Vector Kapuni GTP Monitoring Programme Biennial Report 2012-2014

Technical Report 2014–70

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Executive summary

Vector Gas Limited (Vector), formerly known as NGC New Zealand Limited (NGC), operates a gas treatment plant located on Palmer Road at Kapuni, in the Kapuni catchment. This report for the two-year period July 2012-June 2014 describes the monitoring programme implemented by the Taranaki Regional 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 10 resource consents, which include a total of 78 conditions setting out the requirements that the Company must satisfy. The Company holds 1 consent to allow it to take water, 2 consents to discharge effluent/stormwater into the Kapuni Stream, 4 consents to discharge to land, 2 land use permits, and 1 consent to discharge emissions into the air at this site. Two certificates of compliance are held, in relation to activities permitted under the Regional Freshwater Plan.

The Council's monitoring programme for each year under review included 4 inspections, 6 water samples collected for physicochemical analysis, and a review of 4 biomonitoring surveys of receiving waters.

The monitoring showed that, as in previous years, the site was well managed. There was no Unauthorised Incident (UI) recording non-compliance in respect of this consent holder during the period under review.

Overall, during the two years, the Company demonstrated a high level of environmental performance and compliance with the resource consents.

For reference, in the 2012-2013 year, 35% 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 59% demonstrated a good level of environmental performance and compliance with their consents. In the 2013-2014 year, 60% of consent holders achieved a high level of environmental performance and compliance with their consents, while another 29% demonstrated a good level of environmental performance and compliance.

This report includes recommendations for the 2014-2015 year.

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1. Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is the combined Annual Reports for the periods July 2012-June 2013 and July 2013-June 2014 by the Taranaki Regional Council on the monitoring programme associated with resource consents held by Vector Gas Limited (Vector). The Company operates a gas treatment plant (GTP) situated on Palmer Road at Kapuni, in the Kapuni catchment.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consents held by Vector that relate to abstractions and discharges of water within the Kapuni catchment, and the air discharge permit held by Vector 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 Taranaki Regional Council generally implements integrated environmental monitoring programmes and reports the results of the programmes jointly. This report discusses the environmental effects of Vector 's use of water, land, and air, and is the twenty-third and twenty fourth (combined) annual report by the Taranaki Regional Council for the Company.

1.1.2 Structure of this report

Section 1 of this report is a background section. It sets out general information about compliance monitoring under the RMA and the Council's obligations and general approach to monitoring sites through annual programmes, the resource consents held by Vector, the nature of the monitoring programme in place for the period under review, and a description of the activities and operations conducted in the Vector's site.

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 significance for the environment.

Section 4 presents recommendations to be implemented in the 2014-2015 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 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 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 (eg, 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 for consents and rules in regional plans, and maintains an overview of performance of resource users and consent holders. Compliance monitoring, including both activity and impact monitoring, enables the Council to continually re-evaluate its approach and that of consent holders to resource management and, ultimately, through the refinement of methods and considered responsible resource utilisation, to move closer to achieving sustainable development of the region's resources.

1.1.4 Evaluation of environmental performance

Besides discussing the various details of the performance and extent of compliance by Vector 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 non-compliance with conditions.

- A **good** level of environmental performance and compliance indicates that adverse environmental effects of activities during the year 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, 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 required (environmental)** or **improvement required (administrative compliance)** (as appropriate) indicates that the Council may

have been obliged to record a verified unauthorised incident involving measureable environmental impacts, and/or, there were measureable 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.

For reference, in the 2012-2013 year, 35% 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 59% demonstrated a good level of environmental performance and compliance with their consents. In the 2013-2014 year, 60% of consent holders achieved a high level of environmental performance and compliance with their consents, while another 29% demonstrated a good level of environmental performance and compliance.

1.2 Process description

The Kapuni Gas Treatment Plant is owned and operated by Vector and was built in 1969-70. The original plant was designed to process high carbon dioxide Kapuni gas to a quality suitable for use in general domestic, commercial and industrial appliances. The process involves the removal of carbon dioxide from the gas, which is then dried and chilled to remove some of the heavier hydrocarbons which could affect pipeline operation and appliance efficiency. The pipeline quality gas is then distributed via the transmission distribution network.

The first of several plant expansions occurred in 1973 with the addition of plant to process the heavier hydrocarbons into LPG (liquefied petroleum gas) and natural gas. In 1979-80, further additions were made to process Maui gas and to recover, purify and liquefy some of the carbon dioxide from the gas. The liquid carbon dioxide is used in the beverage, food processing and refrigeration markets.

Photo 1 Vector Kapuni gas treatment plant during three-train operation

In 1985, the gas treatment plant was expanded with the installation of the low temperature separation (LTS) gas conditioning plant which processes the high carbon dioxide content Kapuni gas for water and heavy hydrocarbon removal only. The conditioned gas was supplied to the region's methanol plants so that it could be blended with the much lower carbon dioxide content Maui gas for more efficient methanol production. Methanex reduced its production capacity and as a result the gas conditioning plant was mothballed in May 2005.

During 1997, the KGTP refrigeration systems were upgraded, enabling more natural gas liquids to be removed from the raw gas. Reliability and efficiencies were further improved with the completion in 1998 of a $25 million, three-year refurbishment of the plant's processes and control systems.

NGC and Todd Energy are 50:50 partners in Kapuni Energy which has developed a $37 million, 25MW cogeneration plant within Vector's gas treatment plant complex at Kapuni. It provides the electricity and steam requirements of the KGTP and Fonterra's Lactose factory at Kapuni. It also exports excess electricity into the national grid.

During the 2004-2005 period, NGC completed a $7 million upgrade of the treatment plant, involving re-commissioning one of the plant's three process trains, adding a further 100 tonnes of LPG storage, and installing a reverse osmosis water treatment plant.

In April 2006 NGC changed its name to Vector Gas Limited. NGC remains a legal entity holding previously issued consents, but consents applied for after this date were granted in the name of Vector Gas Limited.

The gas supply for the plant comes from the adjacent Kapuni Gas Production Station operated by Shell Todd Oil Services Limited.

Water is drawn from the Kapuni Stream via the intake structure and raw water supply line for Hawera water treatment plant. Water discharges are from the gas treatment process, plant utilities, domestic effluent and site stormwater. Solid waste discharges are from settling basins for water treatment and waste storage. Air discharges are from the gas treatment process.

1.3 Resource consents

A summary of the consents held by Vector/NGC in relation to activities at its Kapuni gas treatment plant is given in Table 1**Error! Reference source not found.** below and the consents are discussed in Sections 1.3.1 to 1.3.5. A copy of each of the consents can be found in Appendix I.

Table 1 Summary of resource consents held for operation of Kapuni gas treatment plant

Consent number	Purpose	Volume	Next review date	Expiry date
1123-3	Discharge cooling and wastewater to Kapuni Stream		2017	2035
1125-4	Take from Kapuni Stream	3,900 m³/day (52/58 L/s)	2017	2035
1225-3	Discharge treated sewage and process wastes to land	13.5 m³/day (0.97 L/s)	2017	2035
4087-2	Discharge emissions to air		2017	2029
5090-1	Structures for pipeline crossings (Motumate/Waiokura)		2017	2032
5091-1	Discharge steam pipeline construction materials		2017	2032
5496-1	Discharge steam pipeline ingress water to land	8 m³/day		2017
7043-1	Discharge stormwater/settling ponds sludges to land		2017	2023
7281-1	Remove weir structure from Kapuni Stream		2017	2023
7633-0	Structures in, on, over or under Kapuni Stream		-	--
7755-1	Discharge stormwater (non-process areas) to Kapuni Stream		2017	2035
7756-0	Discharge stormwater from LPG load-out to land		-	-

1.3.1 Water abstraction permits

Section 14 of the RMA stipulates that no person may take, use, dam or divert any water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or it falls within some particular categories set out in Section 14.

Water permit **1125-4** allows Vector to take water from Kapuni Stream for the operation of a gas processing facility and related ancillary purposes and downstream uses. This permit was issued by the Taranaki Regional Council on 19 June 2012 under Section 87(d) of the RMA. It is due to expire on 1 June 2035.

Condition 1 sets maximum abstraction rates under normal and emergency conditions.

Condition 2 defines three take location alternatives.

Condition 3 limits the duration of abstraction for emergency or other purposes.

Condition 4 relates to best practicable option.

Conditions 5 to 10 relate to water metering and provision of records.

Condition 11 addresses intake screening for fish protection.

Condition 12 requires financial contribution to Council for providing riparian planting and fencing in the Kapuni catchment.

Condition 13 is a review condition.

1.3.2 Water discharge permits

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

Water discharge permit **1123-3** allows Vector to discharge process effluent and stormwater to the Kapuni Stream. This permit was issued by the Taranaki Regional Council on 18 June 2012 under Section 87(e) of the RMA. It expires on 1 June 2035.

Condition 1 relates to best practicable option.

Condition 2 limits the stormwater catchment area.

Conditions 3 to 9 refer to discharge composition and effects of the discharge on the Kapuni Stream.

Conditions 10 and 11 relate to an effluent and stormwater management plan.

Conditions 12 and 13 relate to treatment and cleaning chemicals.

Conditions 14 and 15 are review conditions.

Water discharge permit **7755-1** allows Vector to discharge stormwater from non-process areas to the Kapuni Stream. This permit was issued by the Taranaki Regional Council on 20 June 2012 under Section 87(e) of the RMA. It expires on 1 June 2035.

Condition 1 relates to best practicable option.

Condition 2 limits the stormwater catchment area.

Condition 3 refers to effects of the discharge on the Kapuni Stream.

Condition 4 relates to a contingency plan in case of spillage or accidental discharge. Condition 5 requires a stormwater management plan.

Conditions 6 and 7 deal with lapse of consent and review of conditions.

1.3.3 Air discharge permit

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

NGC holds air discharge permit **4087-2** to cover the discharge of emissions to air from the treatment of natural gas and other related activities. This permit was issued by the Taranaki Regional Council on 7 February 1996 under Section 87(e) of the RMA. Consent conditions were varied on 27 January 1997. It is due to expire on 1 June 2029.

Condition 1 relates to best practicable option.

Conditions 2, 8, 9, 11, 12, 13, 14 and 15 relate to minimisation of emissions.

Conditions 3 to 7 relate to notification and reporting.

Conditions 10 and 16 are review conditions.

Condition 17 relates to provision of a contingency plan.

1.3.4 Discharges of wastes to land

Sections 15(1)(b) and (d) of the RMA stipulate that no person may discharge any contaminant onto land if it may then enter water, or from any industrial or trade premises onto land under any circumstances, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations.

Discharge permit **1225-3** allows Vector to discharge from an aerated sewage treatment plant onto and into land. This permit was issued by the Taranaki Regional Council on 20 June 2012 under Section 87(e) of the RMA. It is due to expire on 1 June 2035.

Condition 1 relates to best practicable option.

Condition 2 prohibits direct discharge to surface water.

Condition 3 addresses maximum daily discharge volume and minimum disposal area.

Condition 4 is a review condition.

NGC holds discharge permit **5091-1** to cover the discharge of minor amounts of earth material and associated stormwater onto land and into various streams associated with constructions for steam and electricity supply to the Kapuni lactose plant. This

permit was issued by the Taranaki Regional Council on 27 January 1997 under Section 87(e) of the RMA. It is due to expire in June 2032.

Condition 1 relates to the discharge and its effects.

Condition 2 relates to notification.

Condition 3 is a review condition.

Vector holds discharge permit **7043-1** to cover the discharge of sludge from stormwater and filter backwash ponds onto land. This consent was issued by the Taranaki Regional Council under Section 87(a) of the RMA on 29 January 2007. It is due to expire on 1 June 2023.

Consent 7043-1 was varied on 12 August 2009 to allow the inclusion of sludge from the northern settling pond, and again on 25 January 2010 to allow the inclusion of some liquid from the ponds.

Condition 1 relates to best practicable option.

Conditions 2 and 5 require exercise of consent in accordance with documentation supplied.

Condition 3 relates to sludge source, and condition 6 controls discharge location.

Condition 4 allows discharge of liquids at times when the Kapuni Stream flow is low.

Condition 7 relates to records.

Condition 8 addresses soil relocation.

Condition 9 addresses effects on surface water.

Conditions 10 and 11 relate to guidelines for industrial sites and notification of the District Council.

Condition 12 is a review condition.

1.3.5 Land use permits

Section 13(1)(a) of the RMA stipulates that no person may use, erect, reconstruct, place, alter, extend, remove, or demolish any structure or part of any structure in, on under, or over the bed of any lake or river, unless the activity is expressly allowed for by a resource consent, or a rule in a Regional Plan and in any relevant proposed regional plan.

NGC holds land use consent **5090-1** related to pipeline and various structures over the beds of various streams in connection with pipelines to the Kapuni lactose plant. This consent was issued by the Taranaki Regional Council under Section 87(a) of the RMA on 16 August 1996. It is due to expire on 1 June 2032.

Conditions 1 and 2 relate to notification and provision of information to the Council.

Conditions 3 and 4 relate to maintenance.

Condition 5 relate to fish passage and condition 6 related to reinstatement.

Conditions 7 and 8 are review conditions.

Vector holds land use consent **7281-1** related to removal of a weir from the Kapuni Stream. This consent was issued by the Taranaki Regional Council under Section 87(a) of the RMA on 10 April 2008. It is due to expire on 1 June 2023.

Condition 1 requires exercise of consent in accordance with documentation supplied.

Condition 2 relates to notification and condition 3 relates to best practicable option.

Conditions 4, 5 and 6 relate to riverbed disturbance, control and mitigation of sediment, and removal of demolition material.

Condition 7 stipulates dates between which works may occur and condition 8 prohibits the use of explosives.

Conditions 9 and 10 address lapse and review of consent.

1.4 Monitoring programme

1.4.1 Introduction

Section 35 of the RMA sets out an obligation for the Taranaki Regional Council to gather information, monitor, and conduct research on the exercise of resource consents, and the effects arising, within the Taranaki region.

The Taranaki Regional 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 Vector site consisted of four primary components.

1.4.2 Programme liaison and management

There is generally a significant investment of time and resources by the Taranaki Regional 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, or new consents, advice on the Council's environmental management strategies and the content of regional plans, and consultation on associated matters.

1.4.3 Site inspections

The Vector site was visited 4 times during each year of the monitoring period. With regard to consents for the abstraction of or discharge to water, the main points of interest were plant processes with potential or actual discharges to receiving watercourses, including contaminated stormwater and process wastewaters. Air

inspections focused on plant processes with associated actual and potential emission sources and characteristics, including potential odour, dust, noxious or offensive emissions. Sources of data being collected by the consent holder were identified and accessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council. The neighbourhood was surveyed for environmental effects.

1.4.4 Chemical sampling

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

The effluent discharge was sampled on 2 occasions within each year of the monitoring period, and the sample analysed for temperature, conductivity, turbidity, pH, un-ionised ammonia, sodium, potassium, vanadium, dissolved phosphorus, chlorine and total hydrocarbons. The Kapuni Stream above and below the discharge point was sampled concurrently, and the samples analysed for temperature, conductivity, turbidity, pH, un-ionised ammonia, sodium, potassium, vanadium and dissolved phosphorus.

1.4.5 Biomonitoring surveys

A biological survey was performed on 4 occasions each year during the 2012-2014 monitoring period in the Kapuni Stream to determine whether or not the discharge of stormwater and wastewater from the site has had a detrimental effect upon the communities of the stream.

2. Results

2.1 Inspections

The four inspections programmed for each monitoring year were completed on 12 July and 29 October 2012, 26 March, 8 July, 31 October and 23 December 2013, and 16 May and 27 June 2014. On each occasion the inspecting officer was accompanied by one or more staff members of Vector. The various subjects of inspection, including areas for gas processing and transmission, product load-out and storage, treatment systems for raw, cooling and boiler waters, process effluent, stormwater and sewage, chemical stores, and discharge and receiving water monitoring stations and records, were all being managed satisfactorily. An additional visit to the plant was made on 7 August 2013 to address increasingly strict security measures associated with a high hazard area.

2.2 Results of abstraction monitoring

Water for Vector's KGTP is drawn from the Kapuni Stream about 1.4 km above the plant via the intake structure and raw water supply line for Hawera water treatment plant. South Taranaki District Council (STDC) holds land use permit 7413-1 for the structure and water permit 0146-2 to take. Under its own water permit 1125-4, Vector must install and maintain a meter and datalogger at the point where the water enters the supply line for KGTP. The monitoring equipment must be certified by an appropriately qualified person at least every five years.

The water permit conditions are consistent with the Resource Management (Measurement and Reporting of Water Takes) Regulations 2011, which required Vector by 10 November 2012 to keep daily records of volume taken, and thereafter supply by 31 July each year the record for the preceding 1 July to 30 June period. By stipulating a monitoring point other than the take location, the grant of consent 1125-4 constitutes an approval by Council under the Regulations.

Volumes supplied to Vector have been measured and recorded on STDC's supervisory control and data acquisition (SCADA) system since 6 January 2010. Telemetry directly to Council was connected in January 2014.

The daily abstraction record for 2012-2014 is presented in Figure 1.

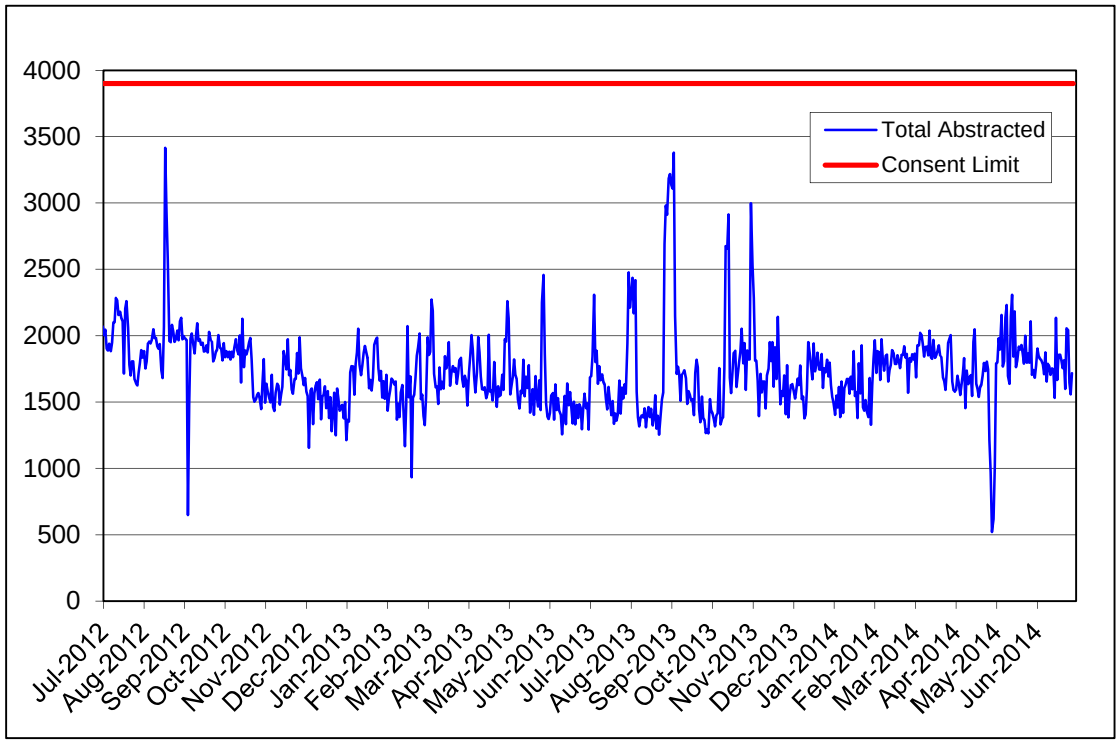


Figure 1 Daily water abstraction by Vector KGTP 1 July 2012 – 30 June 2014, m³/d

The record shows that the limit of 3,900 m³/day on maximum abstraction volume was complied with throughout the 2012-2014 monitoring period.

In 2012-2013, the maximum recorded daily volume was 3,416 m³, or 88% of the limit, on 18 August 2012. The recorded annual volume abstracted was 630,441 m³.

In 2013-2014, the maximum recorded daily volume was 3,380 m³, or 87% of the limit, on 4 September 2013. The recorded annual volume abstracted was 634,629 m³.

Consent 1125-4 provides for the taking of water from two alterative locations near KGTP for up to five days, or such longer period as approved by the Chief Executive of Council, for emergency or other purposes. This option was not exercised during the 2012-2014 monitoring period.

2.3 Results of discharge monitoring

Monitoring of the discharge basins and the Kapuni Stream is undertaken by Vector prior to each discharge and one hour following commencement of the discharges authorised by discharge consent 1123-3. Consent 1123-3 requires the preparation of an effluent disposal management plan including reporting on the exercise of the consents. Vector provided discharge data in relation to these consents for the monitoring period. Twice during each monitoring year the Council carried out interlaboratory comparisons with the Vector site laboratory. The results are discussed in Section 2.4.

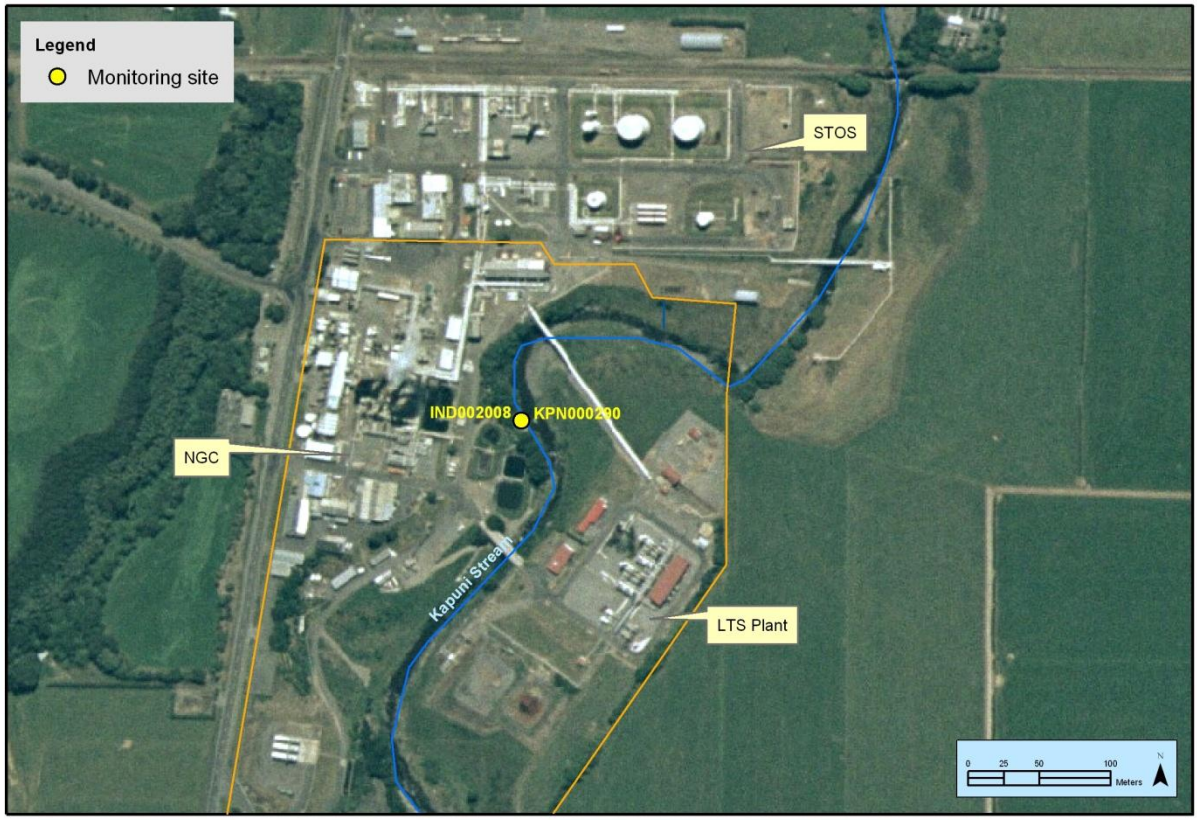


Photo 2 Vector Kapuni gas treatment plant site showing sampling locations

The following comments are made based on the data which has been provided to the Council.

Temperature
Temperature is recorded continuously by Vector both upstream and downstream of the discharge point. In 2012-2013, the maximum temperature differential recorded was 1.7°C, on 27 February 2013. In 2013-2014, the maximum temperature differential recorded was 1.1°C, on 26 August 2013. This was within consent limits.

pH
Consent **1123-3** requires the pH to be within the range 6.5-9.0. Results provide by the Company show that compliance was achieved throughout the monitoring period. In 2012-2013, the maximum recorded pH at the downstream sampling site was 7.95 on 9 February 2013. The corresponding upstream pH was 8.10. The minimum pH recorded downstream was 6.55 on 19 October 2012. The corresponding upstream pH value was 6.58. In 2013-2014, the maximum recorded pH at the downstream sampling site was 8.13, on 5 March 2014. The corresponding upstream pH value was 7.94. The minimum pH value was 6.52 on 15 October 2013. The corresponding upstream pH value was 6.59.

Ammonia
Special condition 6 of consent **1123-3** limits the concentration of ammonia to 0.025 g/m^3 as un-ionised ammonia and to not more than 0.006 g/m^3 unless the discharge is in accordance with the agreement with Ballance to limit the maximum concentration of un-ionised ammonia in the Kapuni Stream. Results provided by the Company show that compliance was achieved throughout the monitoring period. In

2012-2013, the maximum recorded downstream un-ionised ammonia concentration was 0.002 g/m³ on 4 February (total ammonia 0.270 g/m³, 7.27 pH, 19.8 °C) and 19 March 2013 (total ammonia-N 0.140 g/m³, 7.68 pH, 15.4°C). In 2013-2014, the maximum recorded downstream un-ionised ammonia concentration was 0.002 g/m°, recorded on five occasions throughout the year.

Sodium

Special condition 7 of Vector's discharge permit **1123-3** limits the sodium concentration of the Kapuni Stream to 40 g/m³. The sodium concentration is further limited to 22 g/m³ in accordance with the agreement with Ballance. Results provided by the Company show that compliance was achieved throughout the monitoring period. In 2012-2013, the maximum recorded downstream sodium concentration was 22 g/m³ on 3 December 2012; the corresponding upstream value was 10 g/m³. In 2013-2014, the maximum recorded downstream sodium concentration was 29 g/m³, recorded on 5 August 2013; the corresponding upstream value was 9 g/m³. At this time Ballance had been consulted and agreed.

Vanadium

Special condition 8 of Vector's discharge permit **1123-3** limits the vanadium concentration to 0.08 g/m³ when measured at a point 50 metres downstream of the discharge. In 2012-2013, the maximum calculated downstream vanadium concentration recorded was 0.04 g/m³, on 27 March, 3 April and 6 May 2013, and the corresponding upstream concentration was 0.01 g/m³. In 2013-2014, the maximum calculated downstream vanadium concentration recorded was 0.04 g/m³, on 22 occasions throughout the year, and the corresponding upstream concentration was 0.01 g/m³. This showed that compliance with vanadium limits was achieved throughout the monitoring period.

Water treatment chemicals

Special condition 12 of consent **1123-3** requires the consent holder to notify the Council of any change in water treatment chemical or increase in maximum concentration of any water treatment chemical at least one month prior to change of a water treatment programme.

During the 2012-2014 monitoring period, Vector notified the Council of one proposed change in water treatment chemical.

On 27 October 2012, Vector notified Council of intention to replace a chemical used as a corrosion inhibitor and scale control agent in the secondary and Train III cooling water systems. No change of consent was required, as the individual components of the two chemicals were very similar, with low toxicity to aquatic species; and as the amount of chemical discharged would be about 75% less than before, resulting in a proportionate reduction in the amount of phosphate discharged to Kapuni Stream from use of the chemical.

Triennial air discharge report

Special condition 4 of air discharge permit **4087** states:

> *THAT the consent holder shall provide to the General Manager, Taranaki Regional Council, by 1 June 1999 and every three years thereafter a written report:*
>
> *(a) reviewing any technological advances in the reduction or mitigation of discharges to air from the site, and the costs and benefits of these advances; and*
>
> *(b) detailing an inventory of the discharges to air from the site of such contaminants as the General Manager may from time to time specify following consultation with the consent holder; and*
>
> *(c) detailing any measures that have been taken by the consent holder to improve the energy efficiency of the site's activities and processes; and*
>
> *(d) addressing any other issue relevant to the minimisation or mitigation of discharges of contaminants to air from the site that the General Manager, Taranaki Regional Council, considers should be included.*

Such reports have previously been provided in 1999, 2002, 2005, 2009 and 2011. The latest report was received on 30 September 2014 and accepted by Council. The highlights of the 2014 report are summarised below. A copy of the report is attached as Appendix III.

To fulfil the requirements of special condition 4, NGC provided:

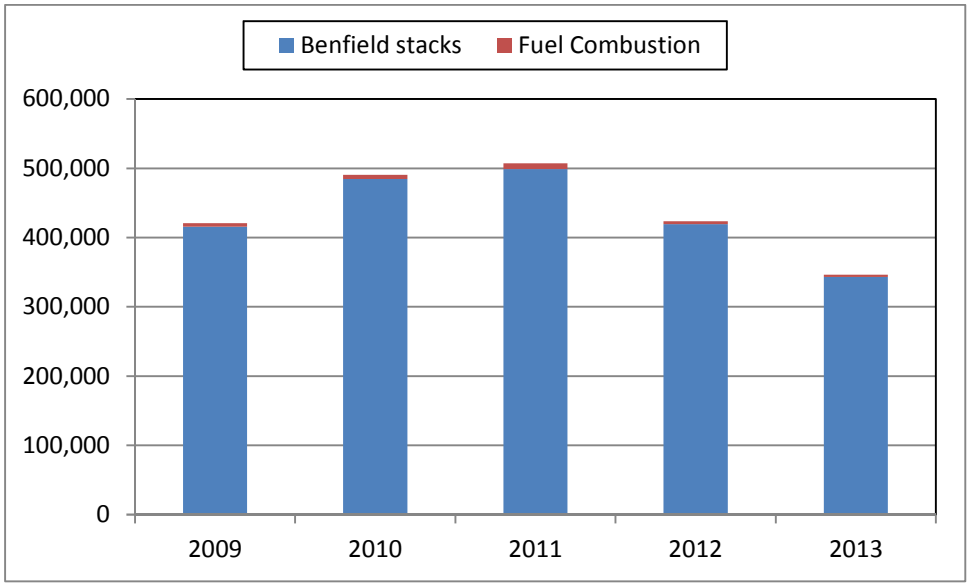
1. a summary of annual emissions of carbon dioxide from the gas treatment plant for the period 2004-2013;
2. a summary of plant process and operational enhancements as measured by efficiency of steam use;
3. the results of annual on-site air monitoring for metal deposition;
4. significant flaring from the site within the past six years.

Council did not require an inventory of discharges to air from the site, as there had been no significant change in processing since the last detailed inventory was taken for the 2009 report.

Carbon dioxide emissions

Annual CO_2 emissions in calendar years since 2009 are shown in Figure 2. The amounts released to atmosphere from the Benfield process and from fuel combustion are distinguished. The reduction in 2013 is a reflection of reduced quantities of gas processed by the plant compared to previous years.

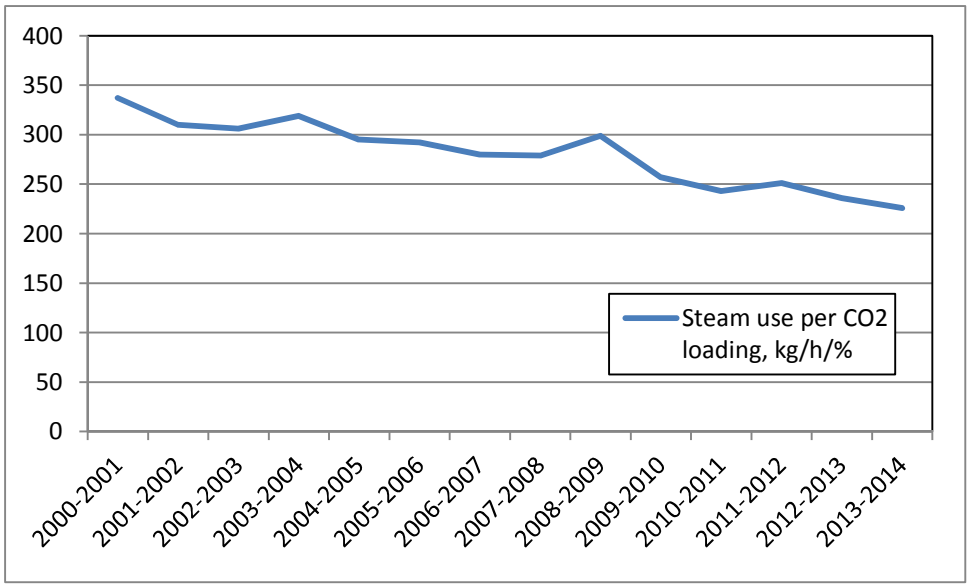
Figure 2 Annual CO_2 emissions, tonnes



Processing and operational enhancements

The efficiency of steam use in the Benfield CO_2 removal plant is a key performance indicator (KPI) for the operation of the gas treatment plant in relation to fuel use. Annual steam use per CO_2 loading since 2000-2001 is depicted in Figure 3. Vector reports that the continual improvement in steam use efficiency from 2009 onwards is not due to any particular process improvement, but rather a continued focus on consistently running the plant at higher efficiency targets from year to year, and that further improvements are likely to be small as maximum efficiency is approached.

Figure 3 Annual steam use per CO_2 loading



Metals deposition

Monitoring of metal deposition, for potassium, vanadium and zinc, is conducted annually at three sites around KGTP by deployment of air deposition gauges. The locations of the sites are immediately east and south of the processing area, that is, downwind and crosswind relative to the prevailing westerly wind, and beside Palmer Road to the southwest. There are no guidelines or standards for metals deposition. The data gathered since 2008 are given in Appendix III. While there is considerable variation in some of the samples, the data do not show any significant change in metal deposition rates over time.

Flaring

Flaring occurs solely as a safety measure. Vector states that any flaring is a financial loss; hence there is a strong drive to minimise any flaring activity. The largest flaring episodes occur during the emergency shutdown (ESD) tests, which have been carried out annually since 1997, normally in February.

2.4 Results of receiving environment monitoring

The Council carried out compliance monitoring checks of Vector's method of wastewater discharge, and monitoring of the discharge and the Kapuni Stream on 16 April and 8 July 2013 and 27 January and 24 July 2014. The last survey was delayed by elevated flows in the Kapuni Stream. Split samples were collected from Vector's discharge point, and from the Kapuni Stream both upstream and downstream of the discharge point. The Council and Vector carried out inter-laboratory analyses on the discharge, upstream and downstream samples. Results are shown in Table 2 and Table 3.

Table 2 Results of inter-laboratory comparisons, 2012-2013

16 Apr 2013	units	U/s of discharge KPN000290		D/s of discharge KPN000293		KGTP discharge IND002008 (A-705)	
		TRC	Vector	TRC	Vector	TRC	Vector
Time	NZST	1050	1103	1100	1057	1040	1040
Temperature	°C	15.9	15.8	16.0	15.6	20.9	18.6
Conductivity, 20°C	mS/m	9.9		11.7		41.8	
pH	pH	7.9	7.72	7.9	7.76	8.0	7.8
Ammonia, total	g/m^3 N	0.010	0.035	0.016	0.07	0.123	0.309
Ammonia, unionised	g/m^3 NH_3	0.000	<0.001	0.000	0.0014	0.006	0.0061
Sodium	g/m^3	9.1	9	11.7	11	235	52
Potassium	g/m^3	3.4	5	4.7	5	26.5	27
Vanadium, dissolved	g/m^3	0.001	*0.01	0.028	*0.18	0.42	*0.97
Zinc, dissolved	g/m^3					0.055	
Phosphorus, Diss.	g/m^3	0.023		0.083		1.32	
Hydrocarbons, total	g/m^3					<0.5	
Turbidity	NTU	0.42		0.94		6.1	
Chorine, free	g/m^3					<0.1	
8 Jul 2013	units	U/s of discharge KPN000290		D/s of discharge KPN000293		KGTP discharge IND002008 (A-705)	
		TRC	Vector	TRC	Vector	TRC	Vector
Time	NZST	1045	1045	1050	1050	1038	1038
Temperature	°C	8.8	9.4	8.7	9.6	13.8	13.2
Conductivity, 20°C	mS/m	9.8		11.3		66.6	
pH	pH	7.8	7.32	7.7	7.33	7.7	7.6
Ammonia, total	g/m^3 N	0.022	0.02	0.034	0.02	0.084	0.225
Ammonia, unionised	g/m^3 NH_3	0.000	<0.001	0.000	<0.001	0.001	0.001
Sodium	g/m^3	8.5	9	11.4	12	128	130
Potassium	g/m^3	3.4	4	3.6	4	7.1	9
Vanadium, dissolved	g/m^3	0.001	*0.01	0.002	*0.14	0.043	*0.32
Zinc, dissolved	g/m^3					0.043	
Phosphorus, diss.	g/m^3	0.012		0.022		0.46	
Hydrocarbons, total	g/m^3					<0.5	
Turbidity	NTU	1.9		2.0		8.4	
Chlorine, free	g/m^3					<0.1	

* Inferred vanadium, based on potassium concentration, upstream value of 0.01 g/m^3 assumed.

Table 3 Results of inter-laboratory comparisons, 2013-2014

27 January 2014	units	U/s of discharge KPN000290		D/s of discharge KPN000293		KGTP discharge IND002008 (A-705)	
		TRC	Vector	TRC	Vector	TRC	Vector
Time	NZST	0950	0955	0940	0941	0945	0948
Temperature	°C	13.1	13.7	13.4	13.9	21.0	20.7
Conductivity, 20°C	mS/m	7.2		8.4		28.3	
pH	pH	7.5	7.00	7.6	6.96	7.8	8.0
Ammonia, total	g/m³ N	0.030	0.07	0.021	0.12	0.019	0.281
Ammonia, unionised	g/m³ NH_3	0.000	<0.001	0.000	<0.001	0.001	<0.001
Sodium	g/m³	6.6	7	9.2	10	58	54
Potassium	g/m³	3.0	3	3.2	3	6.5	7
Vanadium, dissolved	g/m³	<0.001	*0.01	0.003	*0.01	0.042	*0.25
Zinc, dissolved	g/m³					0.072	
Phosphorus, diss.	g/m³	0.027		0.096		1.20	
Hydrocarbons, total	g/m³					<0.5	
Turbidity	NTU	1.7		3.2		11	
24 July 2014	units	U/s of discharge KPN000290		D/s of discharge KPN000293		KGTP discharge IND002008 (A-705)	
		TRC	Vector	TRC	Vector	TRC	Vector
Time	NZST	1529		1525		1517	1525
Temperature	°C	9.7	9.7	9.9	9.9	15.6	14.8
Conductivity, 20°C	mS/m	10.1		11.0		36.1	
pH	pH	7.7	6.94	7.6	6.79	7.1	6.6
Ammonia, total	g/m³ N	0.029	0.007	0.022	0.0141	0.011	0.225
Ammonia, unionised	g/m³ NH_3	0.000	<0.001	0.000	<0.001	0.000	<0.001
Sodium	g/m³	9.0	9	11.3	12	75	75
Potassium	g/m³	3.6		3.6		8.3	10
Vanadium, dissolved	g/m³	0.001	*0.01	0.002	*0.04	0.088	*0.36
Zinc, dissolved	g/m³					0.125	
Phosphorus, diss.	g/m³	0.011		0.054		1.24	
Hydrocarbons, total	g/m³					<0.5	
Turbidity	NTU	1.0		1.2		7.9	
Chlorine, total	g/m³					<0.1	
Chlorine, free	g/m³					<0.1	

* Inferred vanadium, based on potassium concentration, upstream value of 0.01 g/m³ assumed

All results are within consent limits, with the exception of vanadium reported by Vector for the receiving water (see explanation below), and there was generally good agreement between the laboratories.

Poorest agreement was with vanadium results. Vector infers vanadium concentration based on the ratio between vanadium and potassium in Benfield solution (the source of vanadium in KGTP effluent, used in CO_2 stripping), as testing for potassium is much quicker, allowing faster decisions on effluent release. This may lead to some inaccuracies, as potassium in the effluent may come from other

sources, whereby the receiving water vanadium concentration is grossly overestimated. This appears to have occurred for the Vector results on the downstream samples of 16 April and 8 July 2013, when Council results (employing the more accurate, relatively slow, vanadium-specific gallic acid method) showed vanadium concentration to be well under the consent limit of 0.08 g/m^3, whereas the Vector result did not.

There were some differences on ammonia. However, the concentrations were so low that this was not relevant to determination of compliance with the consent limit.

An increasing difference on pH for the receiving water occurred during the review period, with Vector results being the lower, reaching 0.8 units for the 24 July 2014 comparison, both upstream and downstream. The pH value is important in the determination of compliance with the consent limit on un-ionised ammonia concentration. Low pH value leads to a false low value for the un-ionised ammonia concentration calculated for the receiving water, potentially giving an incorrect result of compliance with the limit. To address this issue, at the time of reporting Vector had on order a new pH probe with greater sensitivity in water of low pH buffering capacity.

Biomonitoring
Four biomonitoring surveys were carried out during 2012-2013 monitoring period. Only three surveys were carried out during the 2013-2014 monitoring period, as the October monitoring was delayed until early December primarily due to prolonged periods of adverse weather and river flow conditions in October and November. The surveys were undertaken for Vector and Ballance AgriNutrients Kapuni Limited by a consultant (Stark Environmental Limited) and reviewed by Council Scientific Officers. The surveys were undertaken on 9 August and 26 October 2012, and 22 January, 11 May, 13 July and 3 December 2013, and 3April 2014. A copy of the reviews is attached as Appendix II.

Overall, the MCI scores for most sites were not less than respective medians.. The general conclusion was that the Kapuni Stream was in good health and the impact (if any) of the industrial activity at Kapuni is not discernible.

The Company's consultants also carried out two electric fishing surveys during the 2012-2014 monitoring period. Their reports were also reviewed by Council Scientific Officers. The reports concluded that there is no indication that the petrochemical industries are having any significant adverse effect on fish communities in the Kapuni Catchment. A copy of the reviews is included in Appendix II.

Fish passage
Until the 2007-2008 review period, Vector maintained a concrete v-notch weir across the Kapuni Stream at the gas treatment plant site for control of water level at a (disused) water intake structure, and for measurement of stream flow rate in order to calculate allowable effluent discharge rate from both the gas treatment plant and the ammonia urea plant. The weir was installed in 1985.

Fish surveys in the Kapuni Stream have indicated that the weir and four other nearby structures are potential barriers to the migration of native fish within the stream. The other structures are a rail bridge (New Zealand Railways Corporation), a

ford (STOS) and the effluent diffusers for the gas treatment plant (Vector) and ammonia urea plant (Ballance AgriNutrients Ltd).
In 2001, the four companies engaged a consultant to prepare a report with the object of improving fish passage. The report was completed in October 2001. The initial report recommended building a fish passage to allow fish to pass the weir. NGC investigated this option but found that the cost would be very high and would not guarantee passage of the fish due to the changing nature of the stream.

A long period of further investigations ensued, during which time the gas treatment plant effluent diffuser was removed, the ammonia urea plant effluent diffuser was taken by a flood, and rocks were laid at the STOS ford to aid fish passage. It was decided in April 2006 to remove the v-notch weir and to install a hydrometric station of new design that would sit above the water at the downstream monitoring point. (The Flo-Dar flow measuring system combines radar-based velocity measurement with ultrasonic-based pulse echo depth measurement). The new system would be operated in parallel with the Regional Council's hydrometric station at Normanby Road for a period of about 12 months, after which the weir would be removed.

The Flo-Dar was installed in December 2006, after the stream bed had been profiled. The instrument was mounted on a swinging arm to avoid damage during floods. After initial problems with calibration, the instrument became operational in April 2007, but "validation" was not completed until March 2008. The streambed had to be re-profiled following a large flood, and a profiling procedure was drawn up.
The weir was removed in April 2008 under consent 7281. A hydraulic rock breaker was used to fracture the weir into large sections which were removed from the stream bed by a 20-tonne excavator. This method minimised the discharge of fine material. Erosion protection works, in the form of boulder placement, was carried out along the adjacent right bank above the effluent catch ponds.

This action represented the removal of the second-to-last barrier to fish passage identified in the 2001 report. (Consent **7422-1** was issued to New Zealand Railways Corporation on 4 May 2009 to maintain the weir at its rail bridge and to install a fish pass, which was required to be in place by 23 October 2012. The consent was transferred to Kiwi Rail Holdings and changed in relation to design of the fish pass in February 2014).

The removal of the v-notch weir at the Vector site didn't appear to lead to any additional negative impact on sedimentation downstream. The removal of the weir will have improved fish passage in this reach of the Kapuni Stream, and this may result in improved fish communities. Kiwi Rail installed a new fish pass at the railway bridge in March 2014, which also may lead to improved fish communities.

2.5 Investigations, interventions, and incidents

The monitoring programme for the period under review was based on what was considered to be an appropriate level of monitoring, review of data, and liaison with the consent holder. During the monitoring period matters may arise which require additional activity by the Council eg provision of advice and information, or investigation of potential or actual courses 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 2012-2014 period, it was not necessary for the Council to undertake significant additional investigations and interventions, or record incidents, in association with Vector's conditions in resource consents or provisions in Regional Plans in relation to the Company's activities during the monitoring period.

3. Discussion

3.1 Discussion of plant performance

Visual monitoring of the KGTP was undertaken during site inspections. Oil separators, the waste water treatment plant, stormwater ponds and chemical and oil stores were inspected, as was the state of nearby surface water courses. On all visits the areas were noted to be working effectively and were well maintained.

During site inspections no emissions of smoke, dust or odour that were offensive or objectionable were detected from operations at the KGTP.

No incident was recorded by Council in relation to activities at the KGTP during the 2012-2014 monitoring period.

3.2 Environmental effects of exercise of consents

Monitoring by the Council and results supplied by Vector indicated general compliance with the relevant conditions of discharge consents. In general, there was good agreement between Council and Vector laboratories.

Freshwater biological monitoring showed that there were no impacts of any significance from discharges on the fauna of the Kapuni Stream. Electric fishing undertaken in the Kapuni Stream showed that there was no impact of any significance from discharges on fish communities.

During site inspections, no adverse environmental effects were detected from air discharges at the site. No potential or adverse environmental effects on air quality were observed in the 2012-2014 review period.

3.3 Evaluation of performance

A tabular summary of the Company's compliance record for the year under review is set out in Table 4 to Table 13.

Table 4 Summary of performance for Consent 1125-4 To take Kapuni Stream water for the operation of gas processing facility

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Limits to volume of water abstracted	Volume measurement by Company and review of records by Council	Yes
2. Defines three take locations	Inspection by Council	Yes
3. Limit take duration at alternative locations	Inspection and review of Company records	NA
4. Adopt best practicable option to prevent or minimise adverse effects	Inspection and review of Company records	Yes
5. Installation and maintenance of water meter and data logger	Inspection by Council. Telemetry to Council via STDC system established January 2014.	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
6. Certification of water measuring equipment	Provision of certificate. Preparation for certification was underway at end of review period.	Certification not received
7. Notification of equipment failure	Check of water take records	NA
8. Metering equipment accessible to Council	Inspection	Yes
9. Details of take recording	Records in format required	Yes
10. Notification of details of emergency takes	Notification received within 12 hours	NA
11. Fish screen	Check screen, and intake design	Yes
12. Financial contributions for riparian planting and fencing in Kapuni catchment	Receipt of funds	Yes
13. Option for Council to review consent conditions	Option next available June 2017	NA
Overall assessment of consent compliance and environmental performance in respect of this consent		Good

NA = not applicable

Table 5 Summary of performance for Consent 1123-3 Discharge of process effluent and stormwater

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adopt best practicable option to prevent or minimise adverse effects	Inspection and liaison with consent holder	Yes
2. Limit on stormwater catchment area	Inspection	Yes
3. Monitor temperature from discharge and keep within limits	Company records and measurement, with review and checking by Council	Yes
4. Monitor pH levels and keep within range	Company records and sampling, with review and checking by Council	Yes
5. Discharge cannot produce visible effects on the surface of Kapuni Strea,	Inspection	Yes
6. Concentration of un-ionised ammonia in Kapuni Stream not to exceed limits	Company records and sampling, with review and checking by Council	Yes
7. Concentration of sodium in Kapuni Stream not to exceed limits	Company records and sampling, with review and checking by Council	Yes
8. Concentration of vanadium in Kapuni Stream not to exceed limit	Company records and sampling, with review and checking by Council	Yes
9. Discharge not to contain free available chlorine	Company records and sampling, with review and checking by Council	Yes
10. Submission of effluent disposal management plan to Council	Provision of plan as required	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
11. Effluent disposal management plan to be followed	Company records, inspection and sampling	Yes
12. Provision of programmes of water treatment and notification of any changes	Inspection and provision of information. Three chemical changes notified.	Yes
13. Review of programmes of chemical cleaning treatment and notification of any changes	Inspection and provision of information	Yes
14. Optional review provision re water treatment or chemical cleaning programmes	NA	NA
15. Option for Council to review consent conditions	Option next available June 2017	NA
Overall assessment of consent compliance and environmental performance in respect of this consent		High

NA = not applicable

Table 6 Summary of performance for Consent 1225-3 Discharge of domestic sewage, tri-ethylene glycol, methanol and some water treatment chemicals from an aerated sewage treatment plant onto and into land

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adopt best practicable option to prevent or minimise adverse effects	Inspection and liaison with consent holder	Yes
2. No direct discharge to surface water	Inspection	Yes
3. Discharge limit	Assessment by Council Officer	Yes
4. Option for Council to review consent conditions	Option next available June 2017	NA
Overall assessment of consent compliance and environmental performance in respect of this consent		High

NA = not applicable

Table 7 Summary of performance for Consent 5091-1 Discharge minor amounts of earth material and stormwater to land and various streams (steam pipeline construction)

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Every practicable measure to prevent contamination of watercourses and to minimise streambed disturbance	Not undertaken as not exercised	N/A
2. Notification of construction or maintenance work	Works completed prior to review period	N/A
3. Option for Council to review conditions of consent	Next review date June 2011	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		N/A

NA = not applicable

Table 8 Summary of performance for Consent 5496-1 Discharge of ingress water from steam pipeline onto land

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Discharge to be in accordance to submission	Inspection	Yes
2. No contaminants to enter surface water body	Inspection	Yes
3. No adverse effects will occur to groundwater	Inspection and sampling	NA
4. Option for Council to review conditions of consent	Option not exercised in June 2011. Next review date June 2017	NA
Overall assessment of consent compliance and environmental performance in respect of this consent		High

NA = not applicable

Table 9 Summary of performance for Consent 7043-1 Discharge of sludges to land

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adopt best practicable option to minimise adverse effect	Inspection and Company records	Yes
2. Exercise to be in accordance to submission	Inspection	Yes
3. Specific sludge sources	Inspection	Yes
4. Disposal area specified	Inspection	Yes
5. Minimum distance to and no discharge to surface water	Inspection	Yes
6. Keeping of records	Inspection and Company records	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
7. Relocation of soil to approval of Council	Inspection, no soil moved	NA
8. No adverse effects on any water body	Inspection and biomonitoring	Yes
9. Compliance with soil and groundwater guidelines	Sampling and provision of records	Yes
10. Advice to District Council on land use	Company record	Yes
11. Option for Council to review conditions of consent	Next review date June 2017	NA
Overall assessment of consent compliance and environmental performance in respect of this consent		High

NA = not applicable

Table 10 Summary of performance for Consent 4087-2 Discharge of emissions into the air

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adopt best practicable option to prevent or minimise adverse effects	Inspection and records	Yes
2. Emissions maintained to a minimum	Inspection, Company records and sampling	Yes
3. Approval for alterations affecting discharge to be gained from Council	Notifications	Yes
4. Three yearly written report to Council	Report received when required	Yes
5. Written report reviewing technological advances	Report received when required	Yes
6. Written report evaluating risk to human health	Report received when required	Yes
7. Annual report on gross emission of carbon dioxide	Change to RMA- no longer required	NA
8. Control of discharges to air of carbon monoxide	Company records	Yes
9. Control of discharges to air of nitrogen dioxide	Company records	Yes
10. Option for Council to review conditions re excess of carbon monoxide or nitrogen dioxide limits	Not exercised	NA
11. Concentration of benzene not to exceed limits	Company records and sampling	Yes
12. Control all other discharges as to not exceed limits	Company records and sampling	Yes
13. Discharge of odour	Inspection	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
14. Depressurisation to avoid dense black smoke	Inspection and Company records	Yes
15. No adverse ecological effect on eco-systems	Inspection and biomonitoring	Yes
16. Notice to review consent conditions	Not exercised under condition 4, next optional review date June 2017.	NA
17. Site contingency plan	Annual update of plan	Yes
Overall assessment of consent compliance and environmental performance in respect of this consent		High

NA = not applicable

Table 11 Summary of performance for Consent 5090-1 to erect, place use and maintain two above ground pipelines, an electrical ring main and structures over stream beds

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Structures constructed and maintained according to submission	Inspection	Yes
2. Notification of initial construction and maintenance work	Not undertaken	NA
3. Option for Council to review conditions of consent	Next review date June 2017	NA
Overall assessment of consent compliance and environmental performance in respect of this consent		High

NA = not applicable

Table 12 Summary of performance for Consent 7281-1 Remove weir structure from Kapuni Stream

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Consent to be exercised in accordance with documentation submitted	Inspection by Council	Yes
2. Notification prior to commencement and upon completion of works	Notification given 10 April 2008	Yes
3. Adoption of best practicable option to minimise adverse environmental effects	Inspection by Council	Yes
4. Minimisation of bed disturbance	Inspection by Council	Yes
5. Reasonable steps to minimise sediment effects	Inspection by Council	Yes
6. Removal of materials from streambed	Inspection by Council	Yes
7. Works prohibited between 10 May and 1	Inspection by Council	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
November, without permission		
8. Use of explosives prohibited	Inspection by Council	Yes
9. Lapse of consent if not exercised	Consent was exercised	N/A
10. Option for Council to review conditions of consent	Next review date June 2017	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		N/A

NA = not applicable

Table 13 Summary of performance for Consent 7755-1 to discharge stormwater from site areas where no industrial processes occur

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adopt best practicable option to prevent or minimise adverse effects	Inspection and liaison with consent holder	Yes
2. Limit on stormwater catchment area	Inspection	Yes
3. Controls on effect of discharge in receiving water	Inspection and biological monitoring by Council	Yes
4. Discharge cannot produce visible effects on the surface of Kapuni Strea,	Inspection	Yes
5. Maintenance of contingency plan	Receipt and review of plan	Yes
6. Maintenance of stormwater management plan	Receipt and review of plan	Yes
7. Provision for lapse of consent	NA	NA
8. Option for Council to review consent conditions	Option next available June 2017	NA
Overall assessment of consent compliance and environmental performance in respect of this consent		High

During the period under review, the Company demonstrated a high level of environmental performance and compliance with the resource consents as defined in Section 1.1.4.

3.4 Recommendations from the 2010-2012 Biennial Report

In the 2010-2012 Biennial Report, it was recommended:

1. THAT monitoring of air emissions from the Vector Kapuni gas treatment plant in the 2012-2013 year continue at the same level as in 2011-2012.

2. THAT monitoring of abstractions for and discharges from the Vector Kapuni gas treatment plant in the 2012-2013 year continue at the same level as in 2011-2012.

These recommendations were implemented.

3.5 Alterations to monitoring programmes for 2014-2015

In designing and implementing the monitoring programmes for air/water discharges in the region, the Taranaki Regional Council has taken into account the extent of information made available by previous authorities, its relevance under the Resource Management Act, 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 Vector, the programme for 2012-2013 and 2013-2014 was unchanged from that for 2011-2012. Similarly it is proposed that for 2014-2015, the programme remain unchanged.

A recommendation to this effect is attached to this report.

3.6 Exercise of optional review of consents

None of the consents allow for an optional review in June 2015.

4. Recommendations

1. THAT monitoring of air emissions from the Vector Kapuni gas treatment plant in the 2014-2015 year continue at the same level as in 2013-2014.

2. THAT monitoring of abstractions for and discharges from the Vector Kapuni gas treatment plant in the 2014-2015 year continue at the same level as in 2013-2014.

Glossary of common terms and abbreviations

The following abbreviations and terms are used within this report:

AUP	Ammonia urea plant
Ballance	Ballance Agri-Nutrients Limited
Biomonitoring	Assessing the health of the environment using aquatic organisms
bund	A wall around a tank to contain its contents in the case of a leak
Condy	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 20°C and expressed in mS/m
DRP	Dissolved reactive phosphorus
fresh	Elevated flow in a stream, such as after heavy rainfall
g/m^3	Grammes per cubic metre, and equivalent to milligrammes per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures
KGTP	Kapuni gas treatment plant
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
l/s	Litres per second
MCI	Macroinvertebrate community index; a numerical indication of the state of biological life in a stream that takes into account the sensitivity of the taxa present to organic pollution in stony habitats
mS/m	Millisiemens per metre
mixing zone	The zone below a discharge point where the discharge is not fully mixed with the receiving environment. For a stream, conventionally taken as a length equivalent to 7 times the width of the stream at the discharge point.
NH_4	Ammonium, normally expressed in terms of the mass of nitrogen (N)
NH_3	Unionised ammonia, normally expressed in terms of the mass of nitrogen (N)
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

PM_{10}	Relatively fine airborne particles (less than 10 micrometre diameter
resource consent	Refer Section 87 of the RMA. Resource consents include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15)
RMA	Resource Management Act 1991 and subsequent amendments
STOS	Shell Todd Oil Services Limited
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

*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

Natural Gas Corporation (2005): *Report on Special Condition 4 of the Natural Gas Corporation's Air Discharge Permit 4087 (2004-2005 Study).*

Natural Gas Corporation (2002): *Report on Special Condition 4 of the Natural Gas Corporation's Air Discharge Permit 4087 (2001-2002 Study).* June 2002.

Natural Gas Corporation (1999): *Report on Special Condition 4 of the Natural Gas Corporation's Air Discharge Permit TRK964087.* June 1999.

Natural Gas Corporation (1996): *Report for the Risk Assessment of the Glycol Dehydration Units and BTEX Control Technology.*

South Taranaki District Council (2006): *Kapuni Stream Management Plan*

Taranaki Catchment Board (1990): *Gas Treatment Plant Water Right Monitoring Annual Report 1989.* Technical Report 90-2.

Taranaki Regional Council (2012): *Vector Kapuni GTP Monitoring Programme Biennial Report 2010-2012.* Technical Report 2012-83.

Taranaki Regional Council (2010): *Vector Kapuni GTP Monitoring Programme Annual Report 2009-2010.* Technical Report 2010-90.

Taranaki Regional Council (2009): *Vector Kapuni GTP Monitoring Programme Annual Report 2008-2009.* Technical Report 2009-88.

Taranaki Regional Council (2008): *Vector Kapuni GTP Monitoring Programme Annual Report 2007-2008.* Technical Report 2008-96.

Taranaki Regional Council (2007): *Vector Kapuni GTP Monitoring Programme Annual Report 2006-2007.* Technical Report 2007-88.

Taranaki Regional Council (2006): *NGC Kapuni GTP Monitoring Programme Annual Report 2005-2006.* Technical Report 2006-115.

Taranaki Regional Council (2005): *NGC Kapuni Gas Treatment Plant Monitoring Programme Annual Report 2004-2005.* Technical Report 2005-108.

Taranaki Regional Council (2004): *NGC Kapuni Gas Treatment Plant Monitoring Programme Annual Report 2003-2004.* Technical Report 2004-71.

Taranaki Regional Council (2003): *NGC Kapuni Gas Treatment Plant Monitoring Programme Annual Report 2002-2003.* Technical Report 2003-43.

Taranaki Regional Council (2002): *NGC Kapuni Gas Treatment Plant Monitoring Programme Annual Report 2001-2002.* Technical Report 2002-74.

Taranaki Regional Council (2001a): *Dams, weirs and other barriers to fish passage in Taranaki.*

Taranaki Regional Council (2001b): *Natural Gas Corporation Kapuni Gas Treatment Plant Monitoring Programme Annual Report 2000-2001*. Technical Report 2001-70

Taranaki Regional Council (2000): *Natural Gas Corporation Kapuni Gas Treatment Plant Monitoring Programme Annual Report 1999-2000.* Technical Report 2000-55

Taranaki Regional Council (1999a): *Monitoring of nitrogen oxides and sulphur oxide levels in Taranaki 1993-1999 – Internal Report*. Taranaki Regional Council

Taranaki Regional Council (1999b): *Natural Gas Corporation Kapuni Gas Treatment Plant Monitoring Programme Annual Report 1998-99.* Technical Report 99-63

Taranaki Regional Council (1998): *Natural Gas Corporation Kapuni Gas Treatment Plant Monitoring Programme Annual Report 1997-98.* Technical Report 98-38

Taranaki Regional Council (1997): *Natural Gas Corporation Kapuni Gas Treatment Plant Monitoring Programme Annual Report 1996-97.* Technical Report 97-14

Taranaki Regional Council (1996): *Natural Gas Corporation Kapuni Gas Treatment Plant Water and Air Monitoring Programme Annual Report 1995/96.* Technical Report 96-27

Taranaki Regional Council (1995): *Natural Gas Corporation Kapuni Gas Treatment Plant Water and Air Monitoring Programme Annual Report 1994/95.* Technical Report 95-26

Taranaki Regional Council (1994): *Natural Gas Corporation Kapuni Gas Treatment Plant Water and Air Monitoring Programme Annual Report 1993-94.* Technical Report 94-74

Taranaki Regional Council (1993): *Natural Gas Corporation Water and Air Monitoring Programme Annual Report 1992-93.* Technical Report 93-52

Taranaki Regional Council (1992): *Natural Gas Corporation Resource Consent Monitoring Annual Report 1991/92.* Technical Report 92-42

Taranaki Regional Council (1991): *Kapuni Gas Treatment Plant Annual Report 1990/91.* Technical Report 91-45

Taranaki Regional Council (1990): *Kapuni Gas Treatment Plant Annual Report 1989/90.* Technical Report 90-33

Tonkin and Taylor Ltd (2008): *Report on Special Condition 4 of Air Discharge Permit 4087 2005-2008 reporting period*. T & T Ref: 25635

Vector Limited (2011): *Collation of information relating to emissions from Kapuni compressor C903-5*

Appendix I

Resource consents held by Vector for Kapuni GTP

Discharge Permit

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

Name of Consent Holder:	Vector Limited P O Box 593 HAWERA 4640
Decision Date:	18 June 2012
Commencement Date:	18 June 2012

Conditions of Consent

Consent Granted:	To discharge process effluent and stormwater to the Kapuni Stream at or about (NZTM) 1700945E-5629537N
Expiry Date:	1 June 2035
Review Date(s):	June 2017, June 2023, June 2029
Site Location:	Kapuni Gas Treatment Plant, 298 Palmer Road, Kapuni
Legal Description:	Pt Lot 1 DP 5227 Blk XVI Kaupokonui SD (Discharge source & site)
Catchment:	Kapuni

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

General condition

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

Special conditions

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

2. The discharge of stormwater shall be from a catchment area not exceeding 3.37 ha.

3. The discharge shall not raise the temperature of the Kapuni Stream by greater than 2 degrees Celsius, when measured 50 metres downstream of the discharge point and all practicable steps shall be taken by the consent holder to minimise the temperature rise in the Kapuni Stream. Further, the consent holder shall continuously monitor the temperature of the wastewater, and receiving water upstream and downstream of the discharge point.

4. The discharge shall not cause the pH of the Kapuni Stream to be outside the range 6.5 to 9.0 when measured 50 metres downstream of the discharge point. Further, the consent holder shall continuously monitor the pH of the wastewater, and receiving water upstream and downstream of the discharge point.

5. After allowing for reasonable mixing, within a mixing zone extending 50 metres downstream of the discharge point, the discharge shall not produce any visible oil or hydrocarbon films, scums or foams on the surface of the Kapuni Stream.

6. The discharge shall not cause the concentration of un-ionised ammonia in the Kapuni Stream to exceed 0.006 grams per cubic metre when measured 50 metres downstream of the discharge point, unless agreement is given by the holder of consent 0598-3. In any case, the discharge shall not cause the concentration of un-ionised ammonia in the Kapuni Stream to exceed 0.025 grams per cubic metre.

7. The discharge shall not cause the concentration of sodium in the Kapuni Stream to exceed 15 grams per cubic metre when measured 50 metres downstream of the discharge point, unless agreement is given by the holder of consent 0598-3. In any case, the discharge shall not cause the concentration of sodium in the Kapuni Stream to exceed 40 grams per cubic metre.

8. The discharge shall not cause the total vanadium concentration of the Kapuni Stream to exceed 0.08 grams per cubic metre when measured 50 metres downstream of the discharge point.

9. The discharge shall not contain free available chlorine.

10. Prior to the exercise of this consent, the consent holder shall submit an effluent and stormwater management plan for approval by the Chief Executive, Taranaki Regional Council, acting in a certification capacity. The management plan shall detail the procedures and processes that will be followed to ensure that the conditions of this consent are met, including but not limited to:

    i) controlling the effluent and stormwater discharge rate;
    ii) measuring and recording the discharge;
    iii) measuring and recording the Kapuni Stream (chemical and biological);
    iv) calibration of monitoring equipment;
    v) co-ordination with the holder of consent 0598-3 on discharge of ammonia and sodium;
    vi) minimisation of free phosphate in the discharge, and how this can be achieved;
    vii) minimisation of the temperature increase to the receiving environment;
    viii) contingency events (including discharging in extended low flow events and the use of alternative receiving environments); and
    ix) reporting on exercise of consent.

11. The consent shall be exercised in accordance with the approved effluent and stormwater management plan required by condition 10. Within one months notice given by the Taranaki Regional Council, the consent holder shall review the management plan and resubmit the plan for approval by the Chief Executive, Taranaki Regional Council.

12. The consent holder shall forward to the Chief Executive, Taranaki Regional Council, details of any programmes of water treatment used at the Gas Treatment Plant, including raw water, boiler water and cooling water. Further, the consent holder shall notify the Chief Executive, Taranaki Regional Council, of any change in water treatment chemical, or increase in maximum concentration of any water treatment chemical, at least one month prior to change of a water treatment programme.

13. The consent holder shall forward to the Chief Executive, Taranaki Regional Council, details of any programmes of chemical cleaning used at the gas treatment plant. Further, the consent holder shall notify the Chief Executive, Taranaki Regional Council, of any change in chemical cleaning agent, or increase in concentration of any chemical cleaning agent used, where the effluent is to be disposed of to the Kapuni Stream, at least one month prior to change of a chemical cleaning programme.

14. 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 within three months of notification of proposed changes in water treatment or chemical cleaning programmes under special conditions 12 and 13, 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.

15. 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 2017, and/or June 2023 and/or June 2029 for the purpose of:

    a. 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; and/or

    b. requiring any data collected in accordance with the conditions of this consent to be transmitted directly to the Council's computer system, in a format suitable for providing a 'real time' record over the internet.

Signed at Stratford on 18 June 2012

For and on behalf of
Taranaki Regional Council

_____

Director-Resource Management

Water Permit

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

Name of Consent Holder:	Vector Limited P O Box 593 HAWERA 4640
Decision Date:	19 June 2012
Commencement Date:	19 June 2012

Conditions of Consent

Consent Granted:	To take water from the Kapuni Stream in association with the operation of a gas processing facility at or about (NZTM) 1701464E-5630826N
Expiry Date:	1 June 2035
Review Date(s):	June 2017, June 2020, June 2023, June 2029
Site Location:	Kapuni Gas Treatment Plant, 298 Palmer Road, Kapuni
Legal Description:	Adjacent to Lots 1 & 2 DP 10570 Blk XVI Kaupokonui SD (Site of take) Pt Lot 1 DP 5227 Blk XVI Kaupokonui SD (Site of use)
Catchment:	Kapuni

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

General condition

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

Special conditions

1. The volume of water taken from the Kapuni Stream shall not exceed 3,900 m^3 at a rate no greater than:

   (a) 52 litres/second under normal operating conditions; or

   (b) 58 litres/second in the event of an emergency shutdown situation, or equipment breakdown/failure; or

   (c) 58 litres/second in the event that the taking of water under 1(a) or 1(b) cannot occur.

2. Water shall be taken from the South Taranaki District Council intake structure, except at times when water is taken in accordance with special condition 1(c), when water shall be taken from the Kapuni Stream at or about the following locations:

   (a) (NZTM) 1701160E-5629699N; or
   (b) (NZTM) 1700943E-5629620N; or
   (c) (NZTM) 1700952E-5629494N.

3. The taking of water from an alternative location, as specified in special condition 1(c) of this consent, shall only be exercised for up to five days (120 hours) per calendar year, or such longer period as approved by the Chief Executive, Taranaki Regional Council for emergency or other purposes.

4. At all times the consent holder shall adopt the best practicable option as defined in the Resource Management Act 1991, to prevent or minimise any actual or likely adverse effect on the environment associated with the taking of water from the Kapuni Stream, including, but not limited to, the efficient and conservative use of water.

5. Before exercising this consent, the consent holder shall install, and thereafter maintain, a water meter and a datalogger at the point where the water enters the supply line for the Kapuni Gas Treatment Plant (i.e. (NZTM) 1701293E-5629885N). The water meter and datalogger shall be tamper-proof and shall measure and record the rate and volume of water taken to an accuracy of $\pm$ 5%. Records of the date, the time and the rate and volume of water taken at intervals not exceeding 15 minutes, shall be made available to the Chief Executive, Taranaki Regional Council at all reasonable times.

   Note: Water meters and dataloggers must be installed, and regularly maintained, in accordance with manufacturer's specifications in order to ensure that they meet the required accuracy. Even with proper maintenance water meters and dataloggers have a limited lifespan.

6. The consent holder shall provide the Chief Executive, Taranaki Regional Council with a document from a suitably qualified person certifying that water measuring and recording equipment required by the conditions of this consent ('the equipment'):

   (a) has been installed and/or maintained in accordance with the manufacturer's specifications; and/or

   (b) has been tested and shown to be operating to an accuracy of ± 5%.

   The documentation shall be provided:

   (i) within 30 days of the installation of a water meter or datalogger;

   (ii) at other times when reasonable notice is given and the Chief Executive, Taranaki Regional Council has reasonable evidence that the equipment may not be functioning as required by this consent; and

   (iii) no less frequently than once every five years.

7. If any measuring or recording equipment breaks down, or for any reason is not operational, the consent holder shall advise the Chief Executive, Taranaki Regional Council immediately. Any repairs or maintenance to this equipment must be undertaken by a suitably qualified person.

8. The water meter and datalogger shall be accessible to Taranaki Regional Council officers at all reasonable times for inspection and/or data retrieval.

9. The records of water taken shall:

   (a) be in a format that, in the opinion of the Chief Executive, Taranaki Regional Council, is suitable for auditing;

   (b) specifically record the water taken as 'zero' when no water is taken; and

   (c) for each 12-month period ending on 30 June, be provided to the Chief Executive, Taranaki Regional Council within one month after end of that period.

10. At times when water is taken from an alternative location, as specified in special condition 1(c) of this consent, the consent holder shall advise the Chief Executive, Taranaki Regional Council, within 12 hours of taking water, and within 2 days of ceasing, shall provide details of the length and time the take occurred and the volume and rate of take (cubic metres per day and litres per second).

11. The consent holder shall ensure that the intake is screened to avoid fish entering the intake or being trapped against the screen.

12. The consent holder shall make three annual payments of $16,667 (plus GST) to the Taranaki Regional Council as a financial contribution for the purpose of providing riparian planting and fencing in the Kapuni Stream catchment. These payments shall be made no later than 1 September each year from 2012 to 2014.

13. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2017 and/or June 2020 and/or June 2023 and/or June 2029 for the purposes of:

    (a) 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; and/or

    (b) to require any data collected in accordance with the conditions of this consent to be transmitted directly to the Council's computer system, in a format suitable for providing a 'real time' record over the internet.

Signed at Stratford on 19 June 2012

For and on behalf of
Taranaki Regional Council

_____

Director-Resource Management

Discharge Permit

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

Name of Consent Holder:	Vector Limited P O Box 593 HAWERA 4640
Decision Date:	20 June 2012
Commencement Date:	20 June 2012

Conditions of Consent

Consent Granted:	To discharge domestic sewage, tri-ethylene glycol, methanol and some water treatment chemicals (i.e. phosphate corrosion inhibitors) from an aerated sewage treatment plant onto and into land at or about (NZTM) 1700726E-5629194N
Expiry Date:	1 June 2035
Review Date(s):	June 2017, June 2023, June 2029
Site Location:	Kapuni Gas Treatment Plant, 298 Palmer Road, Kapuni
Legal Description:	Lot 1 DP 18183 Blk XVI Kaupokonui SD (Discharge source & site)
Catchment:	Kapuni

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

General condition

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

Special conditions

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

2. There shall be no direct discharge of any contaminant into a surface water body.

3. The discharge shall not exceed 13.5 m^3 per day (0.97 litres per second), which shall be spread as evenly as practicable to a disposal area of not less than 1,325 m^2.

4. 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 2017 and/or June 2023 and/or June 2029, 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 20 June 2012

For and on behalf of
Taranaki Regional Council

_____

Director-Resource Management

TRK964087

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TARANAKI REGIONAL COUNCIL

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DISCHARGE PERMIT

Pursuant to the RESOURCE MANAGEMENT ACT 1991 a resource consent is hereby granted by the Taranaki Regional Council

Name of Consent Holder: NATURAL GAS CORPORATION OF NEW ZEALAND LIMITED GAS TREATMENT PLANT PO BOX 593 HAWERA

Change to Conditions Date: 27 January 1997

CONDITIONS OF CONSENT

Consent Granted: TO DISCHARGE EMISSIONS INTO THE AIR FROM THE TREATMENT OF NATURAL GAS, COGENERATION, OTHER ON-SITE ACTIVITIES AND OTHER RELATED AND ANCILLARY ACTIVITIES AT OR ABOUT GR: Q20:109-914

Expiry Date: 1 June 2029

Review Date[s]: June 1999, June 2005, June 2011, June 2017 and June 2023

Site Location: KAPUNI GAS TREATMENT PLANT, PALMER ROAD, KAPUNI

Legal Description: PT LOT 1 DP5527 LOT 1 DP9987 LOT 1 DP15254 BLK XVI KAUPOKONUI SD

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

TRK964087

GENERAL CONDITIONS

(a) That on receipt of a requirement from the General Manager, Taranaki Regional Council (hereinafter the General Manager), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.

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

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

(i) the administration, monitoring and supervision of this consent;
(ii) charges for the carrying out of the Council's functions under section 35 in relation to this consent; and
(iii) charges authorised by regulations.

SPECIAL CONDITIONS

1) THAT the consent holder shall at all times adopt the best practicable option to prevent or minimise any actual or likely adverse effects on the environment arising from discharges to air from the site. 'Best practicable option' shall be determined by the General Manager, Taranaki Regional Council, taking into account the information supplied by the consent holder under conditions 4, 5 and 6 of this consent, and following review as set out under condition 16 of this consent.

2) THAT the consent holder shall at all times operate, maintain, supervise, monitor and control all processes so that emissions authorised by this consent are maintained at a practicable minimum.

3) THAT prior to undertaking any alterations to the plant, processes or operations which may significantly change the nature or quantity of contaminants discharged to air from the site, the consent holder shall consult with the General Manager, Taranaki Regional Council, and shall obtain any necessary approvals under the Resource Management Act 1991.

4) THAT the consent holder shall provide to the General Manager, Taranaki Regional Council, by 1 June 1999 and every three years thereafter a written report:

(a) reviewing any technological advances in the reduction or mitigation of discharges to air from the site, and the costs and benefits of these advances; and

(b) detailing an inventory of the discharges to air from the site of such contaminants as the General Manager may from time to time specify following consultation with the consent holder; and

(c) detailing any measures that have been taken by the consent holder to improve the energy efficiency of the site's activities and processes; and

(d) addressing any other issue relevant to the minimisation or mitigation of discharges of contaminants to air from the site that the General Manager, Taranaki Regional Council, considers should be included.

TRK964087

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5) THAT in addition to the requirements of condition 4, the consent holder shall provide to the General Manager, Taranaki Regional Council, by 1 June 1996 a written report reviewing any technological advances in the reduction or mitigation of discharges of benzene, toluene, ethyl benzene, and xylene, from the glycol towers, and discussing how these might be applicable and/or implemented at the Gas Treatment Plant, and the costs and benefits of these advances.

6) THAT by 1 June 1996 the consent holder shall provide to the General Manager, Taranaki Regional Council, a written report evaluating the risk to human health presented by the discharge to air of benzene, toluene, ethyl benzene, and xylene from the site. The report shall be to such detail as is required by the General Manager, Taranaki Regional Council.

7) THAT the consent holder shall provide to the General Manager, Taranaki Regional Council, on an annual basis the gross emissions of carbon dioxide from the site.

8) THAT the consent holder shall control all discharges to air from the site of carbon monoxide, in order that the maximum concentration of carbon monoxide measured under ambient conditions at or beyond the site boundary arising from discharges to air from the site does not exceed 30 mg/m^3 [one-hour average exposure] or 10 mg/m^3 [eight-hour average exposure].

9) THAT the consent holder shall control all discharges to air from the site of nitrogen dioxide, in order that the maximum ambient concentration of nitrogen dioxide measured under ambient conditions at or beyond the site boundary arising from discharge to air from the site does not exceed 300 $\mu g/m^3$ [one-hour average exposure] or 100 $\mu g/m^3$ [twenty-hour average exposure].

10) THAT should an off-site concentration of carbon monoxide or of nitrogen dioxide in the vicinity of the site be found to exceed a limit established in condition 8 or 9 above, then the Taranaki Regional Council may review any or all of the conditions of this consent pursuant to section 128(1)(a) of the Resource Management Act.

11) THAT the consent holder shall control all discharges of benzene to air from the site, in order that the maximum concentration measured under ambient conditions at or beyond the site boundary arising from discharges to air from the site, shall not exceed 16 $\mu g/m^3$ [annual average of twenty-four-hour average exposure], nor 3.2 mg/m^3 at any time, nor 0.32 mg/m^3 [any eight-hour average exposure].

12) THAT the consent holder shall control all discharges to air from the site other than of carbon dioxide, carbon monoxide, nitrogen oxides and benzene, so that the maximum concentration measured under ambient conditions at or beyond the boundary of the site, arising from the exercise of this consent, does not exceed:

(a) more than 1/30th of the relevant Occupation Threshold Value [Time Weighted Average]; or

(b) the Short Term Exposure Limit at any time [Workplace Exposure Standards and Biological Exposure Indices for New Zealand, 1992, Department of Labour].

13) THAT the discharges authorised by this consent shall not give rise to an odour at or beyond the boundary of the site that in the opinion of at least one officer of the Taranaki Regional Council is offensive or obnoxious or objectionable.

14) THAT whenever practicable depressurisation of the plant or sections of the plant shall be so controlled as to avoid dense black smoke from being discharged from any flare.

15) THAT the discharges authorised by this consent shall not give rise to any significant adverse ecological effect on any ecosystems, including but not limited to habitats, plants, animals, microflora and microfauna.

16) THAT pursuant to the provisions of section 128(1)(a) of the Resource Management Act the Council may within six months of receiving a report prepared by the consent holder subject to conditions 4, 5, or 6 of this consent or otherwise by giving notice of review during June 1999 and/or June 2005 and/or June 2011 and/or June 2017 and/or June 2023 serve notice that it intends to review any condition of this resource consent for the purposes of:

(a) dealing with any significant adverse effect on the environment arising from the exercise of this consent; or

(b) requiring the consent holder to adopt the best practicable option to remove or reduce any adverse effect on the environment caused by the discharge.

17) THAT the consent holder shall prepare a site contingency plan to the satisfaction of the General Manager, Taranaki Regional Council, no later than six months after the granting of this consent. The contingency plan shall be reviewed and if necessary updated to the satisfaction of the General Manager, Taranaki Regional Council, annually.

Signed at Stratford on 27 January 1997

For and on behalf of
TARANAKI REGIONAL COUNCIL

DIRECTOR—RESOURCE MANAGEMENT

TRK975090

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TARANAKI REGIONAL COUNCIL

PRIVATE BAG 713
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LAND USE CONSENT

Pursuant to the RESOURCE MANAGEMENT ACT 1991 a resource consent is hereby granted by the Taranaki Regional Council

Name of Consent Holder: NATURAL GAS CORPORATION OF NEW ZEALAND LIMITED GAS TREATMENT PLANT PO BOX 593 HAWERA

Consent Granted Date: 27 January 1997

CONDITIONS OF CONSENT

Consent Granted: TO ERECT, PLACE, USE AND MAINTAIN TWO ABOVE GROUND PIPELINES, AN ELECTRICAL RING MAIN AND ASSOCIATED STRUCTURES OVER THE BEDS OF VARIOUS STREAMS BETWEEN AND INCLUDING THE MOTUMATE STREAM AND AN UNNAMED TRIBUTARY OF THE WAIOKURA STREAM FOR STEAM AND ELECTRICITY SUPPLY PURPOSES AT OR ABOUT GR: Q20:109-915 TO P20:079-915

Expiry Date: 1 June 2032

Review Date[s]: June 1999, June 2005, June 2011, June 2017, June 2023 and June 2029

Site Location: PALMER ROAD TO MANAIA ROAD, KAPUNI

Legal Description: VARIOUS

Catchment:

WAIOKURA	353.000
MOTUMATE	354.000

Tributary: UNNAMED TRIBUTARIES

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

TRK975090

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GENERAL CONDITIONS

(a) That on receipt of a requirement from the General Manager, Taranaki Regional Council (hereinafter the General Manager), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.

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

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

(i) the administration, monitoring and supervision of this consent;
(ii) charges for the carrying out of the Council's functions under section 35 in relation to this consent; and
(iii) charges authorised by regulations.

SPECIAL CONDITIONS

1. THAT the structures licensed by this consent shall be constructed and maintained in accordance with the documentation submitted in support of application 96/322.

2. THAT the consent holder shall notify the Taranaki Regional Council at least 48 hours prior to, and again upon completion of initial construction works, and again 48 hours prior to and upon completion of any subsequent maintenance works which may result in disturbance of the stream beds and/or discharges to the streams.

3. THAT the Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 1999 and/or June 2005 and/or June 2011 and/or June 2017 and/or June 2023 and/or June 2029, for the purpose of ensuring that the conditions are adequate to deal with any significant adverse effects of the discharge on the receiving environment arising from the exercise of this consent, which were not foreseen at the time the application was considered and which it was not appropriate to deal with at the time.

Signed at Stratford on 27 January 1997

For and on behalf of
TARANAKI REGIONAL COUNCIL

DIRECTOR—RESOURCE MANAGEMENT

TRK975091

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DISCHARGE PERMIT

Pursuant to the RESOURCE MANAGEMENT ACT 1991 a resource consent is hereby granted by the Taranaki Regional Council

Name of Consent Holder:	NATURAL GAS CORPORATION OF NEW ZEALAND LIMITED GAS TREATMENT PLANT PO BOX 593 HAWERA
Consent Granted Date:	27 January 1997

CONDITIONS OF CONSENT

Consent Granted:	TO DISCHARGE MINOR AMOUNTS OF EARTH MATERIAL AND ASSOCIATED STORMWATER ONTO LAND AND INTO VARIOUS STREAMS BETWEEN AND INCLUDING THE MOTUMATE STREAM AND AN UNNAMED TRIBUTARY OF THE WAIOKURA STREAM ASSOCIATED WITH THE CONSTRUCTION OF TWO ABOVE GROUND PIPELINES, AN ELECTRICAL RING MAIN AND ASSOCIATED STRUCTURES FOR STEAM AND ELECTRICITY SUPPLY PURPOSES AT OR ABOUT GR: Q20:109-915 TO P20:079-915
Expiry Date:	1 June 2032
Review Date[s]:	June 1999, June 2005, June 2011, June 2017, June 2023 and June 2029
Site Location:	PALMER ROAD TO MANAIA ROAD, KAPUNI
Legal Description:	VARIOUS
Catchment:	WAIOKURA 353.000 MOTUMATE 354.000
Tributary:	UNNAMED TRIBUTARIES

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

TRK975091

COPY

GENERAL CONDITIONS

(a) That on receipt of a requirement from the General Manager, Taranaki Regional Council (hereinafter the General Manager), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.

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

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

(i) the administration, monitoring and supervision of this consent;
(ii) charges for the carrying out of the Council's functions under section 35 in relation to this consent; and
(iii) charges authorised by regulations.

SPECIAL CONDITIONS

1. THAT during the exercise of this consent, the consent holder must observe every practicable measure to prevent the discharge or placement of silt and/or organics and/or cement products and/or any other contaminants into the watercourse, and to minimise disturbance of the stream bed.

2. THAT the consent holder shall notify the Taranaki Regional Council at least 48 hours prior to, and again upon completion of, any exercise of this consent.

3. THAT the Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 1999 and/or June 2005 and/or June 2011 and/or June 2017 and/or June 2023 and/or June 2029, for the purpose of ensuring that the conditions are adequate to deal with any significant adverse effects of the discharge on the receiving environment arising from the exercise of this consent, which were not foreseen at the time the application was considered and which it was not appropriate to deal with at the time.

Signed at Stratford on 27 January 1997

For and on behalf of
TARANAKI REGIONAL COUNCIL

DIRECTOR—RESOURCE MANAGEMENT

TRK995496

TARANAKI REGIONAL COUNCIL

PRIVATE BAG 713
47 CLOTON ROAD
STRATFORD
NEW ZEALAND
PHONE 0-6-765 7127
FAX 0-6-765 5097

DISCHARGE PERMIT

Pursuant to the RESOURCE MANAGEMENT ACT 1991 a resource consent is hereby granted by the Taranaki Regional Council

Name of Consent Holder:	NATURAL GAS CORPORATION OF NEW ZEALAND LIMITED PO BOX 593 HAWERA
Consent Granted Date:	24 June 1999

CONDITIONS OF CONSENT

Consent Granted:	TO DISCHARGE UP TO 8 CUBIC METRES/DAY OF INGRESS WATER FROM A STEAM PIPELINE ONTO LAND IN THE VICINITY OF UNNAMED TRIBUTARIES OF THE KAPUNI, WAIOKURA AND MOTUMATE STREAMS AT OR ABOUT GR: Q20: 109-913, Q20:108-914, Q20:108-915 , P20: 080-915
Expiry Date:	1 June 2017
Review Date[s]:	June 2005 and June 2011
Site Location:	PALMER ROAD TO MANAIA ROAD, KAPUNI
Legal Description:	VARIOUS

Catchment:	KAPUNI	352.000
	WAIOKURA	353.000
	MOTUMATE	354.000
Tributaries:	UNNAMED TRIBUTARIES	

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

TRK995496

General conditions

a) That on receipt of a requirement from the General Manager, Taranaki Regional Council (hereinafter the General Manager), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.

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

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

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

Special conditions

1. THAT the consent holder shall ensure that the discharge of ingress water takes place in accordance with the information submitted in support of application 671.

2. THAT the exercise of this consent, including the design and management of the discharge system, shall not lead or be liable to lead to contaminants entering a surface water body.

3. THAT no adverse effects shall occur to groundwater in the vicinity of the discharge, as a result of the exercise of this consent.

4. THAT the Taranaki Regional Council may review any or all of the condtions of this consent by giving notice of review during the month of June 2005 and/or June 2011, for the purposed of ensuring that the conditions are adequate to deal with an significant adverse effects on the environment arising from the exercise of this consent, which were either not foreseen at the time the applciation was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 24 June 1999

For and on behalf of
TARANAKI REGIONAL COUNCIL

DIRECTOR—RESOURCE MANAGEMENT

Consent 7043-1

TARANAKI REGIONAL COUNCIL

CHIEF EXECUTIVE
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www.trc.govt.nz

Please quote our file number on all correspondence

Discharge Permit

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

Name of Consent Holder: Vector Gas Limited
Private Bag 2020
NEW PLYMOUTH 4342

★ Change To Conditions Date: 25 January 2010 [Granted: 29 January 2007]

Conditions of Consent

★ Consent Granted: To discharge sludge, and some liquid, from two stormwater retention ponds, a filter backwash pond and a settlement pond onto and into land at or about (NZTM) 1700973E-5629335N

Expiry Date: 1 June 2023

Review Date(s): June 2011, June 2017

Site Location: Kapuni Gas Treatment plant, 298 Palmer Road, Kapuni

Legal Description: Lot 1 DP 15254 Lot 1 DP 18183 Blk XVI Kaupokonui SD

Catchment: Kapuni

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

General conditions

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

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

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

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

Special conditions

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

2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of applications 4506 and 6313. In the case of any contradiction between the documentation submitted in support of applications 4506 and 6313 and the conditions of this consent, the conditions of this consent shall prevail.

3. The consent holder shall ensure that only sludge generated in the stormwater retention ponds, filter backwash ponds and from settlement of Kapuni Stream water in the northern pond is discharged.

4. During times when the Kapuni Stream is in low flow, or when equipment failure prevents discharge to the stream, the discharge may include liquids [excluding demineralisation wastes] that normally reside in these ponds as an alternative to discharging them to the stream.

5. No disposal shall occur outside the area specified in application 4506.

6. The discharge onto and into land shall occur a minimum of 25 metres from any surface water body or property boundary. Discharge shall be onto and into land and there shall be no discharge of any contaminant to surface water.

7. The consent holder shall keep records of the following:
   a) Analysis of a representative sample of sludge each time the stormwater ponds and filter backwash pond is de-sludged, and soil quality after each discharge (analysing for arsenic, cadmium, chromium, copper, lead, nickel, mercury and zinc)
   b) Volumes of material discharged
   c) Dates and times of discharge events

   and shall provide the results to the Chief Executive, Taranaki Regional Council, on request.

8. Any relocation of soil from within the defined disposal area shall only occur if it can be shown to the satisfaction of the Chief Executive, Taranaki Regional Council that the standards, terms, and conditions of Rule 29 of the Regional Freshwater Plan for Taranaki will be complied with.

9. The discharge authorised by this consent shall not give rise to any of the following effects in any water body:

   a) the production of 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.

10. At all times, the consent holder shall comply with the guidelines for industrial sites developed by the Australian National Environmental Protection Council (Assessment of Site Contamination) Schedule B(1): Guideline on the Investigation Levels for Soil and Groundwater (1999).

11. The consent holder shall advise the South Taranaki District Council that the disposal area is being used for disposal of contaminated silts at levels and rates expected to result in the soil of that area exceeding agricultural land use guidelines, but not exceeding industrial land use guidelines.

12. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2011 and/or June 2017, 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 25 January 2010

For and on behalf of
Taranaki Regional Council

Director-Resource Management

Consent 7281-1

TARANAKI REGIONAL COUNCIL
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Please quote our file number on all correspondence

Land Use Consent

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

Name of Consent Holder:	Vector Gas Limited Private Bag 2020 NEW PLYMOUTH
Consent Granted Date:	10 April 2008

Conditions of Consent

Consent Granted:	To remove a weir structure in the Kapuni Stream and undertake works for river bank protection purposes at or about 2610957E-6191320N
Expiry Date:	1 June 2023
Review Date(s):	June 2011, June 2017
Site Location:	Kapuni Gas Treatment Plant, Palmer Road, Kapuni
Legal Description:	Pt Lot 1 DP 5227 Lot 1 DP 9987 Blk XVI Kaupokonui SD
Catchment:	Kapuni

For General, Standard and Special conditions pertaining to this consent please see reverse side of this document
www.trc.govt.nz

General conditions

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

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

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

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

Special conditions

1. The exercise of this consent shall be undertaken substantially in accordance with the documentation submitted in support of application 4950. In the case of any contradiction between the documentation submitted in support of application 4950 and the conditions of this consent, the conditions of this consent shall prevail.

2. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least 48 hours prior to the commencement and upon completion of weir removal and again at least 48 hours prior to and upon completion of any subsequent maintenance works which would involve disturbance of or deposition to the river bed or discharges to water. Notification shall include the consent number and a brief description of the activity consented 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.

3. The consent holder shall adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to avoid or minimise the discharge of sediments or other contaminants into water or onto the riverbed and to avoid or minimise the disturbance of the riverbed and any adverse effects on water quality.

4. The consent holder shall ensure that the area and volume of the riverbed disturbance shall, so far as is practicable, be minimised and any areas which are disturbed shall, so far as is practicable, be reinstated.

5. The consent holder shall take all reasonable steps to:

   a) minimise the amount of sediment discharged to streams;
   b) minimise the amount of sediment that becomes suspended in streams; and
   c) mitigate the effects of any sediment in the stream

   Undertaking work in accordance with *Guidelines for Earthworks in the Taranaki Region*, by Taranaki Regional Council, will achieve compliance with this condition.

6. The consent holder shall ensure that all concrete, steel, rubble and any other materials from the demolition is removed from the streambed.

7. Any instream work shall take place only between 1 November and 10 May inclusive, except where this is waived in writing by the Chief Executive, Taranaki Regional Council.

8. The consent holder shall not use explosives in the removal of the structure.

9. This consent shall lapse five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

10. That the Taranaki Regional Council may review any or all of the conditions of this consent by giving notice of review during the month of June 2011 and/or June 2017, for the purpose of ensuring that the conditions are adequate to deal with any significant adverse effects on the environment arising from the exercise of this consent, which were not foreseen at the time the application was considered and which it was not appropriate to deal with at that time.

Signed at Stratford on 10 April 2008

For and on behalf of
Taranaki Regional Council

Director-Resource Management

Certificate of Compliance

Pursuant to section 139 of the Resource Management Act 1991 a certificate of compliance is hereby issued by the Taranaki Regional Council

Name of certificate holder

Vector Gas Limited
P O Box 99-882
Newmarket
AUCKLAND 1149

Site location

Kapuni Gas Treatment Plant, 298 Palmer Road, Kapuni

Certification

The Taranaki Regional Council hereby certifies that as of 29 March 2010:

The placement and use of the following structures in, on, under or over the bed of the Kapuni Stream;

1. LTS pipebridge
2. LTS plant access bridge
3. Water intake structure
4. Flo-Dar and access platform
5. pH meter
6. Gabion baskets
7. Two stormwater discharge pipes
8. Stream bank protection
9. Stock bridge

can lawfully be undertaken without a resource consent.

Relevant Rules

Rule 52 of the Regional Fresh Water Plan applies to all structures listed above excluding a PVC stormwater pipe and Flo-Dar measuring system. That rule has the following conditions:

- *Structure was lawfully established and in use at the date of public notification of this Plan;*
- *Structure must not restrict the passage of fish;*
- *There shall be no significant adverse effects on aquatic life or instream habitat.*

Rule 61 of the Regional Fresh Water Plan applies to the PVC stormwater pipe and Flo-Dar measuring system. That rule has the following conditions:

- *Structures for the conveyance of stormwater shall be no greater than 150 mm in diameter;*
- *Structure shall not cause a navigational hazard;*
- *Structure does not alter the natural course of the river nor reduce channel capacity during flood flows;*
- *There shall be no significant adverse effects on aquatic life or instream habitat;*
- *Structure does not cause significant erosion, scour or deposition;*
- *Disturbance of the bed shall be the minimum necessary to carry out the required works;*
- *No contaminants shall be released to the river or lake bed from equipment being used for the activity, and no refuelling of equipment shall take place on any area of the river or lake bed;*
- *Between 1 May and 31 October there shall be no disturbance of any part of the bed covered by water;*
- *Sediment disturbance will not conspicuously change the visual clarity of water beyond a zone of reasonable mixing;*
- *All construction materials shall be removed from the bed;*
- *Water is only diverted to the extent, and for the period, necessary to carry out the works;*
- *Structure shall not restrict the passage of fish.*

Signed at Stratford on 10 May 2010

For and on behalf of
Taranaki Regional Council

Director-Resource Management

Discharge Permit

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

Name of Consent Holder:	Vector Limited P O Box 593 HAWERA 4640
Decision Date:	20 June 2012
Commencement Date:	20 June 2012

Conditions of Consent

Consent Granted:	To discharge stormwater from site areas of a natural gas treatment plant where no industrial processes occur (e.g. landscaped areas and roads) into the Kapuni Stream at or about (NZTM) 1700830E-5629418N
Expiry Date:	1 June 2035
Review Date(s):	June 2017, June 2023, June 2029
Site Location:	Kapuni Gas Treatment Plant, 298 Palmer Road, Kapuni
Legal Description:	Pt Lot 1 DP 5227 Blk XVI Kaupokonui SD (Discharge source & site)
Catchment:	Kapuni

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

General condition

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

Special conditions

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

2. The stormwater discharged shall be from a catchment area not exceeding 9.39 ha.

3. After allowing for reasonable mixing, 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; and
    e. any significant adverse effects on aquatic life.

4. The consent holder shall maintain a contingency plan (which is incorporated into the contingency plan for the entire site). 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.

5. The consent holder shall maintain a stormwater management plan (which is incorporated into the stormwater management plan for the entire site). 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.

6. This consent shall lapse on 30 June 2017, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

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 2017 and/or June 2023 and/or June 2029, 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 20 June 2012

For and on behalf of
Taranaki Regional Council

_____

Director-Resource Management

TARANAKI REGIONAL COUNCIL
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Please quote our file number on all correspondence

Certificate of Compliance

Pursuant to section 139 of the Resource Management Act 1991 a certificate of compliance is hereby issued by the Taranaki Regional Council

Name of certificate holder

Vector Limited
P O Box 593
HAWERA 4640

Site location

Kapuni Gas Treatment Plant, 298 Palmer Road, Kapuni at or about GR: 1700824E-5629246N
[legal description: Lot 1 DP 15254 [Discharge source & site]]

Proposal/Activity

To discharge stormwater from an LPG storage and load-out facility onto and into land in the vicinity of the Kapuni Stream, in accordance with the proposal set out in application 6645.

Certification

The Taranaki Regional Council hereby certifies that:

the discharge of stormwater from a LPG storage and load-out facility onto and into land in the vicinity of the Kapuni Stream as outlined in the documentation supplied in support of the application is a permitted activity pursuant to Rule 23 of the Regional Freshwater Plan for Taranaki [2001] at the date of receipt of the application for this certificate, provided that it complies with and continues to comply with the following conditions:

- *The discharge shall not originate from any industrial or trade premise where the active area of the site is greater than 0.5 ha, unless there is an interceptor system in place that is designed and managed so that it will keep stormwater from entraining contaminants;*

- *The discharge shall not originate from any industrial or trade premise where hazardous substances are used, stored or potentially spilt unless:*
  - *(i) there is an interceptor system in place that is designed and managed so that it will keep stormwater from entraining contaminants; or*
  - *(ii) there is an interceptor system in place that is designed and managed so that it is capable of capturing contaminated stormwater and either diverting it to trade waste or containing it and/or removing or reducing the contaminants such that:*
    - *any spills can be recovered;*
    - *the discharge shall not contain any persistent or bioaccumulative substances;*
    - *the discharge shall not breach any other specified condition of this rule;*

  and a spill contingency and interceptor system maintenance plan is maintained and regularly updated for the site;
- *The discharge shall not originate from any industrial or trade premises where the movement of rock, earth or soil material is taking place, unless that movement is being undertaken in connection with site landscaping, or the installation, construction, maintenance or demolition of buildings, structures or equipment;*
- *The discharge shall not be greater than is able to be discharged from a pipe of 900 mm in diameter;*
- *The discharge shall not cause significant erosion, scour or deposition;*
- *Discharge that will, or is liable to enter surface water, shall not exceed the following:*

pH	*6.0-9.0*
oil and grease	*15 gm^{-3}*
suspended solids	*100 gm^{-3}*
BOD	*5 gm^{-3}*
unionised ammonia	*0.025 gm^{-3}*
free chlorine	*0.2 gm^{-3}*

- *The discharge shall not give rise to any of the following effects in receiving waters after reasonable mixing:*
  - *(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.*

Any discharge which causes any of the above conditions to be breached is not permitted and may be the subject of enforcement action.

Signed at Stratford on 13 December 2010

For and on behalf of
Taranaki Regional Council

Director-Resource Management

Appendix II

Biomonitoring report reviews

Memorandum

To J Kitto, Scientific Officer
From B Jansma, Scientific Officer
Document 1410044
Date 28 September 2014

Review of Stark Environmental Reports: Kapuni macroinvertebrate biomonitoring and electric fishing in relation to Ballance Agri-Nutrients Kapuni Ltd and Vector Ltd – July 2013 – April 2014

Four macroinvertebrate surveys were scheduled for the 2013-2014 monitoring period. In this memo, three reports of the 2013-2014 monitoring period are reviewed which detail the macroinvertebrate monitoring of regular sites on the Kapuni Stream and tributaries as per the following table. Due to unsuitable weather and flow conditions, the spring survey was delayed until December 2013, while the summer survey was not performed. Refer to the reports for further details.

Survey date	Report Number	Number of sites	
		Kapuni Stream	tributaries
13 & 18 July 2013	2013-07	7	3
3 December 2013	2013-15	11	3
3 April 2014	2014-07	7	3

Macroinvertebrate monitoring

Biomonitoring in July 2013 was undertaken while flows were receding following rain on the mountain. Flows during this survey (1,310 – 1,350 l/sec) were slightly higher than that during the December 2013 survey (1,510 – 1,560 l/sec), but much higher than during the April 2014 survey which saw an average flow of 460 l/sec. There was little mention in the reports of habitat conditions, other than a note about thin periphyton cover in April 2014.

Targets for MCI values have been set for the Kapuni main stem and gully system. For the Kapuni stream a MCI target of 100 has been obtained from historical data and the expected mild enrichment in the mid-catchment. The gully system previously had a MCI target of 72, lower than the main stem, however the characteristic weedy habitat in these streams tends to support lower scoring taxa.

Recent research on the MCI has seen the development of a varied index, to assess the health of soft-bottomed streams. This is referred to as the MCI-sb in the reviewed reports. This index is relevant to the gully system (sites 2, 3, and 5). The target has consequently been reviewed for these sites, and is now 80 for sites 2 and 3, and 73 for site 5.

During all four surveys, all Kapuni Stream sites and all tributary sites sampled exceeded their respective MCI targets. The July 2014 survey recorded only one new seasonal maximum MCI score, at site 2, while the April 2014 survey recorded no new seasonal or

overall extremes. As the December 2013 survey was delayed, it meant four sites were sampled in summer for the first time (Opunake Rd, Upper Palmer Rd, Eltham Rd & Normanby Rd). This resulted in all sites recording new minimum and maximum seasonal MCI scores, although the score recorded at Opunake Rd also constituted a new overall maximum. In addition, the score recorded at Kokiri Rd in this survey was a new seasonal maximum. All sites in all surveys recorded MCI values similar to or higher than their respective overall and seasonal mean MCI scores. This includes site 2 which was frequently an exception to this pattern. This indicates the deterioration recorded at site 2 in previous surveys was not apparent in the 2013-2014 monitoring period.

Linear trends in MCI values at the sites are also reported, by plotting MCI and taxa richness versus time using the LOWESS (Locally Weighted Scatterplot Smoothing) method (used with Tension = 0.4). The statistical significance of the trends was assessed using Mann-Kendall tests in STATISTICA 8. The Benjamini-Hochberg false discovery rate (FDR) was also used, to control the overall Type-I error rate in time series analyses. All sites, except site 2 in the gully system and Opunake Road in the Kapuni main stem, exhibited a statistically significant positive trend in all surveys, with such significantly positive trends being strong enough to avoid elimination by the FDR.

All four surveys recorded numbers of taxa that were similar to or below the overall mean for the respective sites. Most values were within the range of values previously recorded, although there were a small number of new seasonal minimum values set. Those sites that recorded new seasonal minimum taxa richnesses included those sites sampled for the first time in summer, and Kokiri Rd in December 2013. Decreasing taxa richness has been recorded for some time now. Long term trends in taxa richness are also evident at some sites in the Kapuni Stream. All four reports show a statistically significant ($P<0.05$) negative trend in taxa richness at all sites except for site 3.

While these statistically significant negative trends may be in part related to the industries in the area, it must be noted that it can also be related to changes in sampling effort, such as by a change in personnel, variations in flow, and changes to the stream bed structure and substrate.

There was some variation in the dominant taxa over the period covered by the reports. However, *Austroclima, Coloburiscus* and *Deleatidium* mayflies, *Archichauliodes* dobsonfly larvae, *Beraeoptera*, and *Aoteapsyche* caddisfly larvae and elmid beetles continued to be dominant in the Kapuni Stream, being abundant in at least two of the three surveys. Amphipods and snails continued to be dominant in the tributary. In the April 2014 survey, there was a reduced abundance in some 'sensitive' taxa, and an increase in the abundance of some 'tolerant' taxa, such as true flies, consistent with the lower flow recorded during this survey.

Overall, the MCI scores for most sites were not less than respective means. Site 2 (located in the tributary), which often recorded below average MCI-sb scores in previous surveys, recorded above average scores in the surveys reviewed herein. The general conclusion was that the Kapuni Stream was in good health and the impact (if any) of the industrial activity at Kapuni was not discernible.

Electric Fishing

Reports 2013-14 and 2014-06 detail the monitoring of fish communities undertaken in the Kapuni Stream in December 20143 (11 sites), and April 2014 (7sites). The area of streambed fished at each site in the Kapuni Stream was approximately 45 m^2, while the tributary was not fished in either survey.

All sites were surveyed for fish using the single pass electric fishing technique. The results of these surveys are given in Tables 1 and 2.

Table 1 Results of fish survey in the Kapuni Stream conducted on 3 December 2013

Site	Brown trout	Redfin bully	Koaro	Torrentfish	Eels	Koura	*Total no. of species*
O	-	-	3	-	-	-	*1*
P	-	-	-	-	1	-	*2*
E	1	-	-	-	1	3	*3*
9	1	-	-	-	1	-	*3*
11	1	-	1	-	4	-	*3*
12	1	1	-	-	1	-	*3*
10	1	1	-	-	3	1	*4*
6	-	3	-	-	5	-	*2*
7	-	-	-	-	-	-	*0*
8/K	-	-	-	2	7	-	*2*
N	-	-	-	-	-	-	*0*
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total abundance	*5*	*5*	*9*	*2*	*23*	*4*	

Table 2 Results of fish survey in the Kapuni Stream conducted on 3 April 2014

Site	Brown trout	Redfin bully	Koaro	Torrentfish	Eels	Koura	*Total no. of species*
O	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P	N/A	N/A	N/A	N/A	N/A	N/A	N/A
E	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9	-	-	-	-	1	-	*1*
11	-	2	-	-	4	-	*6*
12	-	2	-	-	4	-	*6*
10	-	-	-	2	7	1	*11*
6	-	1	-	7	13	-	*21*
7	-	-	-	11	4	-	*15*
8/K	-	-	-	1	15	-	*16*
N	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total abundance	*0*	*5*	*0*	*21*	*48*	*1*	

A total of 48 fish, comprising six taxa, were caught at eleven sites during the December 2013 survey. During the April 2014 survey, 75 fish were caught, comprising four taxa. This was within the range (8-221) of total fish numbers and variety (3-8 taxa) recorded around April or December in previous years, but the April abundance is notable, being the highest recorded for eleven years.

In December 2013, eels were most abundant comprising 48% of the total number of fish recorded. Koaro (19%), brown trout (10%), redfin bully (10%), koura (8%), and torrentfish (4%) were present also.

In April 2014, eels were the most abundant, comprising 64% of the total number of fish recorded. Torrentfish (28%), redfin bully (7%) and koura (1.3%) were present also. This survey was undertaken in very low flows, and these flows are likely to concentrate the fish, hence the relatively high abundance, and also make torrentfish habitat more available to this survey technique. As a result, the number of torrentfish recorded was the second highest of all surveys undertaken.

Brown trout and koura, which are generally recorded more often than not when electric fishing the Kapuni Stream, were both recorded together in the December 2013 survey. Despite the lower flows (or possibly due to), the abundance of these species was reduced in the April 2014 survey, with only one koura and no brown trout recorded.

It has been noted in previous reports that fine sand has been a dominant feature on the streambed, due in part to the erosion on the mountain. This has continued in both reports reviewed and it is likely to have reduced the suitability of habitat for some taxa, such as koura. It is thought that this reduction in available habitat is also responsible for a reduction in the numbers of brown trout recorded per site. The catch per unit effort has dropped from a high of 4.27 brown trout per site in 1982 – 1983 to less than 0.5 from late 2008 to mid 2012. A slight improvement was recorded in the surveys reported herein, with five being recorded in total, all young of the year trout recorded in December 2013. Trout records may increase in the near future, as Fish and Game is now more actively stocking this river than has happened in the recent past.

One additional point worth noting is the fact that the v-notch weir at the Vector site has been removed. It is noted in the report that there didn't appear to be any additional negative impact on sedimentation downstream. The weir's removal will have improved fish passage in this reach of the Kapuni Stream, and this may result in improved fish communities. Furthermore, New Zealand Railways Corporation has undertaken works to improve fish passage at the railway bridge, which also may lead to improved fish communities.

In short, these electric fishing results from the Kapuni catchment do not provide any conclusive indication that the petrochemical industries are having any significant adverse effects on fish communities in the Kapuni catchment.

Memorandum

To J Kitto, Scientific Officer
From B Jansma, Scientific Officer
Document 1370469
Date 3 July 2014

Review of Stark Environmental Reports: Kapuni macroinvertebrate biomonitoring and electric fishing in relation to Ballance Agri-Nutrients Kapuni Ltd and Vector Ltd – July 2012 – May 2013

Four macroinvertebrate surveys were scheduled for the 2012-2013 monitoring period. In this memo, four reports of the 2012-2013 monitoring period are reviewed which detail the macroinvertebrate monitoring of regular sites on the Kapuni Stream and tributaries as per the following table. Refer to the reports for further details.

Survey date	Report Number	Number of sites	
		Kapuni Stream	tributaries
9 August 2012	2012-09	7	3
26 October 2012	2012-12	11	3
22 January 2013	2013-02	7	3
11 May 2013	2013-06	7	3

Macroinvertebrate monitoring

Biomonitoring in August 2012 was undertaken while flows were increasing slightly due to rain on the mountain. As a result flows were the highest during this survey (2,020-2,170 l/sec). In general, flows become progressively lower with each subsequent survey, with the lowest flow during sampling occurring in the January 2013 survey. There was no mention in the report of sand inundation or habitat conditions.

Targets for MCI values have been set for the Kapuni main stem and gully system. For the Kapuni stream a MCI target of 100 has been obtained from historical data and the expected mild enrichment in the mid-catchment. The gully system previously had a MCI target of 72, lower than the main stem, however the characteristic weedy habitat in these streams tends to support lower scoring taxa.

Recent research on the MCI has seen the development of a varied index, to assess the health of soft-bottomed streams. This is referred to as the MCI-sb in the reviewed reports. This index is relevant to the gully system (sites 2, 3, and 5). The target has consequently been reviewed for these sites, and is now 80 for sites 2 and 3, and 73 for site 5.

During all four surveys, all Kapuni Stream sites and all tributary sites sampled exceeded their respective MCI targets. All four surveys recorded new maximum (overall and seasonal) MCI scores at at least one site, being at site 12 in August 2012, sites 9 and Normanby Rd in November 2012, site 2 in January 2013 and sites 9 and 12 in May 2013. All

sites in all surveys recorded MCI values higher than their respective overall and seasonal mean MCI scores. This includes site 2 which was frequently an exception to this pattern. This indicates the deterioration recorded at site 2 in previous surveys was not apparent in the 2012-2013 monitoring period.

Linear trends in MCI values at the sites are also reported, by plotting MCI and taxa richness versus time using the LOWESS (Locally Weighted Scatterplot Smoothing) method (used with Tension = 0.4). The statistical significance of the trends was assessed using Mann-Kendall tests in STATISTICA 8. The Benjamini-Hochberg false discovery rate (FDR) was also used, to control the overall Type-I error rate in time series analyses. All sites, except site 2 in the gully system and Opunake Road in the Kapuni main stem, exhibited a statistically significant positive trend in all surveys, with such significantly positive trends being strong enough to avoid elimination by the FDR.

All four surveys recorded numbers of taxa that were below the overall mean for the respective sites. Most values were within the range of values previously recorded, although there were a small number of new seasonal and overall minimum values set. Those sites that recorded new seasonal minimum taxa richnesses were site 11 in October 2012, and site 11 and 5 in May 2013. The result for site 11 in May 2013 was also a new overall minimum result. Decreasing taxa richness has been recorded for some time now. Long term trends in taxa richness are also evident at some sites in the Kapuni Stream. All four reports show a statistically significant ($P<0.05$) negative trend in taxa richness at all sites except for site 3.

While these statistically significant negative trends may be in part related to the industries in the area, it must be noted that it can also be related to changes in sampling effort, such as by a change in personnel, variations in flow, and changes to the stream bed structure and substrate.

There was some variation in the dominant taxa over the period covered by the reports. However, *Coloburiscus, Deleatidium* mayflies, *Beraeoptera*, and *Aoteapsyche* caddisfly larvae and elmid beetles continued to be dominant in the Kapuni Stream, being abundant in at least two of the four surveys. Amphipods and snails continued to be dominant in the tributary. In the late January and April 2011 surveys, there was a reduced abundance in some 'sensitive' taxa, and an increase in the abundance of some 'tolerant' taxa, such as true flies, consistent with the increase in periphyton recorded during these surveys.

Overall, the MCI scores for most sites were not less than respective means. Site 2 (located in the tributary), which often recorded below average MCI-sb scores in previous surveys, recorded above average scores in the surveys reviewed herein. The general conclusion was that the Kapuni Stream was in good health and the impact (if any) of the industrial activity at Kapuni was not discernible.

Electric Fishing

Reports 2012-11 and 2013-05 detail the monitoring of fish communities undertaken in the Kapuni Stream in October 2012 (11 sites), and May 2013 (7sites). The area of streambed fished at each site in the Kapuni Stream ranged from 45 m^2 to 48 m^2, while the tributary was not fished in either survey.

All sites were surveyed for fish using the single pass electric fishing technique. The results of these surveys are given in Tables 1 and 2.

Table 1 Results of fish survey in the Kapuni Stream conducted on26 October 2012

Site	Brown trout	Redfin bully	Koaro	Torrentfish	Eels	Koura	*Total no. of species*
O	-	-	3	-	-	-	*1*
P	-	-	-	-	1	-	*1*
E	-	-	-	-	-	-	*0*
9	-	-	-	-	-	-	*0*
11	1	-	1	1	-	-	*3*
12	-	4	-	-	1	-	*2*
10	-	-	-	1	1	-	*2*
6	1	1	-	3	2	-	*4*
7	-	1	-	1	-	-	*2*
8/K	-	-	-	1	2	-	*2*
N	1	1	-	-	2	-	*3*
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total abundance	*3*	*7*	*4*	*7*	*9*	*0*	

Table 2 Results of fish survey in the Kapuni Stream conducted on 11 May 2013

Site	Brown trout	Redfin bully	Koaro	Torrentfish	Eels	Koura	*Total no. of species*
O	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P	N/A	N/A	N/A	N/A	N/A	N/A	N/A
E	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9	-	-	-	-	-	-	-
11	-	-	-	-	1	-	*1*
12	-	3	-	-	-	-	*1*
10	-	-	-	-	-	1	*1*
6	-	4	-	1	2	-	*3*
7	-	1	-	-	-	-	*1*
8/K	-	1	-	1	2	1	*4*
N	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total abundance	*0*	*9*	*0*	*2*	*5*	*2*	

A total of 30 fish, comprising five taxa, were caught at eleven sites during the October 2012 survey. During the May 2013 survey, 18 fish were caught, comprising four taxa. This was within the range (8-221) of total fish numbers and variety (3-8 taxa) recorded around March or November in previous years.

In October 2012, eels were most abundant comprising 30% of the total number of fish recorded. Redfin bully (23%), torrentfish (23%), Koaro (13%), and brown trout (10%) were present also. A notable record was of a large longfin eel, approximately 1 metre long, recorded at Normanby Road (photo 1).

In May 2013, redfin bully were the most abundant, comprising 50% of the total number of fish recorded. Eels (27%), torrentfish (11%) and koura (11%) were present also.

Photo 1 A large longfin eel recorded at Normanby Road, 26 October 2012.

Brown trout and koura, which are generally recorded more often than not when electric fishing the Kapuni Stream, were not recorded together in the reviewed surveys. Brown trout were recorded during the October 2012 survey, but not the May 2013 survey, while the reverse was true for koura.

It has been noted in previous reports that fine sand has been a dominant feature on the streambed, due in part to the erosion on the mountain. This has continued in both reports reviewed and it is likely to have reduced the suitability of habitat for some taxa, such as koura. It is thought that this reduction in available habitat is also responsible for a reduction in the numbers of brown trout recorded per site. The catch per unit effort has dropped from a high of 4.27 brown trout per site in 1982 – 1983 to less than 0.5 from late 2008 to mid 2012. A slight improvement was recorded in the surveys reported herein, with three being recorded in total, all young of the year trout recorded in October 2012. Trout records may increase in the near future, as Fish and Game is now more actively stocking this river than has happened in the recent past.

One additional point worth noting is the fact that the v-notch weir at the Vector site has been removed. It is noted in the report that there didn't appear to be any additional negative impact on sedimentation downstream. The weir's removal will have improved fish passage in this reach of the Kapuni Stream, and this may result in improved fish communities. Furthermore, New Zealand Railways Corporation has undertaken works to improve fish passage at the railway bridge, which also may lead to improved fish communities.

n short, these electric fishing results from the Kapuni catchment do not provide any conclusive indication that the petrochemical industries are having any significant adverse effects on fish communities in the Kapuni catchment.

Appendix III

Report required under special condition 4 of discharge permit 4087

REPORT

VECTOR GAS LIMITED

Report on Special Condition 4 of Air Discharge Permit 4087 2014

30 September 2014

Prepared by - Peter Stephenson

Product Quality and External Relationships Manager

Vector Kapuni Gas Treatment Plant

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1 Introduction

The Kapuni Gas Treatment Plant (KGTP) operates under one comprehensive air discharge permit (4087). The Taranaki Regional Council (TRC) issued permit 4087 on 7 February 1996 as a resource consent under Section 87(e) of the Resource Management Act (RMA). In late 1996 Vector, then NGC, sought a change to 4087 to account for the installation of the cogeneration facility and other related ancillary operations associated with refurbishment activities undertaken at the KGTP. This application was subsequently granted by the TRC on 27 January 1997.

The 17 special conditions on 4087 have both qualitative and quantitative controls and performance standards as well as several requirements to report/notify on air issues associated with the KGTP at pre-defined intervals.

1.1 Air Discharge Permit 4087 Special Condition 4

Special condition 4 of Vector's air discharge permit (4087) states:

That the consent holder shall provide to the General Manager, Taranaki Regional Council, by 1 June 1999 and every three years thereafter a written report:

a) reviewing any technological advances in the reduction or mitigation of discharges to air from the site, and the costs and benefits of these advantages; and
b) detailing an inventory of the discharges to air from the site of such contaminants as the General manager may from time to time specify following consultation with the consent holder; and
c) detailing any measures that have been taken by the consent holder to improve the energy efficiency of the site's activities and processes; and
d) addressing any other issue relevant to the minimisation or mitigation of discharges of contaminants to air from the site that the General Manager, Taranaki Regional Council, considers should be included.

This report constitutes the sixth report produced in accordance with special condition 4, with previous reports being prepared in 2005, 2009 and 2011.

To fulfil the above stated requirements of special condition 4, Vector provides the following specific information and/or comments:

a a summary of annual emissions of carbon dioxide from the Kapuni Gas Treatment Plant for the period 1990 – 2013;

b a summary of plant process changes taken by Vector to improve the energy efficiency of the sites activities and processes;

c on site metal deposition monitoring;

d significant flaring episodes from the site within the past two years.

2 CO_2 Emissions from Vector KGTP Operations

CO_2 emissions arise from a range of sources within the KGTP site. Most of the CO_2 emissions are from plant and equipment solely owned and operated by Vector. A notable exception is the cogeneration facility (jointly owned by Vector and Nova), which produces both steam and electricity for the KGTP site and the Lactose New Zealand site. The cogeneration facility also exports electricity to the national grid.

2.1 Annual CO_2 Emissions from the Kapuni Gas Treatment Plant

Table 2.1 shows the KGTP annual CO_2 emission figures for the reporting period 2008-2009 as well as historical data. Emissions are reported as an actual (or "gross") emission figure for the KGTP as a whole, whilst emission figures previously reported to the MoC/MED were reported as a net figure. Specifically, the actual CO_2 emissions relate to the operation of the boilers and cogeneration; pipeline compressors; CO_2 recovery plant; stabiliser compressor; LTS plant fuel and electricity; GTP electricity generation (prior to cogeneration); Benfield CO_2 removal system; flaring (with credit being applied for CO_2 recovered from the Benfield CO_2 recovery system).

CO_2 emissions were calculated as a net emission figure by Vector for previous reporting on the Voluntary Agreement to the MfE. The net emission figure apportioned the CO_2 emissions from the cogeneration facility to its owners and users. This apportionment is appropriate, as not all the CO_2 emitted from the cogeneration facility is actually associated with Vector's business. The apportionment of CO_2 from the cogeneration facility results in a "CO_2 credit" for the KGTP site arising from electricity exported and steam and electricity supplied to the Lactose Company of New Zealand. Similarly, to ensure that consistent reporting on the Voluntary Agreement was given to the MfE, a CO_2 debit was used for the import of electricity to the KGTP prior to commissioning of the cogeneration facility. These debits[1] result in the differences shown between the net and actual emissions.

From July 2009 onwards, the KGTP has reported data on CO_2 emissions through to MED/MBIE in a different format. Table 2.2 shows the amount of CO_2 released to atmosphere from the Benfield process and from fuel combustion at the KGTP.

The reduction in CO_2 emissions for the period 2012-2013 is a reflection of reduced quantities of gas processed by the plant compared to previous years.

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1 As per the Ministry of Commerce "*Technical Guidelines for Establishing and Reporting Agreements to Reduce Carbon Dioxide Emissions in New Zealand*", electricity import and export has a CO_2 emission factor of 140tCO_2/GWh. This is based upon the average CO_2 emissions for all electricity generated in New Zealand (including hydroelectricity). For any changes from this base level in subsequent years, the CO_2 emission factor is 624 tCO_2/GWh.

Table 2.1: Actual and net carbon dioxide emissions

Year	Net CO_2 emissions (tpa)	Actual CO_2 emissions (tpa)
2004 - 2005	730,384	811,954
2005 – 2006	707,287	787,898
2006 - 2007	720,945	800,735
2007 - 2008	530,757	610,102
2008 – 2009	**489,142**	**553,243**

Table 2.2: KGTP carbon dioxide emissions

Calendar year	CO_2 to Atmosphere from Benfield Stacks (tpa)	CO_2 Produced by KGTP Fuel Combustion (tpa)
2009	**415,461**	**5,152**
2010	**484,408**	**5,994**
2011	**498,986**	**8,370**
2012	**419,426**	**4,161**
2013	**343,161**	**3,353**

3 Processing and operational enhancements at the Kapuni Gas Treatment Plant

3.1.1 Benfield performance monitoring

The Benfield KPI discussed in earlier reports continues to be used for monitoring the efficiency of steam use in the Benfield plant. The continual improvement in steam use efficiency reflected in this KPI from 2009 onwards is not due to any particular process improvement, but rather a continued focus on consistently running the plant at higher efficiency targets from year to year (Table 3.1).

The reduced steam usage has resulted in considerable energy savings for the plant and is the primary reason for the reduced amount of CO_2 produced by KGTP fuel use shown in Table 2.2. Any further improvements on the 2013-2014 figures are likely to be smaller, as the plant reaches its maximum efficiency.

Table 3.1: Annual steam use per CO_2 loading

Period	Annual Steam use per CO_2 loading (kg/hr/%)
2000 - 2001	337
2001 - 2002	310
2002 - 2003	306
2003 - 2004	319
2004 - 2005	295
2005 - 2006	292
2006 - 2007	280
2007 - 2008	279
2008 - 2009	**299**
2009 - 2010	**257**
2010 - 2011	**243**
2011 - 2012	**251**
2012 - 2013	**236**
2013 - 2014	**226**

4 Discharges to atmosphere

4.1 Metal Deposition Monitoring

Extensive heavy metal deposition monitoring around the KGTP was conducted as part of the 2008 monitoring study. Air deposition gauges were deployed at three locations at the KGTP for 30 days and samples were analysed for a suite of metals. Deposition rates at the three monitoring locations were highest overall for potassium, zinc and vanadium. These metals have been analysed annually since 2008 with results shown in Table 4.1.

While there is considerable variation in some of the samples, the data does not show any significant increase, or decrease, in metal deposition rates over time.

Table 4.1: Deposition Analysis for Trace Metals

Metal		Site 1 - Settling Pond	Site 2 - Admin. car park/building	Site 3 - Opposite Maintenance
	Year	µg/m²/day	µg/m²/day	µg/m²/day
Total Potassium	2008	14741	3827	5099
	2009	10043	0	3599
	2010	13210	8962	5468
	2011	4456	5606	6688
	2012	7882	4719	3583
	2013	10616	2803	6984
Total Vanadium	2008	428	53	144
	2009	388	45	114
	2010	198	41	125
	2011	90	55	150
	2012	139	34	80
	2013	191	12	59
Total Zinc	2008	55	212	174
	2009	57	909	106
	2010	330	205	46
	2011	53	266	172
	2012	76	93	97
	2013	110	47	283

5 Flaring

Flaring is an important safety consideration for the site as it allows flammable material to be safely released into the environment in a non-combustible form in the event of either processing upsets or contingency situations arising at the site. There are no circumstances where Vector gains a financial advantage from flaring. Any flaring is a financial loss; hence there is a strong drive to minimise any flaring activity.

5.1 Significant Flaring from 2008 – 2014

The largest flaring episodes occur during emergency shutdown (ESD) tests. In order to achieve the design reliability requirements, and in accordance with international practice, these tests have been carried out on an annual basis since 1997.

Normally the test is carried out in February each year to establish that all emergency shutdown and depressurisation valves actuate. This results in only a fraction of the total hydrocarbon inventory being flared.