units	Survey 11/12/2013			Survey 29/5/2014			
		Upstream 1 (KHI000352)	Upstream 2 (KHI000353)	Downstream (KHI000356)	Upstream 1 (KHI000352)	Upstream 2 (KHI000353)	Downstream (KHI000356)	Stormwater discharge (STW001140)
Time	NZST	15:00	14:50	14:25	14:40	15:00	14:10	13:50
Temp	g/m^3	13.2	13.7	13.6	13.7	13.8	13.8	14.8
pH	pH	6.7	6.5	6.6	6.6	6.6	6.8	7.5
Conductivity at 20°C	mS/m	8.4	10.2	9.0	6.0	9.0	9.1	10.0
Chromium-acid soluble	g/m^3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Hydrocarbons	g/m^3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Suspended solids	g/m^3	14	50	5.0	88	26	17	150
Zinc-dissolved	g/m^3	0.056	0.417	0.301	0.058	0.329	0.432	2.27

The Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC, 2000) propose that for protection of 95% of species (the default value for ecological protection), zinc in fresh water should be less than 0.008 g/m^3 (at a hardness 30 g/m^3 $CaCO^3$). For protection of 90% of species (a lower level of ecological protection), zinc in fresh water should be less than 0.015 g/m^3. These numbers refer to chronic (on-going) exposure. Zinc concentrations recorded upstream and downstream of the Galvanizers site by the two surveys were indicative of zinc contamination (Table 3 and Figure 5). Seepage from the contaminated bore under the Galvanizers site is the most likely source of this contamination recorded upstream of the industrial discharge. It should be noted that SH3 traffic contributes zinc to the environment and given the proximity of the sampling sites for the discharge from Taranaki Galvanizers to SH3, there may be an ongoing source of zinc from this source also; albeit minor.

The results of the 11 December 2013 survey showed an increase in zinc concentration of 0.361 g/m^3 between the upstream (0.056 g/m^3) and the upstream site immediately above the Taranaki Galvanizers discharge point (0.417 g/m^3) and then a decrease of 0.116 g/m^3 between this site and the downstream site (0.301 g/m^3) (Figure 5 and Table 3). As there was no stormwater discharge at the time of survey (STW001140), it is unknown whether or not discharge from the Taranaki Galvanizers site has contributed to the slightly elevated zinc concentrations found at the downstream site. The results of the 29 May 2014 survey showed an increase in zinc concentration of 0.271 g/m^3 between the upstream site (0.058 g/m^3) and the upstream site immediately above the Taranaki Galvanizers discharge point (0.329 g/m^3) and a further increase of 0.103 g/m^3 between this site and the downstream site (0.432 g/m^3) (Figure 5 and Table 3). The stormwater drain at the north-eastern corner of the Taranaki Galvanizers building was discharging at the time of the survey. In comparison to the other three sites, sampling of this discharge showed a high zinc concentration (2.27 g/m^3); however this result was still within the consented discharge concentration.

As mentioned previously, monitoring of the unnamed tributary began after the discovery of the contaminated bore on the Galvanizers site. This monitoring has shown that zinc concentrations in the tributary decreased during the 1990's, then remained relatively constant , varying between the detection limit of 0.005 g/m^3 and 1 g/m^3. Recent results suggest that in general zinc concentrations are continuing to decline over time (Figure 6). Discharge sampling undertaken in the reported period, at upstream site 2 (KHI000353) showed that the latest concentrations of dissolved zinc (0.329 g/m^3) were well below the median of historical dissolved zinc concentrations (0.690 g/m^3) and were the second lowest recorded to date for this site. Results for downstream sites previously sampled (KHI00058 (1991-2010) and KHI000368 (2010-2012), and downstream results from the 2013-2014 monitoring period (KHI000356) also show a decline over time (Figure 7). It is considered likely that it will take some years before the zinc concentrations in the tributary are reduced significantly due to the level of contamination (from the bore) under the Galvanizers site.

The stormwater drain situated on the north east corner of the site was discharging, during the second survey occasion only. A very low and slow flow was sampled. Physicochemical analysis of this discharge showed compliance with consent limits for the major constituents of the discharge including zinc concentration, pH level, and oil and grease concentrations. However, suspended solid concentrations showed a non-compliance with levels 50 mg/m^3 above the consented limit of 100 g/m^3 (Table 3). Despite this breech of consent condition, no enforcement action was taken as there was no detrimental impact to the receiving environment on this occasion, as confirmed by both visual inspection and physicochemical results. A follow-up sample for suspended solids was taken and will be reported on in the 2014-2015 annual report. Despite the high suspended solid concentration in the stormwater discharge, results of the furthermost downstream site (KHI000356) (17 mg/m^3) and the downstream site directly above the discharge (KHI000353) (26 mg/m^3), showed suspended solid concentrations much lower than the upstream site (88 mg/m^3) (Table 3). Turbidity results, were again higher at the upstream site (95 NTU) than the two downstream sites (54 NTU and 39 NTU), with the furthermost downstream site having the lowest turbidity.

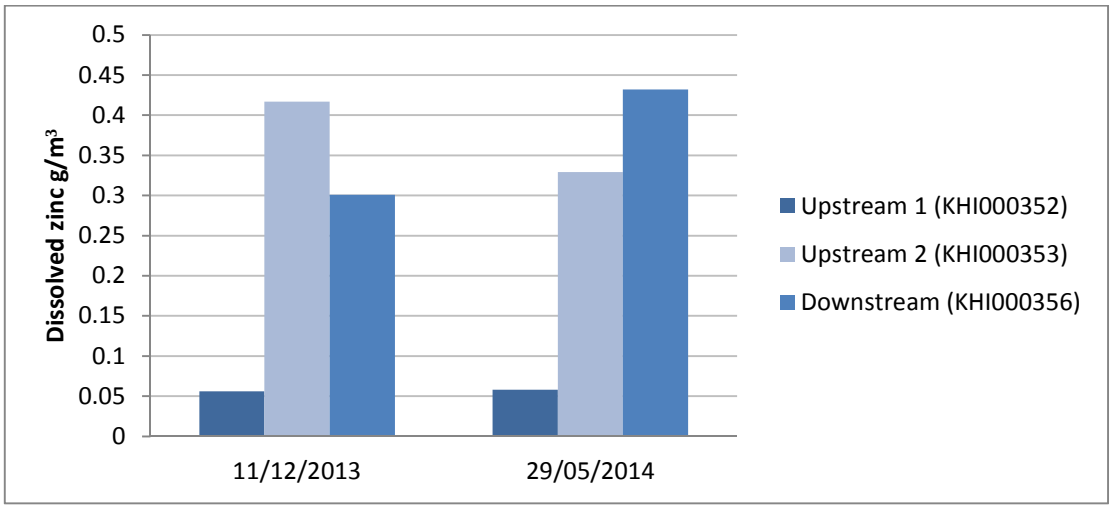

Figure 5 Dissolved zinc concentrations in the unnamed tributary of the Kahouri Stream upstream and downstream of the site on two survey occasions in 2013-2014

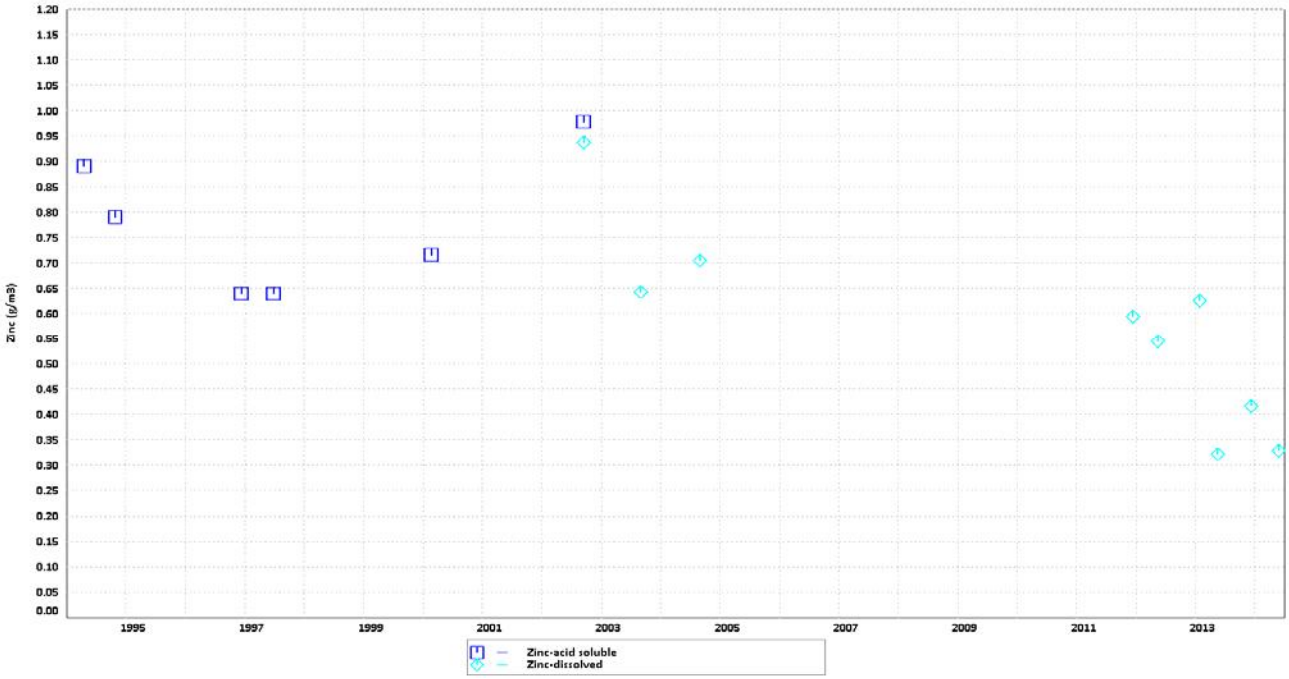

Figure 6 Zinc concentrations in the unnamed tributary of the Kahouri Stream immediately upstream of the Taranaki Galvanizers industrial discharge since 1994 (site KHI000353)

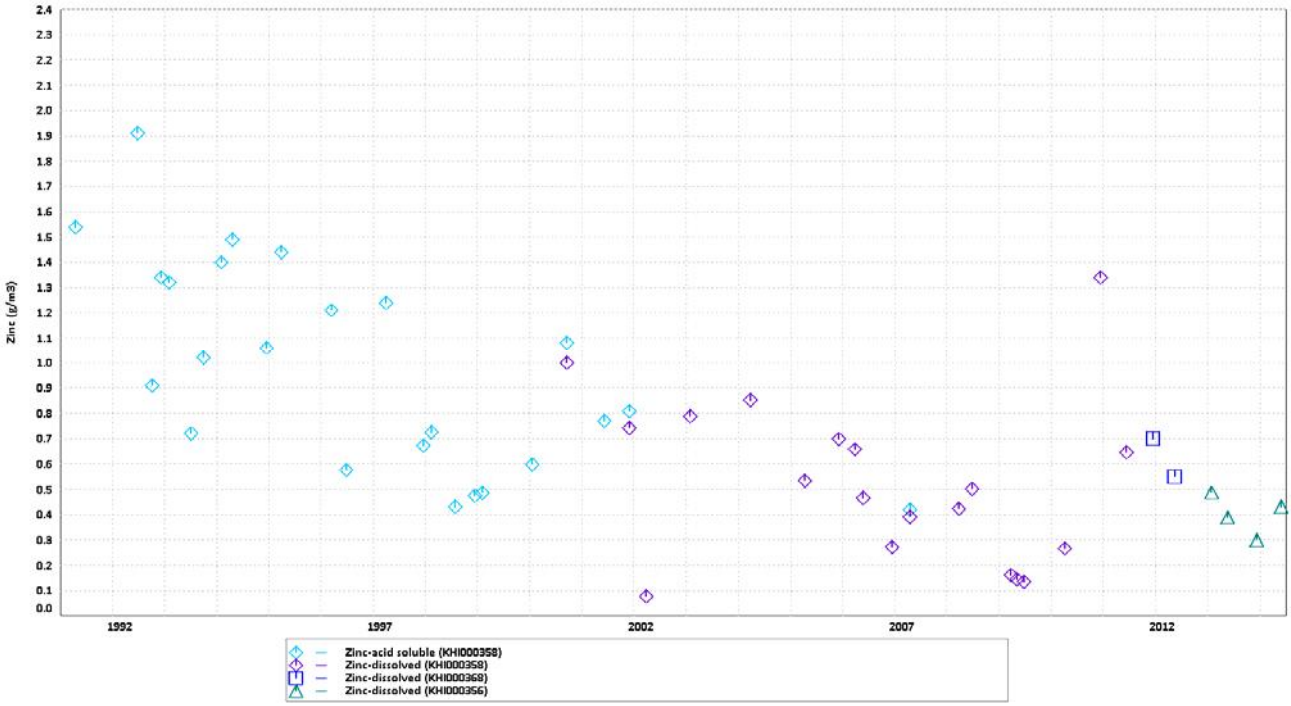

Figure 7 Zinc concentrations in the unnamed tributary of the Kahouri Stream downstream of the Taranaki Galvanizers industrial discharge since 1991 (downstream sites KHI000358, KHI000368 and KHI000356)

2.2 Air

2.2.1 Inspections

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

On 11 December 2013 an inspection was carried out. At the time of the inspection there was evidence of a discharge to air from the building (smoke), however there were no associated odours and discharges dissipated before the boundary.

On 29 May 2014 a second inspection was carried out. At the time of this inspection there was evidence of discharges to air from the building; however there was no associated odour and the discharges dissipated at the boundary.

2.2.1.1 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 essentially buckets elevated on a stand to about 1.6m. The buckets have a solution in them to ensure that any dust that settles out of the air is not resuspended by wind.

During the 2013-2014 monitoring period a single depositional survey was carried out. Deposition gauges were deployed in two locations at the site; by the entrance way (AIR006601) and in the northern corner of the site (AIR006602). The gauges were left in place for 20 days. Material from the gauges was analysed for both solid particulates and for various chemicals associated with pollution including zinc.

Guideline values used by the Council for dust deposition are 4 g/m^2/30 days or 0.13 g/m^2/day deposited matter. When assessing results against these values consideration is given to the location of the industry and the sensitivity of the surrounding community. Deposited particulates collected at both sites were below the guideline level adopted by the Council (Table 4).

Zinc deposition
The Department of Health (1992) has set guidelines for maximum annual application to agricultural land of heavy metals (in sewage sludge). These guidelines may be used for assessing the impact of metals deposited on land in the vicinity of Taranaki Galvanizer's site. The guideline for zinc is 30 kilograms per hectare per year, which equates to 8.2 mg/m^2/day. This guideline is reflected in special condition 3 of consent 4064-3 which requires that the zinc deposition rate near the property boundary be less than 8.2 mg/m^2/day.

At both sites, deposited zinc concentrations were well within these limits (Table 4).

Table 4 Taranaki Galvanizers deposition monitoring results for the 2013-2014 survey (5 November-25 November 2013) with past records from the sites (for the period up to 30 June 2013)

	Guideline Value	Site AIR006601*- Entrance way to site				Site AIR006602- Northern corner of site			
			Historical data				Historical data		
		Survey 2013-2014	No. Samples	Range	Median	Survey 2013-2014	No. Samples	Range	Median
Total particulate mg/m²/day	0.13** g/m²/day	0.07	16	0.01-1.07	0.11	0.11	15	0.01-0.73	0.07
Dissolved zinc mg/m²/day	8.2*** mg/m²/day	0.89	16	0.01-3.0	0.31	1.03	16	0.04-12.6	0.47

*Outlier data point removed from analysis for sample taken 31 May 1995 to prevent skewed statistics.
**Council's guideline value for dust deposition
***Based on the Department of Health guidelines for maximum annual application to agricultural land of heavy metals.

Figure 8 shows that the predominant wind direction over was from a south-easterly direction. The strongest winds during this period came from the nor-northwest. Under the prevailing south-east wind, the two monitoring sites would have been downwind of the galvanising plant site and were therefore likely to entrain high levels of airborne contaminants from the site. However, the result for (AIR006601) was below the historical median and was the same as what was recorded in the previous monitoring occasion in 2011 (0.07 g/m²/day). The result for (AIR0006602) was slightly higher than the previous monitoring occasion (0.06 g/m²/day) and slightly above the historical median (Table 4).

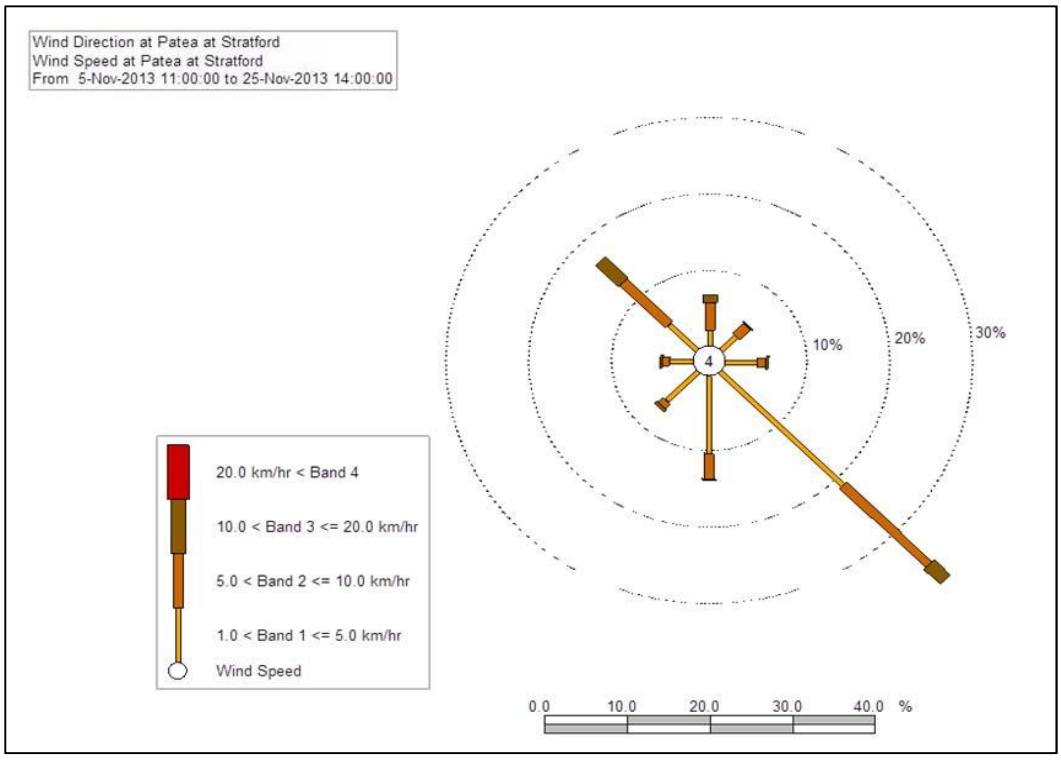

Figure 8 Windrose, showing wind direction and speed for the period 05 November 2013 to 25 November 2011. Data collected at Taranaki Regional Council Office, Stratford

2.3 Investigations, interventions, and incidents

The monitoring programme for the year was based on what was considered to be an appropriate level of monitoring, review of data, and liaison with the consent holder. During the year matters may arise which requires 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 Taranaki Regional Council operates and maintains a register of all complaints or reported and discovered excursions from acceptable limits and practices, including non-compliance with consents, which may damage the environment. The Unauthorised Incident Register (UIR) includes events where the company concerned has itself notified the Council. The register contains details of any investigation and corrective action taken.

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

In the 2013-2014 monitoring period, there were no incidents recorded by the Council that were associated with Taranaki Galvanizers.

3. Discussion

3.1 Discussion of plant performance

The Taranaki Galvanizers site achieved a good level of performance over the period under review (1 July 2013 to 30 June 2014).

In general, the stormwater catchment area was kept clear of contaminants, and wastewater was adequately bunded and managed. Fragments of zinc found on the laydown areas of the site could be removed from stormwater areas on a more regular basis by staff.

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 galvanizing site, as a result of historical disposal of spent acid to a bore on the property. However, the results have also shown that in general zinc concentrations have continued to decline over time. Sampling undertaken in this period showed that the latest concentrations of zinc were well below the median of historical dissolved zinc concentrations and were the lowest recorded to date.

3.3 Evaluation of performance

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

Table 5 Summary of performance for Consent 4657-2 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. Defines discharge contaminant limits	Water quality monitoring	No
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

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		Good

N/A = not applicable

Table 6 Summary of performance for Consent 4064-3 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	Deposition gauging in 2013-2014 monitoring period	Yes
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

N/A = not applicable

In the 2013-2014 monitoring period, the Company demonstrated a good level of environmental performance and compliance with the resource consents (Table 5 and Table 6).

During the monitoring period under review two inspections were conducted, which indicated that site stormwater and wastewater were well managed, and operations were undertaken in a manner that minimised environmental effects.

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.

Leachate discharged from the site, as a result of past activities, to the unnamed tributary of the Kahouri Stream continues to show measurable concentrations of zinc. However, trends over time suggest that zinc levels are continuing to decrease as pH of the leachate improves. No adverse effect of the discharge was found in the tributary downstream, on the basis of chemical monitoring in the unnamed tributary.

3.4 Recommendations from the 2010-2012 Biennial Report

In the 2012-2013 Annual Report, it was recommended;

1. THAT monitoring is continued for the 2013-2014 period, similar in format to the 2012-2013 programme.

2. THAT monitoring of air emissions from the galvanising plant of Taranaki Galvanizers in the 2013-2014 year continue at the same level as in 2012-2013, with biennial air deposition gauge monitoring to be conducted during the 2013-2014 monitoring year.

These recommendations were implemented in the 2013-2014 monitoring programme.

3.5 Alterations to monitoring programme for 2013-2014

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account the extent of information made available by previous authorities, its relevance under the RMA, the obligations of the Act in terms of monitoring emissions/discharges and effects, and subsequently reporting to the regional community, the scope of assessments required at the time of renewal of permits, and the need to maintain a sound understanding of industrial processes within Taranaki emitting to the atmosphere/discharging to the environment.

In the case of Taranaki Galvanizers, it is proposed that the programme for 2014-2015 year continue at the same level as the 2013-2014 year.

3.6 Exercise of optional review of consent

There are no consents held by the Company that allow for an optional review of consent in this period under review.

4. Recommendations

As a result of this annual report for the Taranaki Galvanizers consents, the following recommendations are made:

1. THAT monitoring is continued for the 2014-2015 period, similar in format to the 2013-2014 programme.

2. THAT monitoring of air emissions from the galvanising plant of Taranaki Galvanizers in the 2014-2015 year continue at the same level as in 2013-2014, with biennial air deposition gauge monitoring to be conducted during the 2015-2016 monitoring year.

Glossary of common terms and abbreviations

The following abbreviations and terms may have been used within this report:

Condy	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 20°C and expressed in mS/m
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
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	Aaction taken by Council to establish what were the circumstances/events surrounding an incident including any allegations of an incident
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)
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)
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
UI	Unauthorised Incident

UIR	Unauthorised Incident Register – contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan
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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Department of Health (1992). Public health guidelines for the safe use of sewage effluent and sludge on land.

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Taranaki Regional Council (2012): Taranaki Galvanizers Monitoring Programme Biennial Report 2010-2012.Technical report 2012-14.

Taranaki Regional Council (2013): Taranaki Galvanizers Monitoring Programme Annual Report 2012-2013.Technical report 2013-57.

Appendix I

Resource consents held by Taranaki Galvanizers Limited

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

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