

Taranaki Galvanizers
Monitoring Programme
Annual Report
2015-2016

Technical Report 2016-32

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Executive summary

Taranaki Galvanizers Ltd (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 2015 to June 2016 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess the Company's environmental 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.

The Company holds 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 during the reported period.

Significant works have been undertaken by the company in response to an abatement notice for non-compliance with special condition 4 of resource consent 4657-2 that was issued during the previous period. During the May 2016 survey, suspended solids were elevated at sites monitored upstream and downstream of the stormwater discharge point however were unrelated to activities at the Taranaki Galvanizers site.

Elevated zinc concentrations were recorded in the receiving waters upstream and downstream of the Company's discharge. However, zinc concentrations recorded complied with consent limits. 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 unnamed tributary. Results from the current monitoring period suggest that zinc levels continue to remain relatively stable.

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.

No incidents were recorded by Council in relation to the galvanising plant during the reported period.

During the monitoring period, the Company demonstrated a high level of environmental and administrative performance with the resource consents.

For reference, in the 2015-2016 year, 71% of consent holders in Taranaki monitored through tailored compliance monitoring programmes achieved a high level of environmental performance and compliance with their consents, while another 24% demonstrated a good level of environmental performance and compliance with their consents.

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 is improving in the year under review.

This report makes recommendations for the 2016-2017 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 only occur if circumstances warrant it such as complaints from neighbours or visible smoke extending beyond the Company's boundary.

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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 2015 to June 2016 by the Taranaki Regional Council (the Council), on the monitoring programme¹ associated with the resource consents held by Taranaki Galvanizers Ltd (the Company). The Company operates a galvanising plant near Stratford.

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 to water within the Kahouri catchment, and the air discharge permit held 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 fifth combined annual report by the Council for the Company.

This report covers results and findings of the 2015-2016 monitoring period.

1.1.2 Structure of this report

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

- consent compliance monitoring under the RMA and the Council's obligations;
- the Council's approach to monitoring sites through annual programmes;
- the resource consents held by the Company in the Kahouri 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 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 interpretations, and their significance for the environment.

¹ 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 the Company be undertaken as a stand-alone monitoring programme in the 2010-2011 monitoring period.

Section 4 presents recommendations to be implemented in the 2016-2017 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’ 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 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 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.

Environmental performance is concerned with actual or likely effects on the receiving environment from the activities during the monitoring year.

Administrative performance is concerned with the Company’s approach to demonstrating consent compliance in site operations and management including the timely provision of information to Council (such as contingency plans and water take data) in accordance with consent conditions.

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

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

Environmental Performance

- **High:** No or inconsequential (short-term duration, less than minor in severity) breaches of consent or regional plan parameters resulting from the activity; no adverse effects of significance noted or likely in the receiving environment. The Council did not record any verified unauthorised incidents involving significant environmental impacts and was not obliged to issue any abatement notices or infringement notices in relation to such impacts.
- **Good:** Likely or actual adverse effects of activities on the receiving environment were negligible or minor at most. There were some such issues noted during monitoring, from self reports, or in response to unauthorised incident reports, but these items were not critical, and follow-up inspections showed they have been dealt with. These minor issues were resolved positively, co-operatively, and quickly. The Council was not obliged to issue any abatement notices or infringement notices in relation to the minor non-compliant effects; however abatement notices may have been issued to mitigate an identified potential for an environmental effect to occur.

For example:

- High suspended solid values recorded in discharge samples, however the discharge was to land or to receiving waters that were in high flow at the time;
- Strong odour beyond boundary but no residential properties or other recipient nearby.
- **Improvement required:** Likely or actual adverse effects of activities on the receiving environment were more than minor, but not substantial. There were some issues noted during monitoring, from self reports, or in response to unauthorised incident reports. Cumulative adverse effects of a persistent minor non-compliant activity could elevate a minor issue to this level. Abatement notices and infringement notices may have been issued in respect of effects.
- **Poor:** Likely or actual adverse effects of activities on the receiving environment were significant. There were some items noted during monitoring, from self reports, or in response to unauthorised incident reports. Cumulative adverse effects of a persistent moderate non-compliant activity could elevate an 'improvement required' issue to this level. Typically there were grounds for either a prosecution or an infringement notice in respect of effects.

Administrative performance

- **High:** The administrative requirements of the resource consents were met, or any failure to do this had trivial consequences and were addressed promptly and co-operatively.
- **Good:** Perhaps some administrative requirements of the resource consents were not met at a particular time, however this was addressed without repeated interventions from the Council staff. Alternatively adequate reason was provided for matters such as the no or late provision of information, interpretation of 'best practical option' for avoiding potential effects, etc.
- **Improvement required:** Repeated interventions to meet the administrative requirements of the resource consents were made by Council staff. These matters took some time to resolve, or remained unresolved at the end of the period under review. The Council may have issued an abatement notice to attain compliance.
- **Poor:** Material failings to meet the administrative requirements of the resource consents. Significant intervention by the Council was required. Typically there were grounds for an infringement notice.

For reference, in the 2015-2016 year, 71% of consent holders in Taranaki monitored through tailored compliance monitoring programmes achieved a high level of environmental performance and compliance with their consents, while another 24% demonstrated a good level of environmental performance and compliance with their consents.

1.2 Site 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 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.

The stormwater drain located on the north-eastern side of the site was blocked off by the Company and no longer enters the roadside 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). Stormwater from the northern part of the site now collects in a sand trap and is directed to the south paddock where it flows over pasture, and eventually collects in a settling pond at the southern end of the site. The stormwater discharge exits the settling pond through two black novaflow pipes.

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 galvanising 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 1²

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.

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.

Articles of steel to be galvanised 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 galvanised by 'pickling', or acid treatment, in

² including outlet of the unnamed tributary, the yellow novaflow pipe from the Company's site (IND005014) and the tributary immediately downstream of the discharge (KHI000358)

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.

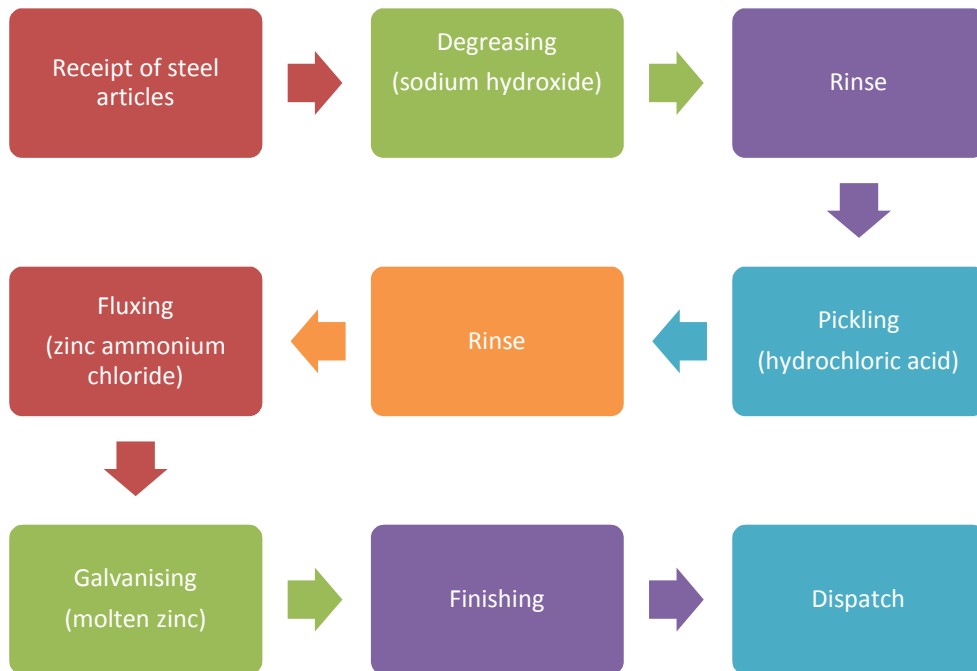


Figure 2 Hot-dip galvanising process undertaken at Taranaki Galvanizers

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 galvanising. 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 galvanised 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 Company's 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 Company's 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 during the 1990's and then remained relatively stable.

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.

The Company holds 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.

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.

The permit is attached to this report in Appendix I.

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.

The Company 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.

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 galvanising 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.

The permit is attached to this report in Appendix I.

1.6 Monitoring programme

1.6.1 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 site consisted of three primary components.

1.6.2 Programme liaison and management

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

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

1.6.3 Site inspections

The galvanising plant was visited two times during the 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.

1.6.4 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 Company'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 Company's site. In light of the information gathered, three new sites, two upstream and one downstream of the site were established. Three downstream sites (KHI000368, KHI000369 and KHI000358) were removed from the Company's monitoring programme. During the current sampling period the stormwater discharge point at the north-eastern end of the site was blocked off and redirected to the southern end of the site. As a result one site (STW001140) was removed from the monitoring programme and a new site (STW002090) was established. Table 1 summarises current sampling sites related to the Company's discharge to water, and they are presented in Figure 1.

Table 1 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 | Immediately upstream of Company's industrial discharge | 1709995E-5647129N | KHI000353* | 22/12/2015 11/05/2016 |
| Industrial discharge (stormwater and ground water seepage) | Stormwater and groundwater leachate from the southern end of the site | 1709995E-5647129N | IND005014* | 11/05/2016 |
| Unnamed tributary of the Kahouri Stream | 200 m downstream of Taranaki Galvanizers | 1710232E-5647063N | KHI000356 | 22/12/2015 11/05/2016 |
| Stormwater discharge point (<i>new site</i>) | Settling pond at the southern end of the site | 1709986E-5647127N | STW002090 | Not sampled |
| Unnamed tributary of the Kahouri Stream | Approximately 75 m u/s of SH3 | 1709926E-5647120N | KHI000352 | 22/12/2015 11/05/2016 |

* 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 inspection undertaken on 22 December 2015 as there was no discharge of leachate occurring at the time of inspection.

The stormwater discharge point (STW002090) located at the southern end of the site was not sampled during either of the inspections undertaken on 22 December 2015 and 11 May 2016, as there was no discharge occurring at the time of the inspections.

Sampling was undertaken at three receiving water sites associated with the stormwater discharge during both of the inspections carried out on 22 December 2015 and 11 May 2016. The three sites sampled included the unnamed tributary immediately above the Company's industrial discharge as it entered manhole 1 (KHI000353), an open channel of the unnamed tributary approximately 200 m downstream of the Company's industrial discharge (KHI000356), and the unnamed tributary approximately 75 m upstream of SH3 (KHI000352).

Samples were analysed for conductivity, pH, water temperature, ammonia, chromium, turbidity, suspended solids and zinc (dissolved).

1.6.5 Air quality monitoring

Air monitoring in the 2015-2016 period comprised visual inspections during December 2015 and May 2016.

2. Results

2.1 Water

2.1.1 Inspections

Two routine inspections of the Company's site were conducted over the 2015-2016 monitoring period. The inspections focused on stormwater and wastewater management at the site.

During an inspection carried out on 22 December 2015, it was found that areas of the site were generally clear of any chemicals with the potential to contaminate stormwater. There were no visible zinc flecks around the yard and no visible discharges to air. No stormwater was observed to be discharging from the southern end of the site and the groundwater discharge pipe was also not discharging. There was an iron oxide scum present at the unnamed tributary of the Kahouri Stream.

During an inspection carried out on 11 May 2014, it was found that areas of the site were generally clear of any chemicals with the potential to contaminate stormwater. Galvanized items were laid around the concrete pad and gravel areas of the yard, mostly on wooden pellets. Small flecks of zinc were visible around galvanized items but the rest of the yard was predominantly clear. The sand trap at the north-eastern end of the site was almost full with brown, dirty water. No stormwater was observed to be discharging from the southern end of the site and no sample was taken. Samples were collected from four other sites upstream and downstream of the Company's site and from the groundwater discharge pipe.

2.1.2 Physicochemical results

On two occasions during the reported period (22 December 2015 and 11 May 2016), sampling was undertaken at two upstream sites (KHI000352 and KHI000353) and a downstream site (KHI000356). On one occasion during the reported period (11 May 2016) sampling was undertaken at the 'yellow novaflow pipe' (IND005014). Samples were analysed for conductivity, chromium, pH, temperature, ammonia, hydrocarbons, turbidity, suspended solids and zinc.

2.1.2.1 Upstream sites (KHI000352 and KHI000353)

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/m³ (at a hardness 30 g/m³ CaCO₃). For protection of 80% of species (the lowest level of ecological protection in the guideline), zinc in freshwater should be less than 0.031 g/m³. These numbers refer to chronic (on-going) exposure. Zinc concentrations recorded upstream of the Company's site by the two surveys were indicative of zinc contamination (Table 2). The level of contamination was lower than the resource consent limit of 5 g/m³. Seepage from the contaminated bore under the Company's site is the most likely source of this contamination recorded upstream of the industrial and stormwater discharges.

The results of the 22 December 2015 survey (Table 2) showed an increase in zinc concentration of 0.476 g/m³ between site upstream 1 (0.073 g/m³) and the site

upstream 2 (0.549 g/m^3) which was situated immediately above the Company's discharge point. The results of the 11 May 2016 survey (Table 2) showed an increase in zinc concentration of 0.678 g/m^3 between site upstream 1 (0.251 g/m^3) and site upstream 2 (0.929 g/m^3).

Table 2 Results of the two sampling surveys at the two upstream sites (KHI000352 and KHI000353).

| Parameter | Unit | Survey 22/12/2015 | | Survey 11/5/2016 | |
|-----------------------|------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| | | Upstream 1 (KHI000352) | Upstream 2 (KHI000353) | Upstream 1 (KHI000352) | Upstream 2 (KHI000353) |
| Time | NZST | 08:10 | 09:55 | 14:20 | 14:40 |
| Temperature | g/m^3 | 12.9 | 14.8 | 16.3 | 16.3 |
| pH | pH | 6.7 | 6.7 | 6.5 | 6.5 |
| Conductivity at 20°C | mS/m | 13.4 | 13.0 | 5.6 | 6.6 |
| Ammonia | $\text{g/m}^3\text{N}$ | 1.21 | 1.65 | 0.345 | 0.596 |
| Chromium-acid soluble | g/m^3 | <0.03 | <0.03 | <0.03 | <0.03 |
| Hydrocarbons | g/m^3 | <0.5 | <0.5 | 1.7 | 1.0 |
| Turbidity | NTU | 15 | 280 | 340 | 590 |
| Suspended solids | g/m^3 | 5 | 150 | 200 | 370 |
| Zinc-dissolved | g/m^3 | 0.073 | 0.549 | 0.251 | 0.929 |

Discharge sampling undertaken in the reported period, at site upstream 2 (KHI000353) showed that the latest concentrations of dissolved zinc (0.549 g/m^3 and 0.929 g/m^3) were slightly below or substantially higher than median of historical dissolved zinc concentrations (0.640 g/m^3) (Figure 3).

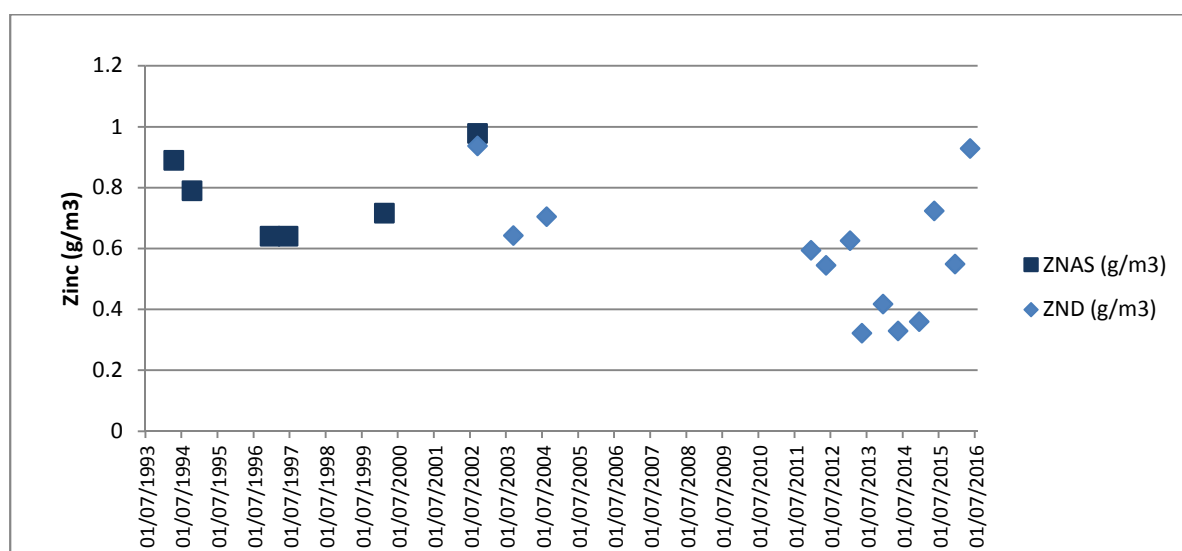


Figure 3 Zinc concentrations in the unnamed tributary of the Kahouri Stream immediately upstream of the Company's industrial discharge since 1994 (site KHI000353).

Suspended solids were elevated (200 g/m^3) at the time of the May 2016 survey at site upstream 1 (KHI000352) and were 112 g/m^3 higher than any of the results recorded at this site to date (Table 2). In addition elevated suspended solids levels were also

recorded at upstream site 2 (KHI000353) during both the December 2015 (150 g/m³) and May 2016 (370 g/m³) surveys (Table 2). The exact cause of this result could not be identified but was likely due to rainfall and/or activities in the headwaters of the stream.

2.1.2.2 Industrial discharge site (IND005014)

Historical and current results from the industrial discharge from the yellow novaflow pipe (IND005014) samples are presented in Table 3. Due to a lack of flow there are no results for the 2012-2013 and 2013-2014 monitoring periods. Prior to the May 2016 inspection part of the novaflow pipe was replaced after it was found that a section was damaged. It is likely the damaged section had previously restricted flow through the pipe.

Table 3 Historical results of the discharge of stormwater/groundwater seepage (IND005014) for the period 24 October 1991 to 21 May 2015 and current results.

| Parameter | Unit | Consent limit | Historical data 24/10/1991-21/05/2015 | | | Current data 11/05/2016 |
|-----------------------|--------------------|---------------|--|-------------|--------|----------------------------|
| | | | No. of samples | Range | Median | |
| Time | | | | | | 14:45 |
| Temperature | °C | - | 19 | 8.7-17.0 | 13.5 | 16.0 |
| pH | pH | 6.0-9.0 | 28 | 3.5-6.9 | 4.4 | 6.8 |
| Conductivity at 20°C | mS/m | - | 27 | 5.8-150 | 35.2 | 9.2 |
| Ammonia-N | g/m ³ N | - | 12 | <0.003-68.0 | 0.910 | 0.249 |
| Chromium-acid soluble | g/m ³ | | 3 | 0.005-0.005 | 0.002 | <0.03 |
| Oil and Grease | g/m ³ | | 3 | <0.5-<0.5 | <0.5 | <0.5 |
| Turbidity | NTU | | 8 | 0.14-80.0 | | 82 |
| Suspended solids | g/m ³ | 100 | 4 | 2-21 | 2.0 | 52 |
| Dissolved zinc | g/m ³ | 5 | 10 | 0.2-39.2 | 5.4 | 0.808 |

Special condition 4 of consent 4657-2 has specified limits on certain constituents of the discharges including; pH, hydrocarbons, suspended solids and zinc. Although historical discharges do 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 4). The concentrations of suspended solids have consistently fallen within the specified consent limits at the industrial discharge site (IND005014) (Table 3).

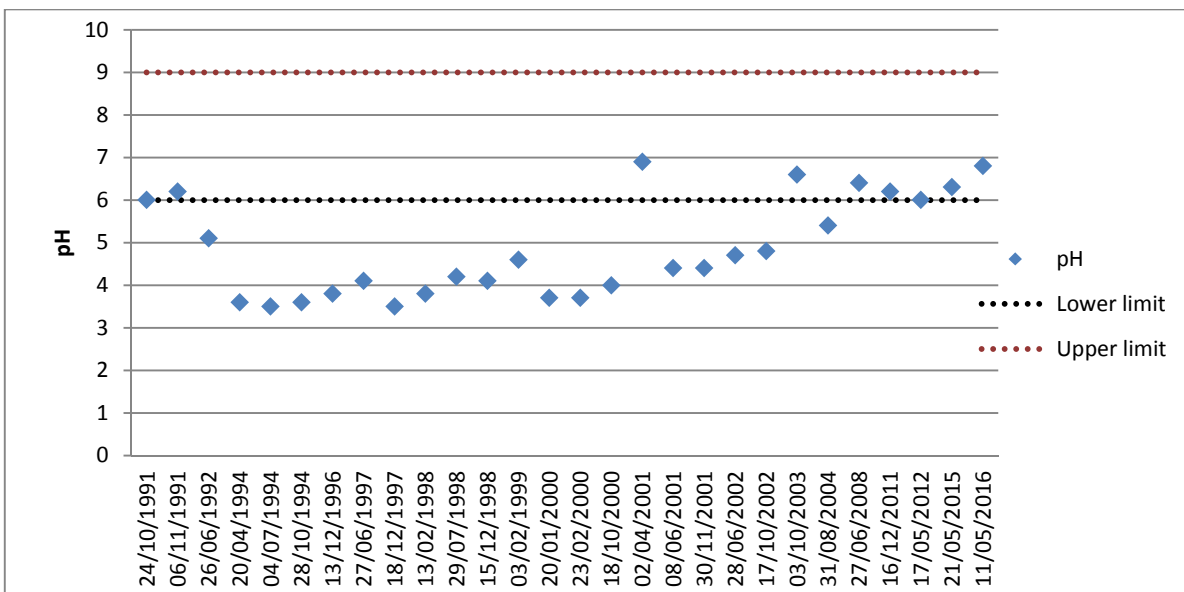


Figure 4 pH levels recorded in the discharge (IND005014) from the Company's site between October 1991 and May 2016³

Dissolved zinc concentrations have fallen within the consent limit of 5 g/m³ (consent conditions granted June 2010) and have decreased considerably in the last 12 years and the current result (0.808 g/m³) continued the trend of falling values at the site (Figure 5).

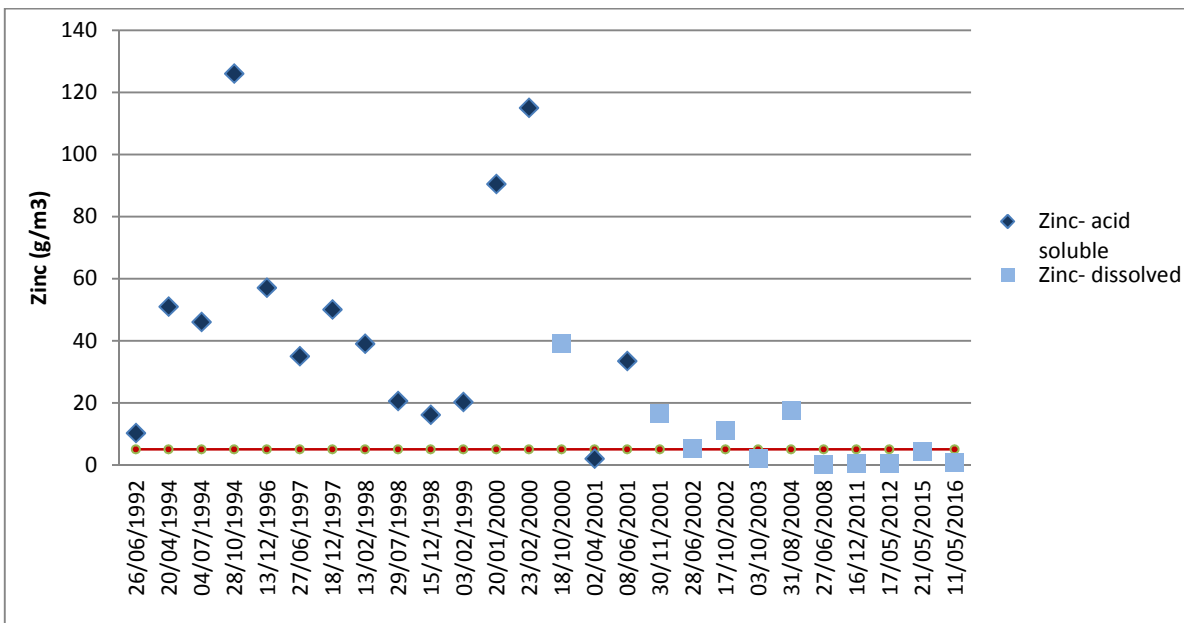


Figure 5 Zinc concentrations recorded in the discharge sample (IND005014) from the Company's site between June 1992 and May 2015⁴

³ Sampling was not undertaken in the 2012-2013 and 2013-2014 monitoring periods due to lack of discharge.

⁴ Sampling was not undertaken in the 2012-2013 and 2013-2014 monitoring periods due to lack of discharge.

2.1.2.4 Stormwater discharge site (STW002090)

The stormwater discharge point (STW002090) located at the southern end of the site was not sampled during either of the inspections undertaken on 22 December 2015 and 11 May 2016 due to a lack of discharge.

Prior to the establishment of the site (STW002090), the stormwater site at the north-eastern end of the site (STW001140) was included in the monitoring programme. Due to a lack of discharge only three samples had been collected from this site since its inclusion in the monitoring programme (Table 4). The first sample collected from this site on the 29 May 2014 showed suspended solid concentrations at 150 g/m³, 50 mg/m³ above the consented limit of 100 g/m³ (Table 4). Despite this breach of consent condition, no enforcement action was taken as there was no likely detrimental impact to the receiving environment. A follow-up sample for suspended solids was taken on 18 September 2014 for suspended solids only. This result also showed significant non-compliance, being 550 g/m³ over the 100 g/m³ consent limit and resulted in an abatement notice (EAC-20459) issued on 1 October 2014 for non-compliance of special condition 4 of resource consent 4657-2. The abatement notice gave the Company until 9 January 2015 to become compliant. A sand trap was installed in the north-eastern corner to reduce suspended solids in the stormwater discharge. However, the survey on 21 May 2015 still showed significant non-compliance for suspended solids at the site with the sample being 340 g/m³ over the consent limit. In response to this the stormwater drain at STW001140 was blocked off and the discharge was redirected to the south paddock where it drains through the paddock and settles in a pond installed by the company to deal with high suspended solids levels.

Table 4 Results of the investigation and sampling at the stormwater discharge site (STW001140).

| Parameter | Units | Survey date | | |
|-----------------------|--------------------|-------------|------------|------------|
| | | 29/05/2014 | 18/09/2014 | 21/05/2015 |
| Time | NZST | 13:50 | 14:35 | 15:05 |
| Temperature | g/m ³ | 14.8 | | 13.3 |
| pH | pH | 7.5 | | 7.1 |
| Conductivity at 20°C | mS/m | 10.0 | | 5.4 |
| Ammonia | g/m ³ N | 0.224 | | 0.178 |
| Chromium-acid soluble | g/m ³ | <0.03 | | <0.03 |
| Hydrocarbons | g/m ³ | <0.5 | | <0.5 |
| Turbidity | NTU | 240 | | 720 |
| Suspended solids | g/m ³ | 150 | 650 | 440 |
| Zinc-dissolved | g/m ³ | 2.27 | | 1.96 |

2.1.2.6 Downstream site (KHI000356)

Results for the surveys carried out on the 22 December 2015 and 11 May 2016 are presented in Table 5.

Table 5 Results of the two current sampling surveys at the downstream site (KHI000356).

| Parameter | Units | Survey date | |
|-----------------------|--------------------|-------------|------------|
| | | 22/12/2015 | 11/05/2016 |
| Time | NZST | 07:50 | 15:00 |
| Temperature | g/m ³ | 12.9 | 16.2 |
| pH | pH | 7.0 | 6.6 |
| Conductivity at 20°C | mS/m | 12.9 | 6.3 |
| Ammonia | g/m ³ N | 1.10 | 0.474 |
| Chromium-acid soluble | g/m ³ | <0.03 | <0.03 |
| Hydrocarbons | g/m ³ | <0.5 | 0.8 |
| Turbidity | NTU | 11 | 500 |
| Suspended solids | g/m ³ | 2 | 310 |
| Zinc-dissolved | g/m ³ | 0.384 | 0.584 |

Suspended solids were very high (310 g/m³) at the time of the May 2016 survey, 279 g/m³ higher than any of the results recorded to date. The exact cause of this result could not be identified but was likely due to rainfall and/or activities in the headwaters of the stream.

There was a decrease of zinc by 0.165 g/m³ between site upstream 2 and the downstream site (0.384 g/m³) during the 22 December 2015 survey (Figure 6). Typically, freshwater waterbodies do not naturally have zinc concentrations above 0.060 g/m³. As there was no industrial (IND005014) or stormwater discharge (STW001140) at the time of survey it was assumed the elevated zinc concentrations at the downstream site was due to the contaminated bore underneath the Company's site. There was a decrease of zinc by 0.345 g/m³ between site upstream 2 and the downstream site (0.584 g/m³) (Figure 6) during the 11 May 2016 survey despite elevated zinc concentrations from the industrial discharge. The reduction in zinc concentration may have been a result of dilution due to the high rainfall which occurred at the time of the survey.

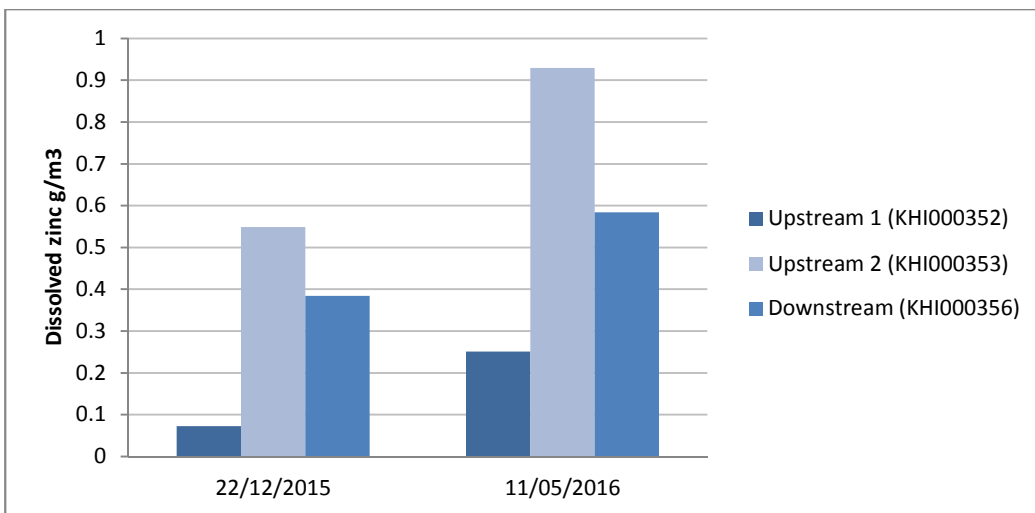


Figure 6 Dissolved zinc concentrations in the unnamed tributary of the Kahouri Stream upstream and downstream of the site on two survey occasions in 2015-2016.

Monitoring of the unnamed tributary of the Kahouri Stream began after the discovery of the contaminated bore on the Company’s 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/m³ and 1 g/m³. Recent monitoring data suggest that zinc concentrations are still relatively stable with an average of 0.584 g/m³ recorded at the site (KHI000356). Results for the downstream sites previously sampled (KHI00058 (1991-2010) and KHI000368 (2010-2012), and the current downstream site (KHI000356) 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 Company’s site.

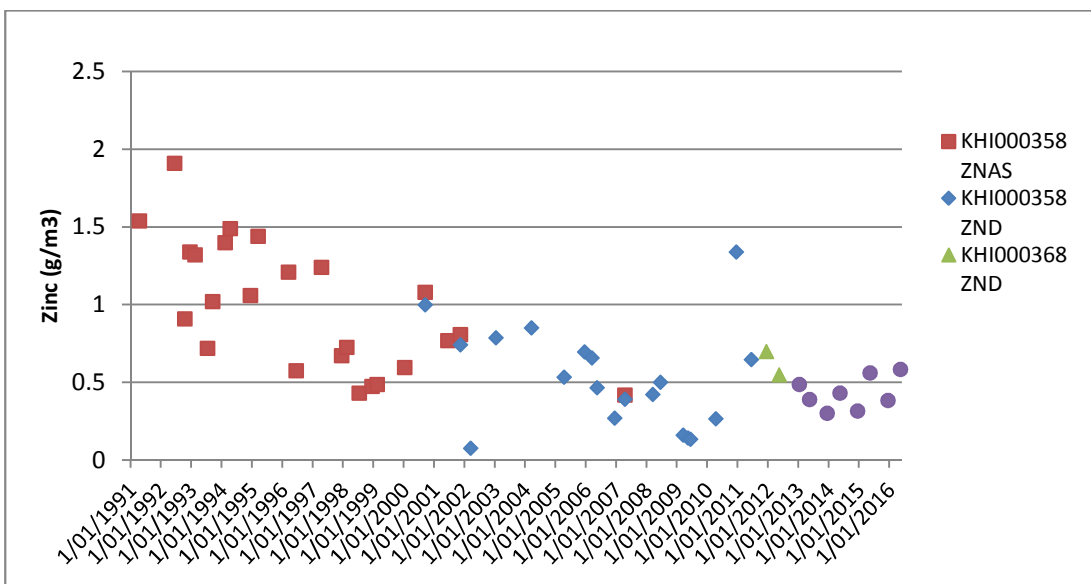


Figure 7 Zinc concentrations in the unnamed tributary of the Kahouri Stream downstream of the Taranaki Galvanizers industrial discharge since 1991⁵

⁵ 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 22 December 2015 an inspection was carried out. At the time of the inspection there was no visible discharge to air from the building (smoke).

On 11 May 2016 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.

2.2.2 Results of receiving environment monitoring

2.2.2.1 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 1.6 m. 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 2015-2016 monitoring period no depositional surveys were carried out. Depositional gauging is done on a provisional basis when circumstances warrant it such as complaints from neighbours or visible smoke extending beyond the Company's boundary.

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 Company. 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 Council operates and maintains a register of all complaints or reported and discovered excursions from acceptable limits and practices, including non-compliance with consents, which may damage the environment. The incident register includes events where the company concerned has itself notified the Council. The register contains details of any investigation and corrective action taken.

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

In the 2014-2015 monitoring period, there was an investigation examining suspended solid concentrations at the stormwater discharge site (STW001140). This investigation

was undertaken on 18 September 2014 due to a non-compliant suspended solid concentration at the site recorded in the 2013-2014 monitoring period. The result of the investigation showed a significant non-compliance (650 g/m^3) and resulted in an abatement notice (EAC-20459) issued on 1 October 2014 for breach of special condition 4 of resource consent 4657-2. The abatement notice gave the Company till 9 January 2015 to become compliant. A sand trap was installed in the north-eastern corner to reduce suspended solids in the stormwater discharge. However, the survey on 21 May 2015 again showed significant non-compliance for suspended solids at the site (440 g/m^3). After the 21 May 2015 non-compliant result, a letter was requested from the Company, by the Council, seeking an explanation as to why the Company continued to be in breach of the abatement notice.

A letter was received from the Company on 13 July 2015 and it was decided to accept the Company's explanation and no further enforcement action was taken. The Company stated that additional work would be completed at the site that would rectify the problem. This work has since been carried out and involved redirecting the stormwater discharge point from STW001140 at the north-eastern corner of the site to a settling pond at the southern end of the site (STW002090). No sample was collected from the new stormwater site (STW002090) due to a lack of discharge at the time of sampling. No other investigations or incidents occurred or were recorded during the 2015-2016 monitoring period.

3. Discussion

3.1 Discussion of site performance

The Company's site achieved a high level of performance over the 2015-2016 monitoring period.

In general, the stormwater catchment area was kept clear of contaminants, and wastewater was adequately banded and managed. Fragments of zinc found on the laydown areas of the site should continue to be removed from stormwater areas 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 below the resource consent condition requirements.

3.3 Evaluation of performance

A tabular summary of the Company's compliance record for the year under review is set out in Table 6 and Table 7.

Table 6 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. Defines discharge contaminant limits | Water quality monitoring | Not sampled |
| 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 7 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 | Deposition gauging | 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

In the 2015-2016 monitoring period, the Company had a high level of environmental performance in respect to their resource consents (Table 6 and Table 7).

During the monitoring period under review two inspections were conducted, which indicated that wastewater was 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.

As a result of past activities, samples collected from the tributary of the Kahouri Stream continue to show significant concentrations of zinc. However, trends over time suggest that zinc levels are continuing to decrease as pH of the leachate improves.

3.4 Recommendations from the 2014-2015 Report

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

1. THAT monitoring is continued for the 2015-2016 period, similar in format to the 2014-2015 programme.
2. THAT monitoring of air emissions from the galvanising plant in the 2015-2016 year continue at the same level as in 2014-2015.

These recommendations were implemented in the 2015-2016 monitoring programme.

3.5 Alterations to monitoring programme for 2016-2017

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

- the extent of information made available by previous authorities;
- its relevance under the RMA;
- its obligations to monitor emissions/discharges and effects under the RMA; and
- to report to the regional community.

The Council also takes into account the scope of assessments required at the time of renewal of permits, and the need to maintain a sound understanding of industrial processes within Taranaki emitting to the atmosphere/discharging to the environment.

In the case of the Company, it is proposed that the programme for 2016-2017 year continue at the same level as the 2015-2016 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 Company's consents, the following recommendations are made:

1. THAT monitoring is continued for the 2016-2017 period, similar in format to the 2015-2016 programme.

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 | 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. |
| 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 | <i>Resource Management Act 1991</i> and including all subsequent amendments. |
| SS | Suspended solids. |

| | |
|------|--|
| Temp | Temperature, measured in °C (degrees Celsius). |
| Turb | Turbidity, expressed in NTU. |
| UI | Unauthorised Incident. |
| Zn* | Zinc. |

*an abbreviation for a metal or other analyte may be followed by the letters 'As', to denote the amount of metal recoverable in acidic conditions. This is taken as indicating the total amount of metal that might be solubilised under extreme environmental conditions. The abbreviation may alternatively be followed by the letter 'D', denoting the amount of the metal present in dissolved form rather than in particulate or solid form.

For further information on analytical methods, contact the Council's laboratory.

Bibliography and references

- ANZECC (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000. Australian and New Zealand Environment and Conservation Council, October 2000.
- Department of Health (1992). Public health guidelines for the safe use of sewage effluent and sludge on land.
- Taranaki Regional Council (2015): Taranaki Galvanizers Monitoring Programme Annual Report 2014-2015. Technical report 2015-42.
- Taranaki Regional Council (2014): Taranaki Galvanizers Monitoring Programme Annual Report 2013-2014. Technical report 2014-31.
- Taranaki Regional Council (2013): Taranaki Galvanizers Monitoring Programme Annual Report 2012-2013. Technical report 2013-57.
- Taranaki Regional Council (2012): Taranaki Galvanizers Monitoring Programme Annual Report 2010-2012. Technical report 2012-14.
- Taranaki Regional Council (2011): Kahouri Stream Monitoring Programme Annual Report 2009-2010. Technical report 09-10.
- Taranaki Regional Council (2010): Kahouri Stream Monitoring Programme Annual Report 2008-2009. Technical Report 09-99.
- Taranaki Regional Council (2009b): Kahouri Stream Monitoring Programme Annual Report 2007-2008. Technical Report 08-93.
- Taranaki Regional Council (2009a): Kahouri Stream Monitoring Programme Annual Report 2006-2007. Technical Report 07-118.
- Taranaki Regional Council (2006a): Kahouri Stream Monitoring Programme Annual Report 2005-2006. Technical Report 06-69.
- Taranaki Regional Council (2005): Kahouri Stream Monitoring Programme Annual Report 2004-2005. Technical Report 05-73.
- Taranaki Regional Council (2004): Kahouri Stream Monitoring Programme Annual Report 2003-2004. Technical Report 04-66.
- Taranaki Regional Council (2002): Kahouri Stream Monitoring Programme Annual Report 2001-2002. Technical Report 02-27.

Appendix I

Resource consents held by Taranaki Galvanizers Limited

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

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

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/m²/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

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

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.

| <u>Constituent</u> | <u>Standard</u> |
|--------------------------------|---|
| pH | Within the range 6.0 to 9.0 |
| suspended solids | Concentration not greater than 100 gm ⁻³ |
| total recoverable hydrocarbons | Concentration not greater than 15 gm ⁻³ |
| 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

Chief Executive

